ROSKILDE UNIVERSITY

Juggling with the norms

Everyday practice in an emergency service in Niger

Hahonou, Eric Komlavi

Published in:
A Health Policy and Systems Research Reader on Human Resources for Health

Publication date:
2017

Document Version
Publisher's PDF, also known as Version of record

A HEALTH POLICY AND SYSTEMS RESEARCH READER ON
HUMAN RESOURCES FOR HEALTH

Edited by Asha George, Kerry Scott, Veloshnee Govender

Alliance for Health Policy and Systems Research

World Health Organization

A HEALTH POLICY AND SYSTEMS RESEARCH READER ON
HUMAN RESOURCES FOR HEALTH

Edited by Asha George, Kerry Scott, Veloshnee Govender

Alliance for Health Policy and Systems Research

World Health Organization

A health policy and systems research reader on human resources for health / Asha George, Kerry Scott, Veloshnee Govender, editors

ISBN 978-92-4-151335-7

TABLE OF CONTENTS

Illustrative primary research articles by research inference 137

List of Figures

List of Tables

Foreword

Health workers are the day-to-day providers of preventative, curative and palliative health care. They, and all those who constitute human resources for health (HRH) - managers, supervisors, support staff and human resources in allied social sectors - sustain health systems. In addition to operationalizing health systems, these multiple actors are the ones who ultimately implement health policies, thereby interpreting and shaping policy. Evidence and policy relevant research is critical for understanding and supporting these key dynamic actors at the heart of health systems.

The current commitment to achieving Universal Health Coverage and Sustainable Development Goal 3 (Ensure healthy lives and promote wellbeing for all at all ages) presents an opportunity for the global community to direct attention and energy towards HRH as a key part of resilient, people-centred health systems. The Global Strategy on Human Resources for Health: Workforce 2030 and the United Nations High-Level Commission on Health Employment and Economic Growth represent bold and unprecedented calls to action advocating for increased investments in the health and social workforce and intersectoral collaboration. In the coming years, they importantly signal two key priorities for action on the part of the global community of HRH stakeholders, comprising a diverse group of policy-makers, planners, practitioners, civil society and professional associations. These include strengthening health workforce contributions to improved health and sustained development and addressing outstanding challenges, such as the severe health worker shortage and maldistribution more acutely experienced in low- and middle-income countries.

The need for innovations in HRH policy and practice at the global, regional and country level requires robust, timely and relevant research evidence. However, there is a paucity of methodological guidance on the scope and conduct of health policy and systems research approaches and methodologies relevant for supporting HRH in the Universal Health Coverage and Sustainable Development Goal era.

The Health Policy and Systems Research Reader on Human Resources for Health responds to this gap. It is a global public good relevant to both practitioner and researcher communities. It covers a diverse range of topics, ranging from health workforce boundaries, metrics and modelling; the social relations and organizational contexts supporting effective training, supervision, motivation and performance of health workers; as well as broader governance dynamics.

Critically, the Reader showcases innovative research that examines HRH topics in a manner that recognizes the discretionary power and dynamism of health workers, contends with the power relations that drive health policy and practice, and accounts for the complexity and pluralism of low- and middle-income health systems. In addition and equally important, I believe that the Reader is an essential and timely resource that will in the forthcoming years be increasingly used for teaching and capacity development on human resources for health as a key component of health policy and systems for researchers and practitioners alike.

Dr Naoko Yamamoto
Assistant Director-General
Universal Health Coverage and Health Systems
World Health Organization

About the Reader

Why is this Reader needed?

There is wide recognition that human resources for health (HRH) are key to people-centered health systems, resilient economies and sustainable development. Progress on achieving these goals will depend on the effective deployment of capable and motivated health workers, where and when they are needed to provide a full range of high quality health services, whether promotive/preventive, curative or rehabilitative/palliative (WHO, 2016a; WHO, 2016b; WHO et al., 2016).

Yet HRH is also an area in which evidence has yet to catch up with the pressing policy decisions needed. This gap between HRH policy and research is particularly challenging given the increasingly complex social contexts in which health systems operate. This includes increasingly mobile populations, rapid social and technological change, acute and long-term humanitarian crisis, adaptive economic markets and shifts in power, growth and development pathways in the global political economy.

In the midst of these societal transformations and tensions, HRH as a field has not remained static. The past few years have seen a proliferation of research on HRH, drawing from a range of disciplines (i.e. public health, sociology, psychology, anthropology, organizational sciences, public administration, and management studies). Whereas the field traditionally focused on the medical professions, there is now increasing attention to a much more diverse set of HRH cadres, including nursing professions, auxiliary medical personnel, informal providers, community health workers and home carers. While HRH policy previously narrowly focused on training, recruitment and deployment, recent policy relevant research spans a broader range of issues related to migration, retention, dual practice, accountability, informal markets, gender bias and violence, as well as the need for HRH management and leadership in mixed and often poorly regulated health systems.

Given these research evolutions and outstanding policy needs, securing the foundations of HRH research is critical for improving and advancing policies and strategies for HRH as a vital element of health systems strengthening. Yet there is no resource that summarizes key HRH issues and the research approaches to address them, despite the resurgence in global HRH political prioritisation and the renaissance in HRH research. The Reader aims to address this gap by taking stock of HRH research, cataloguing its advances and identifying remaining challenges. With a strong health policy and systems research (HPSR) orientation, the Reader also promotes greater understanding of the varied disciplines, methodologies, study designs, methods and questions applied to researching HRH. It provides resources for capacity development of researchers and practitioners alike and aims to inspire innovation and investment to fulfill future HRH research agendas. In following these multiple aims, the Reader addresses the needs of researchers, teachers and students of HRH and those policy-makers and funders making decisions about HRH research within the broader rubric of transformative health systems and inclusive economies.

What does this Reader offer?

The Reader builds upon recent efforts by the Alliance for Health Policy and Systems Research, World Health Organization (WHO) to strengthen health systems research approaches, through key research guides, including the Health Policy and Systems Research Methodology Reader (Gilson, 2012), the Implementation Research in Health: A Practical Guide (Peters, Tran, and Adam, 2013), and the Participatory Action Research in health systems: A Methods Reader (Loewenson et al., 2014). Previous HPSR Readers sought to establish new disciplinary ground by introducing new areas or types of research. In contrast, this Reader builds on and bridges two existing scientific and practitioner communities. The Reader speaks to the HRH community and its existing body of work, while also linking to the emerging field of HPSR with its multidisciplinary, people-centered focus.

People-centred HPSR is grounded in an "understanding that i) health systems are, as part of any fabric of society, social and political constructs that provide vital opportunities for tackling social injustice; ii) human agency, in interaction with broader societal structures, fundamentally shapes health systems; and iii) social science perspectives and approaches offer particular value to this area of trans-disciplinary research" (Sheikh, George, and Gilson, 2014, p. 2). The Reader will imbue this HPSR spirit by emphasizing where possible actor-oriented analysis, highlighting how health workers can be creative and dynamic agents best placed alongside with patients, community members, managers and policy-makers to address health system complexities (Figure 1.1).

Figure 1.1 Human resources for health: Multiple actors, interests and power

A key element of the Reader is building on previous Alliance Readers to appreciate the diversity of research methodologies and questions that are valuable to understanding HRH (Table 1.2). In contrast to the hierarchy of evidence that serves as a foundation for epidemiological sciences, HPSR argues for methodological fit dictated by the research question asked and its intended inference (Gilson, 2012). While descriptive research serves as a foundation for all research endeavours, HPSR also serves to understand underlying mechanisms by asking how and why, and by using theories to guide and test understanding through explorative and explanatory research.

HPSR is also about guiding change whether collaboratively through emancipatory approaches or through more researcher controlled intervention research that aims to test the adequacy, plausibility and probability of influence. Finally, HPSR is also about informing stakeholders about the consequences of certain decisions, and is therefore predictive through scenario building, which can involve participatory stakeholder engagement and computer modelling.

While each chapter will provide enough of an overview about HRH to situate the research done on that topic, the focus will be on the research (methodological significance in terms of HPSR boundary stretching, strengths, weaknesses and future areas for further attention) and not on providing a comprehensive review of that HRH topic. HRH topic already provided by others (Soucat, Scheffler, and Ghebreyesus, 2013; Scheffler et al., 2013). We do however provide references to classic texts, conceptual frameworks and reviews to help guide the audience. Similarly, while discussing how HRH research can be strengthened from an HPSR perspective, the Reader will not train the audience in specific HPSR methodologies. Instead, it provides references that help orient the audience about varied HPSR disciplines, methodologies and methods.

Lastly, while the Reader highlights in particular research from low- and middle-income country contexts, it is not restricted to this geographical context. While research funding, capacity and production in low- and middle-income countries needs to be prioritised, HRH concerns are global in nature and there are insightful, quality research articles from other contexts that are valuable to include for HRH concerns are global in nature and articles from other contexts are included when their insights and quality were deemed important for LMIC-oriented research.

Figure 1.2 Multidisciplinary research inference
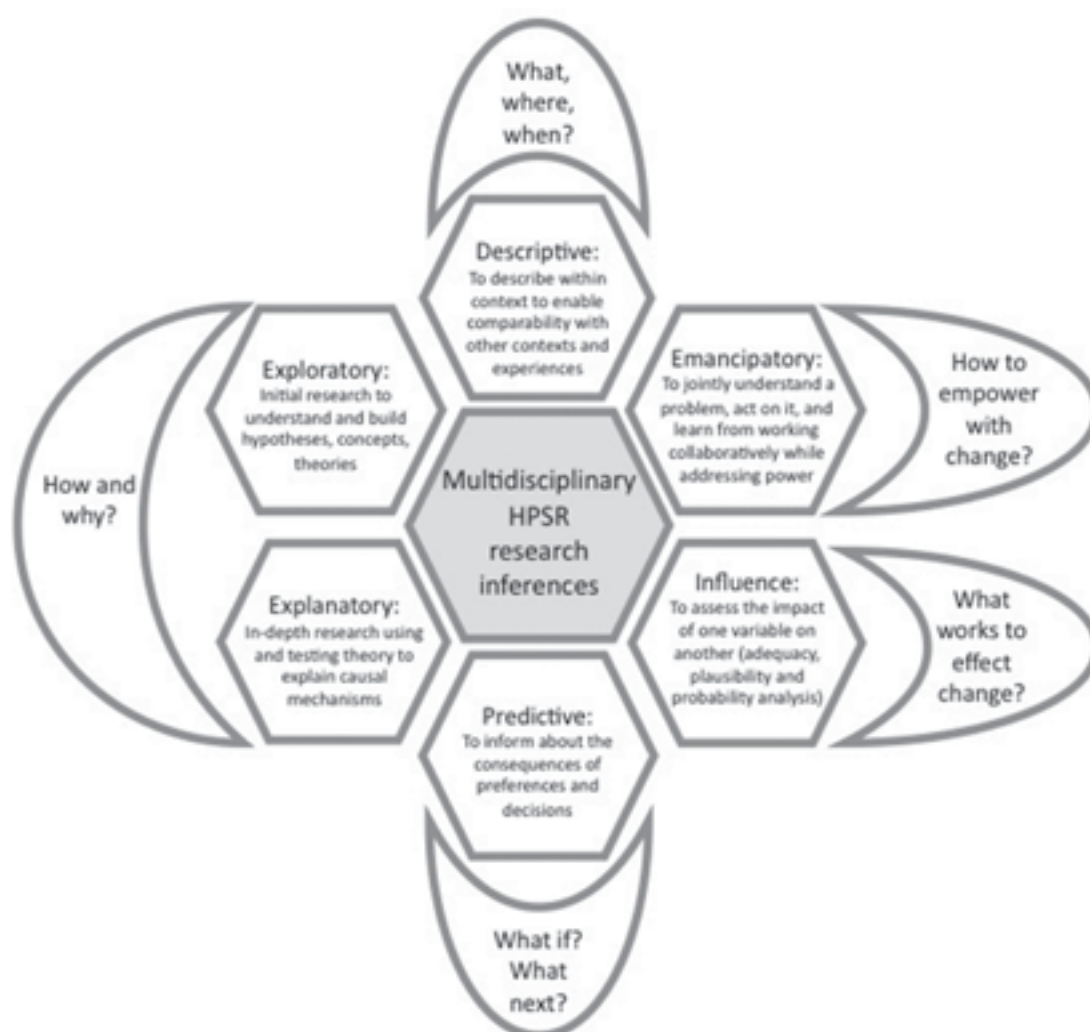
Table 1.1 Research inferences applied to human resources for health research (adapted from Peters, Tran, and Adam 2013)

Research inference	HRH question	HRH studies
Descriptive: Describe phenomena within context so readers can assess comparability to other contexts and experiences	What is the composition and geographic distribution of health workers?	Cross-sectional analysis from national labour surveys
	How is supervision practiced?	Mixed methods study measuring the quality of supervision
	What is the extent of gender based violence experienced by health workers?	Mixed methods study measuring extent of gender discrimination and violence experienced by health workers
Exploratory: Initial research to understand phenomena to build hypotheses, concepts, theories	What drives corrupt practices by health workers?	Ethnography of informal norms in hospital wards
	What are the gendered experiences of health workers in humanitarian contexts?	
Explanatory: In-depth research using and testing theory to explain causal mechanisms	How do global funding flows influence HRH policy?	Comparative mixed methods study of HIV funding on human resources for health policy
	How has HRH policy evolved in humanitarian crisis?	Political economy analysis of HRH policy making in a country affected by humanitarian crisis
	How does the context in which district managers work influence their ability to effect change?	Realist evaluation of capacity building for district managers
		Historical analysis of district manager decision space

Research inference	HRH question	HRH studies
Emancipatory: How stakeholders jointly understand a problem, act on it, and learn from working collaboratively to contest power relations and effect change?	What are the root causes of disrespectful treatment within the district hospital staff team, and how can the staff construct more respectful norms?	Participatory quality improvement studies Participatory training initiatives addressing gender discrimination in the health workforce
Influence: Studies that aim to explain the impact of one variable on another (adequacy, plausibility and probability analysis)	What are the determinants of dual practice among physicians? What aspects of organisational culture and management practice impact health worker motivation?	Labour market surveys Provider surveys that develop scales enabling regression analysis between groups of providers
Predictive: Informing stakeholders about the consequences of certain decisions	What is the optimal allocation of doctors and nurses in response to the changing health care seeking patterns caused by a new health insurance policy?	Systems dynamics modelling to analyze various demand and supply scenarios and consider trade-offs in the allocation of doctors and nurses.

How is the Reader structured?

The Reader is divided in three parts, each containing topic-specific chapters.

Part A: Who are included as health workers, where and why?
- Chapter 1. Health worker profiles: boundaries, metrics and modelling
- Chapter 2. Social contexts and relations shaping health workers

Part B. How are health workers supported to deliver services?
- Chapter 3. Building health worker capacity through training and supervision
- Chapter 4. Health worker performance, practice and improvement

Part C. How are human resources for health governed?
- Chapter 5. Health worker motivation: individual, organizational and cultural factors
- Chapter 6. Health workforce leadership, management and organizational cultures
- Chapter 7. Brokering policies and politics for human resources for health

While the structure of the Reader is presented linearly due to the confines of being published in a book, we recognize that the research questions and themes are tightly interconnected in multiple ways (Figure 1.2). In our conceptualisation, we place health workers at the center: asking who they are, where they work, what they do, and how they are supported and governed. Motivation is seen as a mediating factor intervening at multiple instances: internally governing health worker behaviour, informing decisions on becoming a health worker, workplace location, and ability to perform, and influencing willingness to engage politically. While social-economic and political factors bookend the Reader physically (Chapter 2 & 7), we recognise that these broader determinants overlap across all the research questions and themes examined.

Each chapter has a background section that references classic texts, conceptual frameworks and reviews to provide a grounding in the HRH topic concerned. The chapters then introduce the key featured primary research articles, noting the rationale behind the selection and referencing other similar articles of relevance not included in the Reader for lack of space.

Figure 1.3 Visualisation of questions and themes structuring the Reader
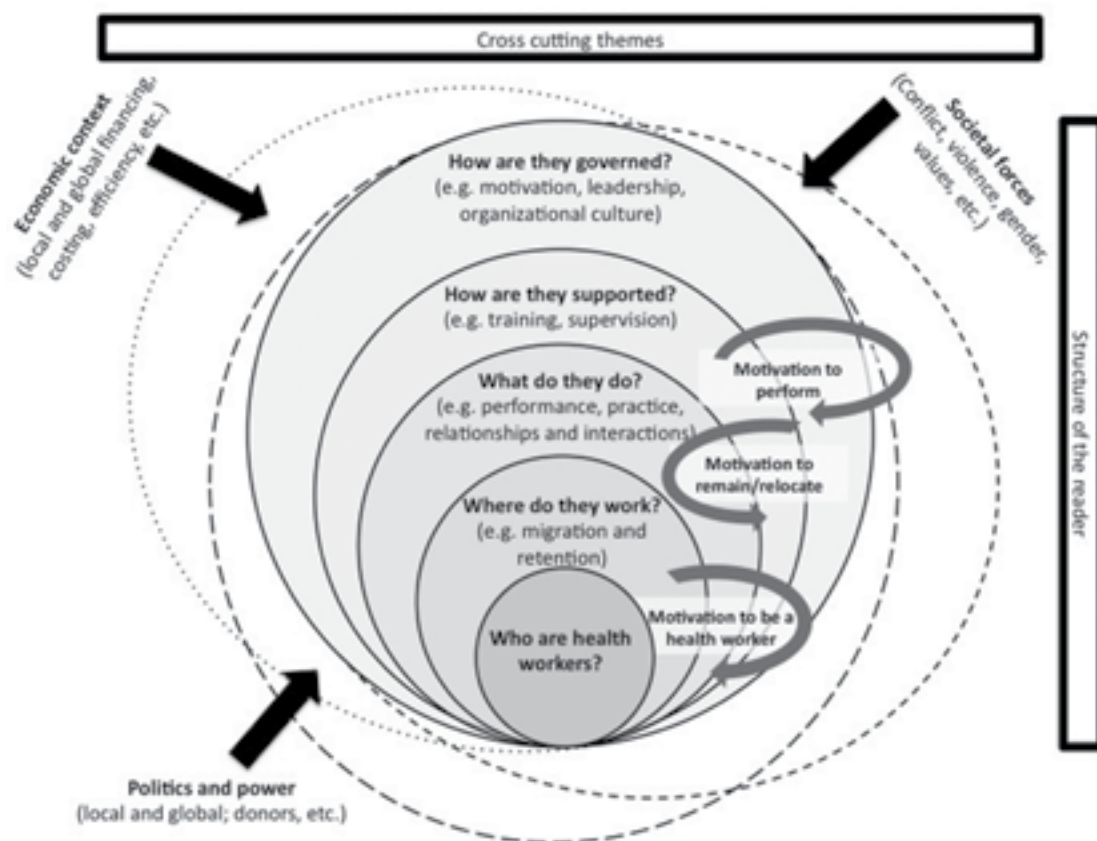
How was the Reader developed?

The idea of the Reader emerged from a doctoral seminar initiated by Sara Bennett at the Johns Hopkins School of Public Health in 2013. Since then a core group of faculty and emerging scholars were involved in developing the Reader into its current form.

A team of editors, with guidance from a steering committee, convened and facilitated a writing and review collaborative of 18 researchers with extensive experience in HRH from various disciplinary and regional contexts. This collaborative drew inputs from a broader reference group of researchers and practitioners, who provided inputs to the outline of topics covered by the Reader and submitted articles to be considered. A list of those who provided technical support and those who provided invaluable administrative support to the Reader from start to finish is listed below.

The Collaboration for Health Systems Analysis and Innovation (CHESAI) and Health Systems Global (HSG) facilitated online community building for and awareness about the Reader through blogs. Fliers disseminated at the 2016 Fourth Global Symposium on Health Systems Research in Vancouver elicited recommended articles and HSG convened webinars eliciting further discussion and feedback. The core writing team met in Cape Town in May 2017, to finalize the structure and tone of the Reader, as well as the final selection of Reader articles.
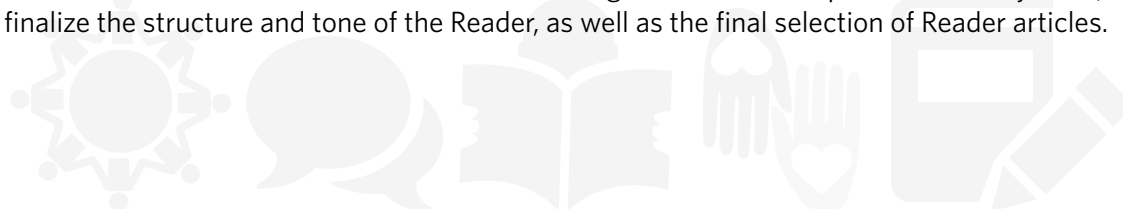
Building on the course materials developed for the doctoral seminar, the writing team also reviewed submissions from crowdsourcing and from searches using the bibliography of key articles, relevant databases and search engines (PubMed, Google Scholar). Initial shortlists of ten primary research articles were selected by each chapter lead. The main criteria used to select the articles included diversity in region, health worker cadre, and methods, as well as the quality and innovativeness of the research. A group prioritisation process took place in person during the Cape Town meeting to further narrow the list to less than 50 articles. In prioritising papers, we purposefully chose not to repeat papers already highlighted in previous Alliance Readers, tried to redress geographical biases already apparent in the original database and initial selection, and sought to not repeat key authors. We recognize that the final listing can never be entirely comprehensive or representative of key HPSR approaches to HRH, but are confident that the breadth of participation in supporting the Reader helped to overcome potential weaknesses.

Given the emphasis on ensuring that the efforts in developing the Reader go beyond a printed publication, power point presentations aiding research uptake and teaching were also developed for each chapter. While the formal launch was at the 2017 Fourth Global Forum on Human Resources for Health, HSG webinars also served to raise awareness of the Reader and the materials developed.

Acknowledgements

References

Gilson L (2012). Health Policy and Systems Research: A Methodology Reader. Geneva: World Health Organization.

Loewenson R, et al., editors (2014). Participatory action research in health systems: a methods reader. Harare: Regional Network for Equity in Health in East and Southern Africa, Training and Research Support Centre, Alliance for Health Policy and Systems Research, World Health Organization and International Development Research Centre Canada.

Peters DH, Tran NT, Adam T, editors (2013). Implementation Research in Health: A Practical Guide. Geneva: World Health Organization.

Scheffler RM, et al. (2013). Health Labor Market Analyses in Low- and Middle-Income Countries: An Evidence-Based Approach. Directions in Development—Human Development. Washington, DC: World Bank. doi:10.1596/978-1-4648-0931-6.

Sheikh K, George AS, Gilson L (2014). People-centred science: strengthening the practice of health policy and systems research. Health Res Policy Syst. 12(1):19. doi:10.1186/1478-4505-12-19.

Soucat A, Scheffler RM, with Ghebreyesus TA, editors. (2013). The Labor Market for Health Workers in Africa: A New Look at the Crisis. Washington DC: World Bank. doi: 10.1596/978-0-8213-9555-4.

World Health Organization (2016a). Global strategy on human resources for health: Workforce 2030. Geneva: World Health Organization.

World Health Organization (2016b). Working for health and growth: investing in the health workforce. Report of the High-Level Commission on Health Employment and Economic Growth. Geneva: World Health Organization.

World Health Organization et al. (2016). Final report of the expert group to the High-Level Commission on Health Employment and Economic Growth. Geneva: World Health Organization.

Contributors

Core editorial team

Asha George, School of Public Health, University of the Western Cape, Bellville, South Africa

Kerry Scott, Independent Research Consultant, Bengaluru, India

Veloshnee Govender, Alliance for Health Policy and Systems Research, World Health Organization, Geneva, Switzerland

Steering committee

Uta Lehmann, School of Public Health, University of the Western Cape, Bellville, South Africa

Luis Huicho, Cayetano Heredia University, Lima, Peru

Raeda AbuAlRub, University of Science and Technology, Irbid, Jordan

Ligia Paina, Johns Hopkins School of Public Health, Baltimore, United States of America

Chapter contributors and peer reviewers

Seye Abimbola, University of Sydney, Sydney, Australia

Raeda AbuAlRub, University of Science and Technology, Irbid, Jordan

Sara Bennett, Johns Hopkins School of Public Health, Baltimore, United States of America

Aarushi Bhatnagar, Oxford Policy Management, New Delhi, India

Marjolein Dieleman, Royal Tropical Institute, Amsterdam, the Netherlands

Asha George, University of the Western Cape, Bellville, South Africa

Veloshnee Govender, Alliance for Health Policy and Systems Research, World Health Organization, Geneva, Switzerland

Luis Huicho, Cayetano Heredia University, Lima, Peru

Aku Kwamie, Independent Research Consultant, Accra, Ghana

Uta Lehmann, School of Public Health, University of the Western Cape, Bellville, South Africa

Tim Martineau, Liverpool School of Tropical Medicine, Liverpool, United Kingdom of Great Britain and Northern Ireland

Ligia Paina, Johns Hopkins School of Public Health, Baltimore, United States of America

NS Prashanth, Institute of Public Health, Bengaluru, India

Timothy Roberton, Johns Hopkins School of Public Health, Baltimore, United States of America

Kerry Scott, Independent Research Consultant, Bengaluru, India

Veena Sriram, University of Chicago, Chicago, United States of America

Stephanie Topp, James Cook University, Townsville, Australia

Sophie Witter, Queen Margaret University, Edinburgh, United Kingdom of Great Britain and Northern Ireland

Technical reference group (crowdsourcing, webinars, inputs to outline)

Syed Masud Ahmed, James P Grant School of Public Health, BRAC University, Dhaka, Bangladesh

Praveenkumar Aivalli, Institute of Public Health, Bengaluru, India

Soumya Alva, John Snow Inc., Boston, United States of America

Woldekidan Amde, School of Public Health, University of the Western Cape, Bellville, South Africa

James Antwi, World Health Organization, Mbabane, Swaziland

José Maria Bayas, Barcelona Hospital Clinic, Barcelona, Spain

James Campbell, Human Resources for Health Department, World Health Organization, Geneva, Switzerland

Mario Dal Poz, Rio de Janeiro State University, Rio de Janeiro, Brazil

Ibrahima Bouna Diouf, Ministry of Health and Social Action, Dakar, Senegal

Fadi El-Jardali, American University of Beirut, Lebanon

Carlos H Espinoza, Cayetano Heredia University, Lima, Peru

Mathew George, Tata Institute of Social Sciences, Mumbai, India

Jessica Gross, Centers for Disease Control, Atlanta, United States of America

Alison Hernandez, Umeå University, Umeå, Sweden

Niamh Humphries, Royal College of Physicians of Ireland, Dublin, Ireland

Taufique Joarder, James P Grant School of Public Health, BRAC University, Dhaka, Bangladesh

Karen Johnston, James Cook University, Townsville, Australia

Karina Kielmann, Queen Margaret University, Edinburgh, United Kingdom of Great Britain and Northern Ireland

Ellen Kuhlmann, Goethe University Frankfurt, Frankfurt am Main, Germany

CE Labarda, University of the Philippines, Quezon City, Philippines

Margrieta Langins, Health Services Delivery, World Health Organization

David K Mafigiri, Makerere University, Kampala, Uganda

Shinjini Mondal, McGill University, Montreal, Canada

David Nelson, IntraHealth International, Chapel Hill, United States of America

Constance Newman, IntraHealth International, Chapel Hill, United States of America

Manoj Kumar Pati, Institute of Public Health, Bengaluru, India

Robyn Preston, James Cook University, Townsville, Australia

BR Rajeev, SOCHARA, Bengaluru, India

Neethi Rao, Institute of Public Health, Bengaluru, India

Marta Schaaf, Columbia University, New York, United States of America

Meike Schleiff, Johns Hopkins School of Public Health, Baltimore, United States of America

Neha Singh, London School of Hygiene & Tropical Medicine, London, United Kingdom of Great Britain and Northern Ireland

Shweta Singh, National Health Systems Resource Centre, New Delhi, India

Kalyani Subbiah, Azim Premji University, Bengaluru, India

Figure 1.4 Contributors to the Reader
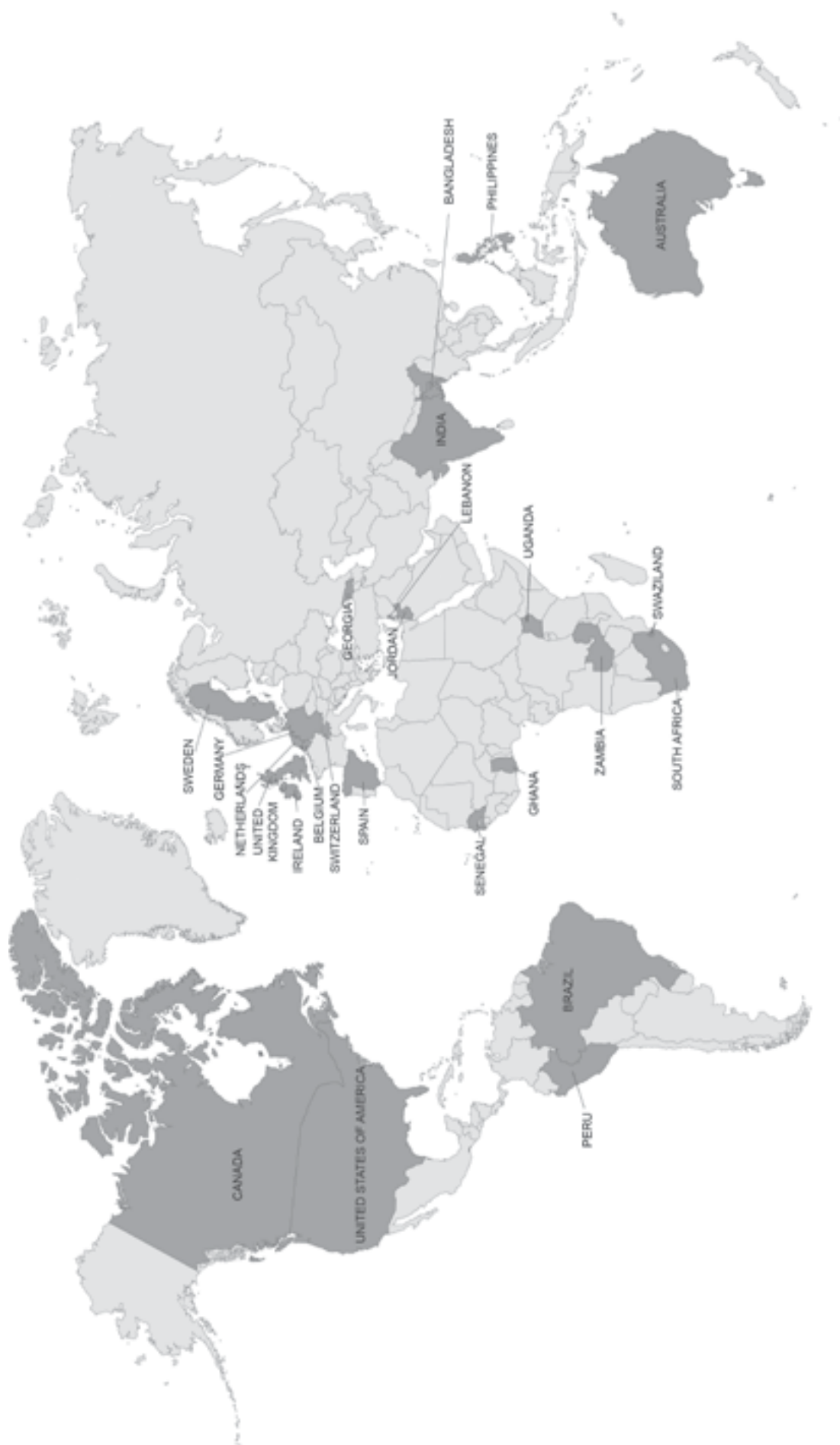
Figure 1.5 Countries represented by the primary research articles highlighted by the Reader

A HEALTH POLICY AND SYSTEMS RESEARCH READER ON HUMAN RESOURCES FOR HEALTH
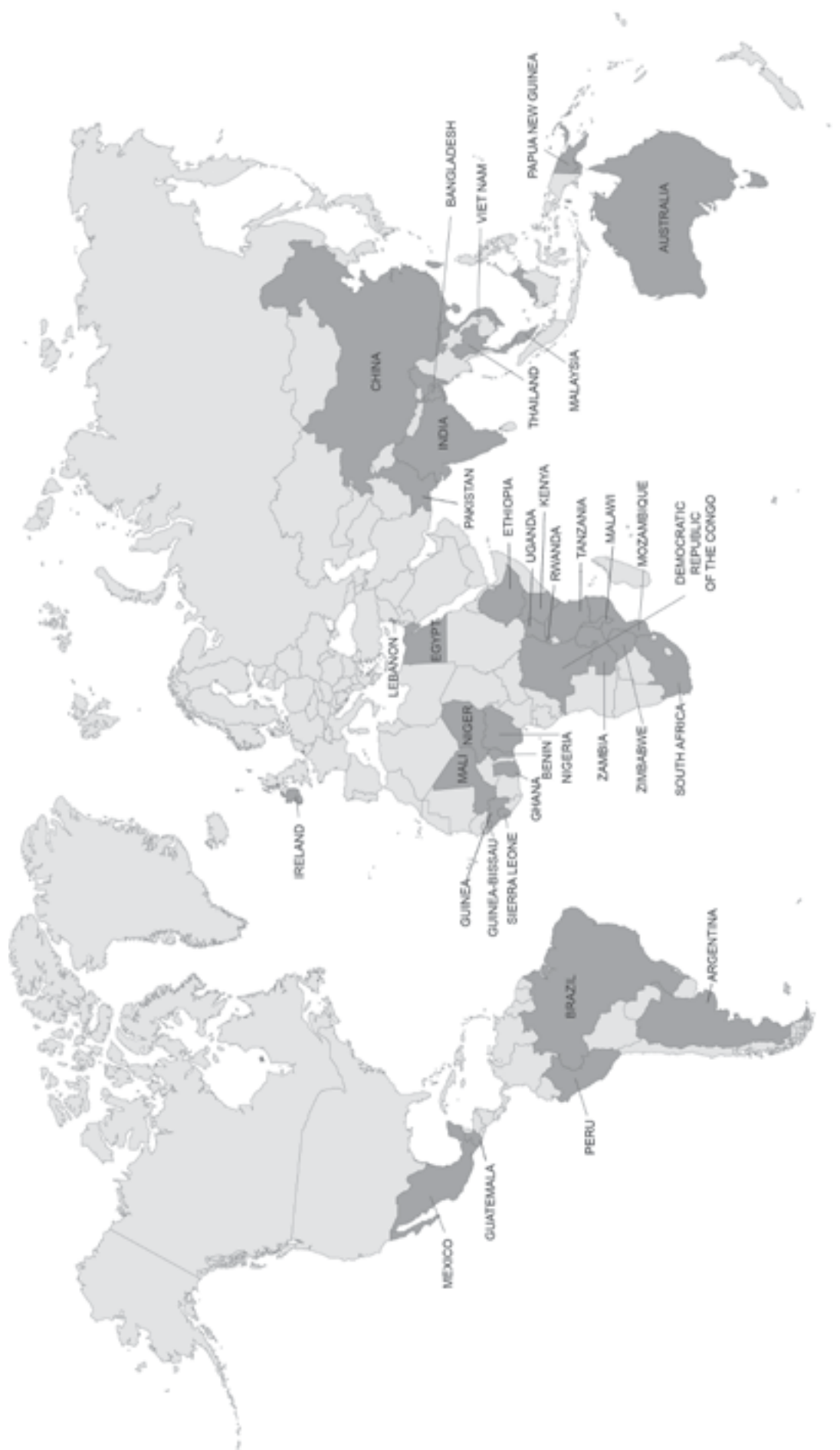
Key for classifying research inference

Descriptive

Exploratory

Explanatory

Emancipatory

Influence

Predictive

Part A.

Part A: Who are included as health workers, where and why?

A HEALTH POLICY AND SYSTEMS RESEARCH READER ON HUMAN RESOURCES FOR HEALTH

Chapter 1.

Health worker profiles: boundaries, metrics and modelling

Kerry Scott and Asha George

1.1 Defining the chapter

This chapter explores research on health worker profiles in three ways: definitional boundaries, measurement metrics and planning models. First we highlight research that sets, broadens or questions the boundaries of who is included in the health workforce. Next we explore the methodological complexity in generating metrics that describe health workforce characteristics, including dimensions of human resources for health (HRH) shortages, skills imbalance and maldistribution. Finally we draw attention to research that supports planning on how to meet future health needs through HRH modelling.

In describing health worker profiles and health workforce characteristics (who counts as a health worker, how to measure the health workforce, and how to plan for the future), this chapter links closely to Chapter 2, which examines the social dynamics underpinning health workforce characteristics, and to Chapter 7, which examines the underlying political forces that shape the health workforce.

1.2 Background on health worker profiles

Who is included in HRH? We may think first of doctors, and then other formally trained and recognized health professionals such as nurses, pharmacists and dentists. But what about those people who may or may not have formal training, such as community health volunteers, informal providers and traditional midwives? A woman or other family member caring for aging parents? People who do not provide health services directly, such as health managers and public health researchers? People who may be outside the health sector but are essential for good health, such as nutrition counsellors, and water and sanitation technicians? Once we have decided where to draw the boundaries that define health workers, how do we count them and plan for health systems that support them to excel?

In the 2006 *World Health Report*, the World Health Organization (WHO, 2006, p. 4) defined health workers as "all people engaged in actions whose primary intent is to enhance health". This broad and inclusive definition aligned with efforts by the Joint Learning Initiative and Global Health Workforce Alliance, working with national governments, civil society, academics, international and regional institutions, professional associations and the private sector, to highlight the shortage and maldistribution of HRH, improve measurement, and expand the number of occupations tracked in global HRH databases. Despite these global efforts to expand and strengthen systems of counting and classifying health workers, many people who engage in health work (particularly unpaid work in communities and at home) are still excluded due to practical data limitations combined with political bias.

Against this backdrop, health policy and systems research (HPSR) brings to the fore the profile and experience of various health cadres previously neglected by HRH policy, such as informal health-care providers (Sudhinaraset et al., 2013), informal medicine sellers (Cross and MacGregor, 2010), children caring for sick adults (Skovdal et al., 2009), volunteer carers (Maes et al., 2011), traditional birth attendants (Sibley and Sipe, 2006; Sibley et al., 2012), and traditional, complementary and alternative providers (Lakshmi et al., 2015).

Beyond bringing forward new categories of health workers previously neglected by HRH policy, HPSR contributions have built on social science research to broaden and problematize our conceptual understandings of HRH categories.

Instead of taking for granted established health workforce categories (such as public versus private providers, and formal versus informal sectors), new work describes the fluidity of continuums upon which the health workforce can be considered "mixed" (for example, from formal to informal, and from biomedical to traditional and complementary) (Sheikh et al., 2017). McPake et al. (2014) (discussed in depth in Chapter 2) examine how physicians in Mozambique, Guinea-Bissau and Cabo Verde are conceived of as both public and private actors, a duality not captured in national and international health worker databases. Health worker plurality, which is particularly common in low- and middle-income countries' health systems, poses a challenge to classification but must be better understood to enable realistic consideration of HRH shortage and distribution. Similarly, Olaniran et al. (2017) explain how the term "community health worker" can be categorized into three groups by education and pre-service training, and into four categories by remuneration. Their review draws attention to the political implications of definitions, wherein different actors may understand health worker categorizations differently, with consequences for policy and practice (such as selection criteria, training, and whether and how much a cadre is paid). Furthermore, this work suggests that additional research is required to interrogate local meanings of globally accepted terminology and highlights the complexity of developing tools that enable classification and international comparison.

1.3 Illustrative primary research articles

With this understanding of how HPSR contributes to advancing HRH profiles, we showcase six HPSR articles that review, describe and inform health worker profiles. These articles were selected from a pool collated from a doctoral seminar at the Johns Hopkins School of Public Health, a crowdsourcing exercise supported by Health Systems Global and subsequent searches using the bibliography of key articles and on relevant databases and search engines (PubMed, Google Scholar). The main criteria used to select the articles included diversity in region, cadre and methods as well as the quality of the studies based on standard guidelines.

The first two articles highlight nuances in HRH classification from two distinct methodological perspectives, discussing the framing of care work (Bedford, 2011) and how different metrics illuminate new aspects of health workforce migration (Arah, 2007). The next two articles present efforts to overcome data limitations and classification challenges to count and describe the existing health workforce in a robust manner (Ahmed et al., 2011; Rao et al., 2012). The final two articles discuss health workforce planning by presenting dynamic modelling tools and discussing the political processes that underpin health system decision-making (Crettenden et al., 2014 ; Jansen et al., 2014).

Bedford K (2011). Care and the 53rd Commission on the Status of Women: a transformative policy space? Reprod Health Matters. 19(38):197–207

Health workers	Family members providing care
Geographical area	Global
Research methods	Qualitative: document review and in-depth interviews
Research inference	Explanatory

As mentioned earlier, social science research has questioned the boundaries set around health worker profiles, examining who is served by the definitions, measurement strategies and policy efforts to identify, enumerate, regulate and support health workers. Feminist theory in particular has highlighted that the framing of an issue is a political act that influences the daily experiences of men and women, including their expected workload, access to income, opportunities for advancement, respect in society and physical safety. Along these lines, Bedford's policy analysis focuses on how the 2009 United Nations 53rd Commission on the Status of Women framed caregiving in the context of human immunodeficiency virus (HIV) and how this framing influenced, both positively and negatively, gendered power relations, disability rights and heteronormativity/conservative "family values".

Bedford finds that the Commission's theme, "equal sharing of responsibilities between women and men", received widespread support from diverse groups, including "those interested in radically changing gender relations" and "conservative parties interested in defending what they understand to be the natural family" (p. 199). The Commission's success in bridging such a common consensus was achieved by drawing attention to the need to shift the burden of caring for sick people from unpaid, predominantly female, family and community members and on to government-run programmes, in a widely supported challenge to the free market economic order. Despite this positive outcome, disability rights activists noted that the Commission's emerging consensus also framed people with disabilities as "burdens", lacking voice and control over how they were supported, and re-entrenching the historical power of care professionals. Furthermore, female-headed households, extended family and kinship support, and lesbian, gay, bisexual and transgender family units were marginalized by the reification of traditional nuclear family formations.

Other excellent articles using qualitative methods to question HRH boundaries include Pigg's (1995) ethnography from Nepal that questions how traditional medical practitioners and traditional birth attendants are defined and understood. Pigg (1995) shows that the terms "traditional medical practitioner" and "traditional birth attendant", and associated strategies to train them in biomedical practices, are generated internationally but applied to a complex reality of vast variation in roles, identities and practices among shamanic healers and women who play a role in childbirth. The failure to differentiate across terms and roles has a range of unanticipated (and often undocumented) outcomes, including "producing" new traditional birth attendants among women who had no role in childbirth but decided to attend training, missing women who attend births but do not identify as midwives (because in some places this is a lower caste role), and suggesting that healers take up medical roles (such as promoting family planning or oral rehydration salts) when they are exclusively focused on spiritual issues. More recently, Maes et al. (2015) have argued that international praise for Ethiopia's salaried female Health Extension Worker programme is at odds with the country's reliance on a larger, unpaid cadre of female health workers called the Women's Development Army.

They show that narratives about saving lives, empowering women and creating model citizens mask the economically disempowering, gender-regressive and potentially coercive nature of the Women's Development Army. In this sense, exploratory HPSR as exemplified by Bedford (2011), Pigg (1995) and Maes et al. (2015) serves to unearth the implicit implications and at times unintended consequences of HRH policy classifications.

Arah OA (2007). The metrics and correlates of physician migration from Africa. BMC Publ Health. 7:83

Health workers	Physicians
Geographical area	Sub-Saharan Africa
Research methods	Quantitative: ranking and correlational analyses on African health professional emigration database
Research inference	Descriptive

Innovative health systems research can also reveal new dimensions of HRH phenomena – in this case, different facets of the HRH migration and maldistribution crisis. Arah (2007) quantifies physician out-migration according to three metrics: total number of physician émigrés; emigration as a fraction of potential physician pool that ends up working in destination countries; and physician migration density defined as the number of physician émigrés per 1000 population of the African source country. Arah found that no country retained the same rank with all three different migration metrics. For example, Algeria lost the most physicians in absolute terms, Mozambique lost the highest proportion of its physicians, and Mauritius had the highest physician migration density (number of doctors lost per 1000 population). Arah also examines these three metrics across nine major destination countries (including the United Kingdom of Great Britain and Northern Ireland, the United States of America, France and Canada), showing again that the top source countries of African physician immigrants into these settings vary according to the metric used. For example, South Africa lost the most physicians (3509) in absolute terms to the United Kingdom, Malawi lost the highest proportion of its physicians (38%) to the United Kingdom, and Seychelles had the highest physician migration density (0.36 doctors per 1000 population) with regard to the United Kingdom. This analysis highlights that "metrics tell tales and quite often different ones, depending on the perspectives adopted" (p. 3). The way we quantify physician out-migration depends on which metric we look at, and using multiple metrics enables better understanding of the degree of the problem for African countries.

The articles discussed above use diverse research methods to show that decisions about "what counts" in HRH illuminate different aspects of the health workforce. By critically examining globally agreed upon categories, strategies and issues (such as focusing on health-care work in the home, promoting an equal caring role among men and women in families, and concern with physician out-migration from Africa), researchers are able to unmask new dimensions of the issue. Strategies and terms that achieve global consensus ("equal care work") may be at odds with the needs of marginalized people (such as by excluding people living in extended or non-traditional family structures or alienating people with disabilities). Applying different measurement strategies for HRH problems (out-migration) can shift our understanding of how extreme a problem is and which countries to focus on.

1.3.2 Descriptive studies of health worker profiles

How do we move from the complexity inherent to HRH profiles to the pragmatics of counting how many and which people are in the health workforce? Over the past decade, global health workforce data expanded from counting only five health professions (doctors, nurses, midwives, dentists and pharmacists) in the WHO Global Atlas of the Health Workforce in the early 2000s (Dal Poz et al., 2006) to considering up to nine categories of health workers in the 2016 updated Global Health Workforce Statistics aggregated set, and up to 18 categories in the disaggregated set (WHO, 2016). These categories include environment and public health workers (such as district health officers, and health, food and labour safety inspectors), community and traditional health workers, medical assistants, nutritionists, personal care workers, health managers (such as health policy lawyers and medical records technicians), and support workers (such as ambulance drivers and building maintenance staff).

To count these health workers in a manner that enables international comparisons, the United Nations and the International Labour Organization guide countries in developing or revising their national records systems to map on to the International Standard Classification of Occupations, the International Standard Classification of Education, and the International Standard Industrial Classification of All Economic Activities (WHO et al., 2009). These three classification systems attempt to harmonize definitions of health workers, managers and support workers in the health sector and in other sectors (such as nurses working in schools). In addition, the new database brings together all available data on health workers in all 192 United Nations Member States.

Efforts to build and maintain an expansive global database to count HRH highlight major data availability challenges: the lack of standard HRH definitions and challenges in bringing together different data sources, with highly variable information quality, collection methods and criteria for coding and categorization (Dal Poz et al., 2006). This section showcases two articles that have grappled with the challenges of which cadres to count; whether and how to capture informal and community-level providers; and how to reconcile varying data sources and definitions to determine health worker profiles, including equity of distribution and deficit both in terms of numbers and types of health worker.

Rao KD, Bhatnagar A, Berman P (2012). So many, yet few: human resources for health in India. Hum Resour Health. 10(1):19

Health workers	Multiple public and private health workers including informal providers
Geographical area	India
Research methods	Quantitative: National census and sample survey data
Research inference	Descriptive

Rao et al. (2012) explain that routine sources of information on the health workforce in India are fragmented and generally unreliable. Professional councils in many low- and middle-income countries, including India, do not maintain live registers; there is a lack of standardization in measurement, definitions and even the existence of cadres across states; and certain categories of health worker, such as physiotherapists, medical technicians, rural medical practitioners (that is, unqualified allopathic providers) and faith healers, are not recorded in state-level registers. The absence of data on informal or unqualified rural medical practitioners is particularly concerning because these are often the first point of contact for medical care for the rural population.

To overcome the shortcomings of routine health worker data, Rao et al. (2012) applied the National Occupational Classification to 2001 Indian census data and to 2004 National Sample Survey data to quantify the size, composition and distribution of health workers in India. These efforts enabled the identification of many practitioners, including doctors, homeopaths, ayurvedic practitioners, medical assistants and faith healers. To avoid misclassifying rural medical practitioners, who commonly call themselves "doctors" but have no formal qualification or licence, Rao et al. extrapolated data from the 2001 census on self-reported roles and compared them with data on qualifications from the National Sample Survey to determine how many practising health workers were unqualified.

Overlapping job specifications prevented the authors from differentiating between nurses, midwives and traditional birth attendants. In addition, they could not capture community health workers because the census and sample survey data, which used National Industrial Classification and National Occupational Classification codes, did not have a separate classification code for them. Despite these limitations, Rao et al.'s analysis enabled them to quantify the overall shortage of qualified health workers in contrast to the high portion of unqualified providers (36%), geographical maldistribution, skewed nurse/doctor ratios (heavily in favour of doctors) and underrepresentation of women in the Indian health workforce.

More recent work has assessed the Indian health workforce, including the proportion of unqualified providers in India, using occupation and qualification data from the 2001 census alone (Anand and Fan, 2016) and from the 2011–2012 National Sample Survey alone (Rao et al., 2016). Rao et al.'s 2012 analysis took place before data on educational qualification from the 2001 census were available and before the 2011–2012 National Sample Survey was completed. Thus, the 2012 analysis is exemplary both for its detailed discussion on the strengths and limitations of various data sources and because it showcases how different data sources (2001 census and 2004 National Sample Survey) can be combined to produce timely information on health worker profiles despite data availability limitations.

Ahmed SM, et al. (2011). The health workforce crisis in Bangladesh: shortage, inappropriate skill-mix and inequitable distribution. Hum Resour Health. 9(1):3

Health workers	Multiple public and private health workers including informal providers
Geographical area	Bangladesh
Research methods	Quantitative: Provider survey in a geographic area aided by community free-listing
Research inference	Descriptive

In light of the dearth of comprehensive data in Bangladesh, Ahmed et al. (2011) undertook a nationally representative survey to determine the number and type of health workers in Bangladesh. The survey drew randomly from the nationally representative primary sampling units (a cluster of around 200 households) used by the Bangladesh Bureau of Statistics for its Sample Vital Registration System, enabling estimates to be made up to the district level. Because it was designed specifically to measure all active health-care providers in the formal and informal sectors, the survey included classification codes for typically overlooked or sometimes misclassified cadres, including community health workers, unqualified village doctors, medicines salespeople and others in the informal sphere.
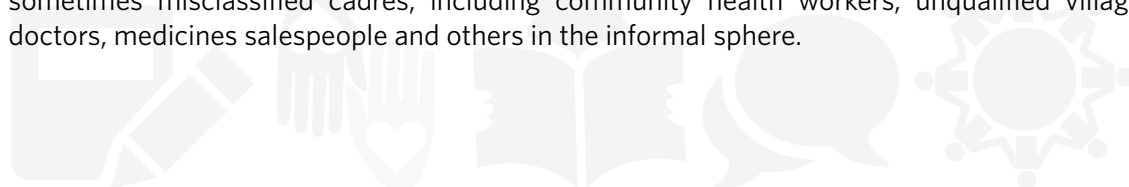
A comprehensive list of all practising health-care providers was developed through accessing rosters from public and private health-care facilities and conducting free listing exercises with multiple community informants. Names provided by key informants were cross-checked to avoid omission or double-counting due to a provider using multiple names (such as nickname, family name or title); in cases of confusion, providers were visited on the spot. Ahmed et al.'s extensive efforts enabled them to detail more accurately the low density of qualified providers, even in comparison with other south Asian countries, the sharp increase in unqualified providers, the problematic ratio of doctors to nurses (2.5 doctors to every nurse), and the persistent overwhelming urban bias of formally qualified health-care practitioners.

Ahmed et al. (2011) and Rao et al. (2012) showcase two different strategies that health systems researchers can engage to overcome the dearth of routine health information data when seeking to describe the health workforce in low- and middle-income countries: re-analysing pre-existing sources of data, such as the census and sample surveys, (Rao et al., 2012) or conducting new surveys with innovative community-informant engagement and cross-checking (Ahmed et al., 2011). Both have advantages and drawbacks. Re-analysing existing data can be cost- and time-efficient but places researchers at the mercy of the initial dataset's quality and classification systems. As Rao et al. (2012) note, they were unable to differentiate between some cadres such as nurses, midwives and traditional birth assistants because the original data showed overlapping job functions. In addition, in many countries, census and survey data are out of date or inaccessible to the public. Although new surveys such as that conducted by Ahmed et al. (2011) can provide highly specific information, such as on community health workers, they require extensive financial and human resources, which may not be available in struggling health systems, and in some cases fail to achieve national representation.

1.3.3 Strategies for estimating health workforce requirements to assist with planning for the future

Beyond describing the health workforce, countries must plan how best to distribute their existing health workers in the short term and cultivate a workforce for the longer term. The Workload Indicators of Staffing Need (WHO, 2010a, 2010b) software and user manual support health planning based on measuring the specific population needs per health centre and have been used in many countries, including South Africa (Daviaud and Chopra, 2008), Uganda (Namaganda et al., 2015) and Namibia (Wesson et al., 2015), to model and plan their workforces. Instead of using standardized staffing norms, the Workload Indicators of Staffing Need estimates workforce need based on workload and is customized to the country context by defining workload components, setting activity standards (time it takes for a trained, well-motivated member of a particular cadre to perform an action to standard in the country's context), available working times, and existing staffing statistics. Theoretical models can also determine ideal health workforces for specific cadres, such as physical therapy (Jesus et al., 2016) or for evolving disease profiles, such as interdisciplinary chronic disease management (Segal and Leach, 2011) or HIV/AIDS (Bärnighausen et al., 2007).

Health workers	Public and private physicans, nurses, midwives
Geographical area	Australia
Research methods	Mixed: policy/national data review; scenario modelling; stakeholder consultation
Research inference	Predictive

To illustrate cutting-edge work in planning, we first showcase Crettenden et al.'s (2014) research on dynamic stock and flow modelling for Australia's workforce. We selected this article because it highlights how health workforce planning must take into account the dynamic and complex nature of health systems, rigorous predictive modelling, and also political will, consultation and validation.

The article presents national-level workforce planning for doctors, nurses and midwives in Australia, using scenario analysis and national-level data to project the impact of various policy options. The researchers modelled how the workforce's ability to serve the population would be influenced by a range of future scenarios, including improved productivity through innovation, improved workforce retention of nurses, different levels of reliance on immigrant health professionals, increased and decreased population demand for health care, and capped working hours for doctors to reduce their working time per week. They projected the future supply and demand for each of the three health professions across the various scenarios, using national data on the current labour force, training capacity of schools, immigration and population demand. What makes this manuscript exemplary is not only the presentation of these prediction models but also that the research team engaged in extensive consultation and review processes.

While typical workforce modelling and planning tend to be top-down and focused on the technical details of prediction (and often on only one profession or disease), this exercise engaged a technical working group, the public, workforce participants and clinical leads across the three professions to validate the modelling strategies, understand the context of workload capacity and generate alternative scenarios. These stakeholders commented on the appropriateness of the assumptions underpinning the research (such as the nature of possible changes in population demand) and how to ensure best practice in quantifying education and training capacity and workload measures. For example, consultation and review from nurses flagged the fact that the recent rate of exit from the profession was markedly lower than earlier rates (probably because of the impact of the tighter economic environment on superannuation savings), and that higher exit rates should be assumed for the model rather than carrying forward the most recent rates. These consultations strengthened the models and also bolstered stakeholder trust and support across sectors, enabling the results to be "accepted as an evidence base upon which policy decisions are made" (Crettenden et al., 2014, p. 6).

The models produced enabled policy-makers to identify the most important policy levers that could be adjusted to achieve change and led to evidence-informed policy recommendations. For example, improving workforce retention of nurses had the greatest impact on minimizing potential future workforce shortages, leading to the development of a retention plan that coordinated action by government, industry, the higher education sector and national nursing organizations. Overall, this article provides an exemplary description of the integration of technical modelling with actor engagement to inform workforce policy development to best match community health needs. The emphasis on complexity, iteration and consultation with a range of stakeholders to develop technically robust and politically actionable models makes this an excellent example of HPSR for health workforce projection.

Health workers	Physicians, nurses, midwives
Geographical area	Guinea
Research methods	Mixed: needs based and health sector demand and supply based modelling; policy dialogue
Research inference	Predictive

Another excellent example of HPSR modelling and political engagement is Jansen et al.'s (2014) work on HRH requirements in Guinea. Jansen et al. explain that while countries that have already achieved universal health care can use service demand modelling, which predicts future demand based on prior utilization, needs-based modelling is more appropriate for countries such as Guinea with a high current unmet need. Instead of predicting HRH requirements based on utilization, Jansen et al. developed a model based on estimated need for health care, and further combined this method with deterministic modelling of future health sector supply and demand to account for projected mismatch between population needs, health worker availability (supply), and budgeted positions available (demand). Jansen et al. engaged in policy dialogue and discussions between stakeholders from various levels within the health system and from non-health sectors in order to select interventions for further analysis. In their rich discussion of the process, they note that "improving the evidence-base does not necessarily imply that workforce decisions and investments are made in a more rational way from a technical point of view" (p. 229) because of political sensitivity around prioritizing regions, health needs or cadres, and bureaucratic limitations on reorganizing budget items.

1.4 Research challenges, gaps and future directions

1.4.1 Accounting for plurality in human resources for health

There is increasing recognition that the health workforce is plural and complex. Local understanding of health worker functions are diverse, and health workers change roles and move geographically over their lifespans, while carrying multiple simultaneous identities (such as across the public and private sectors, or across allopathic and traditional medicine). Researchers must consider how to measure and account for this plurality, and how to reconcile this complexity with the need for standardization and pragmatism. New conceptual models and theoretical frameworks are needed to enable low- and middle-income country-centred understanding of health worker profiles in rapidly changing plural health systems.

Despite the fact that global health workforce databases have expanded the range of people included as HRH, national data availability, quality and compatibility in low- and middle-income countries have not caught up. Descriptive data on the health workforce in low- and middle-income countries remain concentrated on the "main five" health workers (doctors, nurses, pharmacists, dentists and midwives). Many men and women engaged in actions whose primary intent is to enhance health continue to go uncounted, including the health system management, clerical and administrative workforce, which is estimated to make up almost a third of the total health workforce (WHO et al., 2009). Defining, describing and planning for the health workforce involves political processes wherein health workforce problems are agreed upon and potential solutions prioritized and implemented. When some health workers go uncounted, they are also excluded from official counts and discussions.

The scope and quality of routine data should be improved through bolstering country-level technical and financial capacity to capture internationally standardized data on the wide range of health worker occupations, sectors and educational classifications. Census and sample survey data often overlook or misclassify informal providers or lack the specificity to distinguish between separate cadres (such as nurses, midwives and traditional birth attendants). Even for the health worker cadres that are commonly counted, such as doctors and nurses, routine datasets maintained by governments or professional bodies are often unreliable, as they lack transparent classification standards, fail to remove people who leave the workforce, or miss people working in the private sector.

In addition to improving quality, researchers and policy-makers must ensure existing statistics on the health workforce in low- and middle-income countries are used to measure and understand HRH profiles, including census and survey data, professional and educational registers, routine administrative rosters, facility assessments, and health-care-seeking surveys (WHO et al., 2009). Public access to and analysis of existing data must be bolstered.

1.4.3 Creating a more inclusive foundation for human resources for health planning

Developing boundaries or deriving new metrics can enable invisible health work to be seen or highlight new dimensions of a problem, thereby improving health worker well-being or generating support for new political strategies. It can also, however, delegitimize forms of health work (such as the caring work done within non-traditional families or by unqualified practitioners) or define a problem in ways that limit possibilities for radical change or equity. Health policy and systems researchers must ask: Who benefits from boundaries, metrics and models? Who is illuminated or made invisible? What problems are constructed and prioritized? And whose interests are served by health workforce models and plans?

HPSR can showcase methodologies for amplifying the voices of overlooked workers, highlighting their role in the health system, and improving health policy and planning to account for their needs and contributions. In addition, HPSR approaches can push health workforce planning beyond a techno-centric focus on supply and demand and changing disease burdens. HPSR can highlight the power dynamics inherent to identifying priorities and allocating resources for the future, thus enabling potentially divergent stakeholder interests to be understood and more productively engaged towards equity-oriented health workforce planning.

Acknowledgements

References

Ahmed SM, et al. (2011). The health workforce crisis in Bangladesh: shortage, inappropriate skill-mix and inequitable distribution. Hum Resour Health. 9(1):3. doi:10.1186/1478-4491-9-3.

Anand S, Fan V (2016). The health workforce in India. Human Resources for Health Observer Series no. 16. Geneva: World Health Organization.

Arah OA (2007). The metrics and correlates of physician migration from Africa. BMC Publ Health. 7(83):1–7. doi:10.1186/1471-2458-7-83.

Bärnighausen T, Bloom DE, Humair S (2007). Human resources for treating HIV/AIDS: needs, capacities, and gaps. AIDS Patient Care STDs. 21(11):799–812. doi:10.1089/apc.2007.0193.

Bedford K (2011). Care and the 53rd Commission on the Status of Women: a transformative policy space? Reprod Health Matters. 19(38):197–207. doi:10.1016/S0968-8080(11)38576-X.

Crettenden IF, et al. (2014). How evidence-based workforce planning in Australia is informing policy development in the retention and distribution of the health workforce. Hum Resour Health. 12(1):7. doi:10.1186/1478-4491-12-7.

Cross J, MacGregor H (2010). Knowledge, legitimacy and economic practice in informal markets for medicine: a critical review of the research. Soc Sci Med. 71(9):1593–1600.

Dal Poz MR, et al. (2006). Counting health workers: definitions, data, methods and global results. Geneva: World Health Organization.

Daviaud E, Chopra M (2008). How much is not enough? Human resources requirements for primary health care: a case study from South Africa. Bull World Health Org. 86(1):46–51. doi:10.2471/BLT.07.042283.

Jansen C, et al. (2014). Realizing universal health coverage for maternal health services in the Republic of Guinea: the use of workforce projections to design health labor market interventions. Risk Manag Healthc Policy. 7:219–232. doi:10.2147/RMHP.S46418.

Jesus TS, et al. (2016). Finding the "right-size" physical therapy workforce: international perspective across 4 countries. Phys Ther. 96(10):1597–1609. doi:10.2522/ptj.20160014.

Lakshmi JK, et al. (2015). Cultural consonance, constructions of science and co-existence: a review of the integration of traditional, complementary and alternative medicine in low- and middle-income countries. Health Policy Plan. 30(8):1067–1077. doi:10.1093/heapol/czu096.

Maes K, et al. (2011). Volunteer home-based HIV/AIDS care and food crisis in Addis Ababa, Ethiopia: sustainability in the face of chronic food insecurity. Health Policy Plan. 26(1):43–52. doi:10.1093/heapol/czq017.

Maes K, et al. (2015). Using community health workers: discipline and hierarchy in Ethiopia's Women's Development Army. Ann Anthropol Pract. 39(1):42–57. doi:10.1111/napa.12064.

McPake B, Russo G, Tseng FM (2014). How do dual practitioners divide their time? The cases of three African capital cities. Soc Sci Med. 122(2014):113–121. doi:10.1016/j.socscimed.2014.10.040.

Namaganda G, et al. (2015). Making the transition to workload-based staffing: using the Workload Indicators of Staffing Need method in Uganda. Hum Resour Health. 13(1):89. doi:10.1186/s12960-015-0066-7.

Olaniran A, et al. (2017). Who is a community health worker? A systematic review of definitions. Glob Health Action. 10(1):1–14. doi:10.1080/16549716.2017.1272223.

Pigg SL (1995). Acronyms and effacement: traditional medical practitioners (TMP) in international health development. Soc Sci Med. 41(1):47–68. doi:10.1016/0277-9536(94)00311-G.

Rao KD, Bhatnagar A, Berman P (2012). So many, yet few: human resources for health in India. Hum Resour Health. 10(1):19. doi:10.1186/1478-4491-10-19.

Rao KD, Shahrawat R, Bhatnagar A (2016). Composition and distribution of the health workforce in India: estimates based on data from the National Sample Survey. WHO South East Asia J Public Health. 5(2):133–140. doi:10.4103/2224-3151.206250.

Segal L, Leach MJ (2011). An evidence-based health workforce model for primary and community care. Implement Sci. 6(1):93. doi:10.1186/1748-5908-6-93.

Sheikh K, et al. (2017). Governing the mixed health workforce: learning from Asian experiences. BMJ Glob Health. 2(2):e000267. doi:10.1136/bmjgh-2016-000267.

Sibley LM, Sipe TA (2006). Transition to skilled birth attendance: is there a future role for trained traditional birth attendants? J Health Popul Nutr. 24(4):472–478 pmid: 17591344.

Sibley LM, Sipe TA, Barry D (2012). Traditional birth attendant training for improving health behaviours and pregnancy outcomes. Cochrane Database Syst Rev. 8(8): CD005460. doi:10.1002/14651858.CD005460.pub3.

Skovdal M, et al. (2009). Young carers as social actors: coping strategies of children caring for ailing or ageing guardians in western Kenya. Soc Sci Med. 69(4):587–595. doi:10.1016/j.socscimed.2009.06.016.

Sudhinaraset M, et al. (2013). What is the role of informal healthcare providers in developing countries? A systematic review. PLoS ONE. 8(2): e54978. doi:10.1371/journal.pone.0054978.

Wesson J, et al. (2015). Improving access to care among underserved populations : the role of health workforce data in health workforce policy, planning and practice. World Health Popul. 16(1):36–50. doi:10.12927/whp.2015.24314.

World Health Organization (2006). Working together for health: the World Health Report 2006. Geneva: World Health Organization.

World Health Organization (2010a). Workload indicators of staffing need. Geneva: World Health Organization (http://www.who.int/hrh/resources/wisn_user_manual/en/).

World Health Organization (2010b). Workload indicators of staffing need: user's manual. Geneva: World Health Organization (http://www.who.int/hrh/resources/WISN_Eng_UsersManual.pdf?ua=1).

World Health Organization (2016). Technical notes: 2016 update – Global Health Workforce Statistics database. Geneva: World Health Organization.

World Health Organization et al. (2009). Handbook on monitoring and evaluation of human resources for health with special applications for low- and middle-income countries. Geneva: World Health Organization.

Chapter 2.

Social contexts and relations shaping health workers

Asha George, Ligia Paina, Kerry Scott and Seye Abimbola

2.1 Defining the chapter

Health workers, in addition to working for health, are first and foremost human beings. Their empathy, intuition and ingenuity, alongside their technical skills, are critical in negotiating the social contexts that shape their work environment and professional practice. This emphasis on human agency and social context is a key characteristic of people-centred health systems (Sheikh et al., 2014). While this reader highlights health workers as active agents in multiple places, this chapter in particular focuses on the social relations and social systems that embed and are negotiated by health workers. These include the broad social norms and structural forces that foster equity and solidarity or, conversely, that constrain livelihoods and survival. These social dynamics also shape and are shaped by the markets in which health workers practise or to which they are compelled to move.

In foregrounding these social relations and contexts, this chapter closely mirrors Chapter 1 on health worker profiles by describing the social forces that underpin who health workers are and where they work. The influence of social relations and context also cuts across Chapter 4, covering performance, and Chapter 5, covering motivation. Our chapter focuses on macro-level social dynamics, while those that manifest at the meso-level are covered in Chapter 6 on management, leadership and organizational culture. This chapter also complements Chapter 7 on policies and politics, which emphasizes the political processes, including health reforms and donor initiatives, involved in shaping policies and health worker practice. Finally, while we review social relations and contexts in this chapter, we do so illustratively, as it is beyond the scope of this reader to comprehensively document health policy and systems research (HPSR) on every facet of social contexts and relations shaping health workers.

2.2 Background on social forces

Research on human resources for health (HRH) has focused on technical inputs, such as the content of enabling policies, the nature of training and supervision, and other determinants of health worker performance (Kok et al., 2015a). The link between macro-structural context and health worker profiles, experiences and capacities is rarely examined in depth (Kok et al., 2015b; Schneider and Lehmann, 2016; Sheikh and George, 2010). Ideally, responsive health workers working within progressive health systems generate trust and well-being that can redress social inequalities (Gilson et al., 2007). At the other extreme, whether related to extreme humanitarian crises or more normalized everyday stress, discrimination and insecurity, detrimental social contexts and relations curtail professional opportunities, increase vulnerability to violence and diminish livelihoods.

Humanitarian crises due to conflict, natural disasters or unanticipated disease outbreaks are increasing across the world, with extreme consequences for the most marginalized people. Attention to health workers in such circumstances, characterized by problems of donor coordination, coupled with weakened government capacity, and in certain places strong informal and unregulated private provision, is relatively recent (Durham et al., 2015; Fujita et al., 2011; Miyake et al., 2017). While some have argued that these crises can provide opportunities to create new HRH policy trajectories (Fujita et al., 2011), recent reviews have been more cautious about state-building claims (Witter et al., 2015) or windows of opportunity for change (Witter et al., 2016). With health policy and systems researchers calling for the prioritization of HRH as a critical research area for fragile and conflict-affected states (Woodward et al., 2016), we hope for additional in-depth research that will enable rich contextualized understanding of the dynamic complexities of HRH in such settings.

While targeted violence against specific ethnic groups or nationalities is a feature of conflict and post-conflict settings, gender-based violence is experienced in all settings and largely victimizes women. Gender-based violence is particularly relevant to HRH given the predominantly feminized profile of the health workforce, particularly at lower levels (George, 2007; Newman, 2014). Prior research has indicated that female health workers not only experience higher rates of violence but also suffer greater physical and psychological harm from such violence (Di Martino, 2003). This reflects both their more vulnerable status in the health workforce and their internalized coping mechanisms due to the lack of effective public acknowledgement and redress (Chaudhuri, 2010; George, 2007).

Gender-based violence and harassment is one extreme form of the broader pervasive gender discrimination faced in the health workforce. While studies point to female physicians working fewer hours than their male counterparts, confounding variables related to physician age, family responsibilities, practice characteristics and patient profile are often not examined sufficiently (Hedden et al., 2014). In contrast, there is consensus that women are systematically paid less even in the same cadre (Tijdens et al., 2013; Vecchio et al., 2013). Women's gendered professional and personal needs are often not considered by policy-makers (Daniels et al., 2010), and multiple negotiations must be brokered within professionalized cadres (Nair, 2007; Wildschut and Gouws, 2013) or when embedded in communities (Mumtaz et al., 2013). More recent research uses an intersectionality lens, to understand how gendered discrimination is layered with social class and other social determinants (Jones et al. 2009; Tlaiss, 2013).

With regard to social class and income, while vocation is a key motivating factor for health workers, this does not discount the importance of remuneration and, for those at the lower levels of the health workforce, secure livelihoods (McCoy et al., 2008; Tijdens et al., 2013). Health worker pay and incentives, along with other factors, shape recruitment and retention in both the public and private sectors (Bertone and Witter, 2015). Pay and incentives also influence job satisfaction and motivation and therefore play a key role in supporting responsive care. Finally, when working in poorly regulated and dysfunctional services, low and unpredictable payment can be seen to justify informal fees and moonlighting (McCoy et al., 2008; Tijdens et al., 2013).

From a macro-level viewpoint, while aggregate health worker pay can dominate government health expenditure, particularly in low- and middle-income countries with low government health spending, at a global level it represents on average 34% of total health expenditure, is set to increase over time, and is rising faster than in other sectors (Hernandez-Peña et al., 2013). While wage ranking is relatively consistent at the extremes of the spectrum (typically with doctors at the top and care workers at the bottom), the wage ranking of nurses and midwives varies considerably by health system, as does the wage disparity between health cadres (Tijdens et al., 2013). In reviewing health workforce development in western Europe, Pavolini and Kuhlman (2016) note that despite an overall shortage of health workers and

increasing future demand, many basic- to middle-level health workers have flexible contracts, work part time or are looking to leave the sector. While the numbers of health workers are increasing, working conditions for those at lower levels are not improving. Furthermore, the heterogeneity of these changes across cadres and countries eludes neat categorization by health workforce theories aligned with the professions, the welfare state or labour markets (Pavolini and Kuhlmann, 2016).

In terms of understanding health labour markets, McPake et al. (2014a) provide a comprehensive review of the application of economic thinking to HRH, with insight on why they fail and how an understanding of market forces and social institutions can help guide government intervention. In understanding how social institutions structure economic exchanges (Ostrom, 2010), including those related to health workers, formal rules refer to regulations, policies and guidelines, while informal rules refer to social norms, unwritten codes of conduct, and shared strategies. From a top-down perspective, a government may put in place or respond to rules that determine the production (for example, relative to market exit through emigration, alternative careers or death) and overseeing (regulation and supervision to ensure performance) of health workers. From a bottom-up perspective, community norms and collective action may promote certain types of health service and determine the profile and behaviour of available health workers (George and Iyer, 2013; Sieverding et al., 2015). These top-down and bottom-up influences interact and, when they are not aligned, may lead to labour market failure (Abimbola et al., 2014). In making demand and supply decisions, health system actors (such as government officials, public- and private-sector players, and health workers and individuals who may demand and use their services) are confronted with information and motivation problems and influenced by geographical and socioeconomic contexts that may constrain or enable their choices and performance.

The structural, economic and social forces introduced above drive the movement of health workers across rural/urban, public/private or national/international boundaries of health systems. The phenomenon of internal and international migration has given rise to a body of research and practice aiming to understand why and how health workers move, whether and how this movement affects health systems and health outcomes, and how to manage the push and pull factors for health workers (Kroezen et al., 2015; Labonté, 2015). Internal migration can contribute to shortages of health workers and can exacerbate weaknesses in rural health systems and inequities in health-care access, particularly in underserved areas. Huicho et al. (2010) provide a helpful framework for conceptualizing internal migration and for evaluating interventions that aim to increase access to health workers in underserved communities. Others have estimated the cost-effectiveness of policy measures to retain workers in rural areas (Keuffel et al., 2016; Lagarde et al., 2012). At the global level, the past decade has seen the emergence of the World Health Organization (WHO, 2010) Global Code of Practice on the International Recruitment of Health Personnel, which aims to strengthen data on international recruitment and migration and to support strengthening local health systems to promote retention and research to document the early implementation of the Code (Tankwanchi et al., 2014; WHO, 2016).

Various disciplines can highlight the implicit assumptions underlying existing regulatory health workforce migration policies and their effects on health (Clemens, 2007). Using economic theory, Clemens (2014) challenges researchers and policy-makers to rethink the language used to label skilled migration and its effects, and how best to manage these, while ensuring skilled migrants have the opportunity and freedom to work abroad. He argues for moving beyond coercive taxes and quotas or recruitment bans and to think about who bears the cost for skilled training and reforming the education system. His findings indicate the importance of undertaking research that addresses the multisectoral determinants of health worker migration, and research that critically examines our assumptions about the pathways through which health worker migration policies are intended to work.

2.3 Illustrative primary research articles

We present eight primary research articles that build on this background to showcase how social relations and contexts influence health workers. These articles were selected from a pool collated from a doctoral seminar at the Johns Hopkins School of Public Health, a crowdsourcing exercise supported by Health Systems Global and subsequent searches using the bibliography of key articles and on relevant databases and search engines (PubMed, Google Scholar). The main criteria used to select the articles included diversity in region, cadre and methods, and the quality and innovativeness of the studies.

In highlighting the social agency of health workers and their embeddedness in broader social relations and systems, we selected articles that review their resilience through conflict in Uganda (Namakula and Witter, 2014) and the context of gender-based violence in the health workforce in Rwanda (Newman et al., 2011). We then review how labour markets and their dynamics impact on the livelihoods of health workers, through the exclusion of volunteers in Ethiopia struggling with survival (Maes et al., 2011), the multiple strategies pursued by primary health-care workers in the Democratic Republic of the Congo to secure adequate incomes (Maini et al., 2017), the drivers of dual practice in Mozambique, Guinea-Bissau and Cabo Verde (McPake et al., 2014b), and how dual practice influences physician location in Viet Nam (Vujicic et al., 2011). The last set of articles highlights innovative approaches to understanding the drivers of migration through the experience of health workers emigrating from Ireland (Humphries et al., 2015) and the social connectedness of rural auxiliary nurse midwives in Mali (Hurley et al., 2014).

2.3.1 Violence as a structural and gendered driver of inequality

Namakula J, Witter S (2014). Living through conflict and post-conflict: experiences of health workers in northern Uganda and lessons for people-centred health systems. Health Policy Plan. 29(Suppl. 2):ii6–ii14

Health workers	Public and private sector health workers
Geographical area	Uganda
Research methods	Qualitative: Life histories
Research inference	Exploratory/Emancipatory

Namakula and Witter (2014) use life histories to understand why Ugandan health workers stayed on during Uganda's 20-year conflict and how they coped during and after the conflict. This article showcases the powerful potential of participatory methodology, wherein the interview involved asking health workers to draw a line representing their lives and then indicating and discussing important life decisions and events along it. Life histories enabled the researchers and health workers to reflect on important experiences, including traumatic incidents during the conflict, in a sensitive, participant-led manner and created space for health workers to identify and claim their agency and resilience. In gaining deep understanding of health worker experiences, coping mechanisms, frustrations and incentives, this study generates insight into policy levers that could support health worker motivation and retention in post-conflict settings. For instance, the authors note that being from the region in which one served was an important retention factor, as was loyalty to one's first facility and opportunities for incremental career advancement through in-service training. Equally important, this work takes seriously the actor-centred ethos of HPSR, wherein health workers are seen not only as technical inputs to the delivery of care but also as human beings in their own right, whose perspectives and dignity are valued as an end in themselves and as an integral part of a responsive health system. Further reflections on the use of life histories as a methodology within post-conflict and crisis settings are elucidated by Witter et al. (2017).

Health workers	Multiple public and private sector facility health workers
Geographical area	Rwanda
Research methods	Mixed: provider survey, facility audits, key informant interviews, in-depth interviews, focus group discussions, stakeholder engagement
Research inference	Descriptive

Newman et al. (2011) combined a range of methods to explore the link between workplace violence and gender among health workers in Rwanda. Qualitative formative research (interviews with policy-makers, a focus group with health personnel, and a review of national labour and gender policies) enabled the researchers to develop culturally appropriate descriptions of workplace violence and gender discrimination. These phenomena were then examined through a health worker survey, key informant and facility manager interviews, and facility audits. Newman et al. found that violence was experienced by 39% of the health workers sampled, with similar rates of verbal abuse, bullying and physical violence among men and women, and higher rates of sexual violence among women. Gender inequality at work (unequal treatment and unequal access to jobs) was associated with increased odds of workplace violence. Gender-based violence at work emerged as one component of wider gender discrimination that reduces women's employment opportunities, penalizes them for their biological reproductive role, and limits their economic freedoms.

Newman et al.'s research dissemination was informed by utilization-focused evaluation (Patton, 1997). This involved wide consultation with government and civil society to identify what information about workplace violence and gender would be most valuable to inform decisions and improve conditions for health workers. The article presents an analysis of changes to workforce policy arising from the research. This attention to policy impact and stakeholder engagement, in addition to the authors' mixed-methods examination of gender and workplace violence, is what makes Newman et al.'s (2011) research stand out as exemplary HPSR.

While violence in the health workforce and its gendered dimensions have been noted earlier (Di Martino, 2003; George, 2007), further research has been limited, despite ongoing incidences of rape and murder of female health workers, for example as reported by the press in India (Gangotri et al., 2016). While there is increasing recognition of the risk of workplace violence for health workers in emergency departments (Hamdan and Abu Hamra, 2015; Mirza et al., 2012), this research is largely descriptive and, although disaggregating by sex, does not apply a deeper gender lens. The research by Kim and Motsei (2002) remains a landmark study in detailing the gendered lived experience of nurses in South Africa and how violence normalized in their personal lives must be recognized before they can be expected to respond to other victims without replicating conservative gender ideologies.

2.3.2 Labour markets: economic livelihoods and dynamics

Maes KC, et al. (2011). Volunteer home-based HIV/AIDS care and food crisis in Addis Ababa, Ethiopia: sustainability in the face of chronic food insecurity. Health Policy Plan. 26(1):43–52

Health workers	Volunteer caregivers
Geographical area	Ethiopia
Research methods	Mixed: provider survey with ethnographic observation over 20 months, in-depth interviews, focus group
Research inference	Exploratory

Maes et al. (2011) combine longitudinal ethnography and cross-sectional survey methods to examine the sustainability and human rights implications of health worker volunteerism in the context of urban food insecurity and scale-up of treatment for human immunodeficiency virus (HIV). The ethnographic methods involved 20 months of participant observation, focus group discussions and interviews with a sample of 13 volunteer carers, who the authors re-interviewed up to 7 times to explore themes of carer motivation, food insecurity, relationships, costs and benefits, and well-being. In addition, a sample of carers was surveyed to gather demographic and household data and to assess food insecurity using the validated Household Food Insecurity Access Scale. Following a mixed-methods design, the survey questions and analysis were informed by the ethnographic work, which suggested that the role of the volunteers in the household food economy was an important factor in household food access.

The study links high rates of chronic food insecurity among volunteer carers with their distress, demotivation and changing demographics. Despite a strong desire to serve, volunteer carers described internal ambivalence about volunteering when they could not access enough food for their families and increasingly strained relationships within their households. Moreover, food insecurity impaired care relationships that were already fraught because of HIV-related stigmatization, since volunteers could not address patient needs for food to support adherence to antiretroviral treatment. Newer volunteers tended to be younger people who could not find paid work and who lived as dependents in higher-income households, suggesting that these marginally better-off families were broadly subsidizing HIV care. This paper is exemplary in its use of mixed-methods, attention to an often undervalued and overlooked cadre of health workers, and analysis of how structural forces affect the capacity and livelihoods of volunteers and the sustainability of health programmes.

Maini R, Hotchkiss DR, Borghi J (2017). A cross-sectional study of the income sources of primary care health workers in the Democratic Republic of Congo. Hum Resour Health. 15(1):17

Health workers	Public sector primary health care workers
Geographical area	Democratic Republic of the Congo
Research methods	Mixed: Facility and provider survey, qualitative interviews
Research inference	Descriptive

Another approach to understanding health worker livelihoods is illustrated by Maini et al. (2017), who studied the different sources of income for primary health-care workers in the Democratic Republic of the Congo, where poor remuneration of public sector health workers encourages a diversification of income sources. The authors used regression models to examine the determinants of income source and level, and used qualitative data to explore the perception of health workers on each income source. With less than a third of health workers

receiving government salary, which even when received was often irregular and insufficient, most health workers sought income from "private" sources such as user fees, gifts, informal payments, private clinical practice, non-clinical activities, per diems, and performance payments from nongovernmental organizations implementing externally financed health programmes. Contextual factors such as provincial location, presence of externally funded programmes and local user fee policy also influenced the extent to which nurses received many income sources. Notably, this study used mixed-methods to explore how adaptations within local health care markets, in the form of health worker remuneration, partially and suboptimally fill the space left by the lack of governance institutions to ensure the reliable provision of public goods.

McPake B, Russo G, Tseng FM (2014a). How do dual practitioners divide their time? The cases of three African capital cities. Soc Sci Med. 122:113–121

Health workers	Public and private sector physicians
Geographical area	Mozambique, Guinea-Bissau, Cabo Verde
Research methods	Quantitative: two-stage estimation model with propensity score-matching
Research inference	Exploratory

Another market-driven adaptation to insufficient levels of health worker remuneration is the blurring of the public and private sectors as health workers engage in dual practice. McPake et al. (2014b) used regression models to identify predictors of doctors choosing to engage in dual practice and, for those who do so, to identify predictors of how doctors choose to allocate their time between the public and private sectors in three Portuguese-speaking African countries: Mozambique, Guinea-Bissau and Cabo Verde. They found that higher hourly wages in the private sector, greater number of dependents, competing priorities that limit the number of hours physicians are able to devote to work, working outside the city and higher level of demand for private services were associated with increased likelihood of a physician engaging in dual practice and increased allocation of time to the private sector. In this rare quantitative exploration of the processes involved in dual practice, McPake et al. (2014b) examined the economic theory that suggests that by restricting supply in the public sector, health workers can increase demand and price in the private sector; however, the limited ability to pay for private-sector services in the studied populations constrains health workers' ability to migrate entirely to the private sector.

While the level of public-sector salaries was not associated with dual practice in McPake et al.'s (2014b) study, another study by the same group in the same three countries found that it was the institutions governing health markets in these countries that significantly shape the patterns of dual practice (Russo et al., 2014). In Cabo Verde, where rules exist to govern dual practice and the rules are monitored and enforced, the public characteristics of public services are protected, forcing private activity to the private sector, where it is formally regulated and recognized as dual practice. In Guinea-Bissau, where such rules do not exist, physicians offer private services within public facilities, where they may escape regulation altogether. In Mozambique, where the rules are both "patchy" and "patchily" applied, there is a mix of both regulated and unregulated private services within public facilities, and poorly regulated high-cost services in private facilities (p. 780). As in the study by McPake et al. (2014b), Russo et al. (2014) highlighted the role of bottom-up market forces in shaping dual practice, albeit in the form of low demand due to limited ability to pay, which limits the viability of standalone private facilities, leading to the delivery of private services in the public sector.

Vujicic M, et al. (2011). Physician shortages in rural Vietnam: using a labor market approach to inform policy. Soc Sci Med. 73(7):2034–2070

Health workers	Physicians
Geographical area	Viet Nam
Research methods	Quantitative: discrete choice experiments based on a labour market survey
Research inference	Descriptive

Integrating a discrete choice experiment within a labour market survey, Vujicic et al. (2011) explored how geography and the potential for dual practice influence health worker labour market dynamics in Viet Nam. In a random sample of physicians in three regions in Viet Nam, they found that dual practice is prominent, as 35% of physicians hold a second job, and that the significant wage premium associated with working in an urban area is driven by much higher earnings from dual practice (on average, 90% of official income) rather than official earnings in the primary job. In addition, physicians working in higher-level health facilities located in urban areas earn significantly higher official income (up to 71% higher) than those working in rural primary health-care facilities. There is a counterintuitive market behaviour in the pattern of mobility, however: few physicians move across facility levels (primary, secondary or tertiary) and geographical areas (rural or urban), and few physicians change jobs more than once during their career; when job movements do occur, they tend to be within the same geographical setting and the same level of facility. Notably, this study incorporates discrete choice experiments, an innovative method that provided a quantitative estimate of the relative value physicians place on different job attributes. The experiments showed that physicians from rural areas and low-income families are more willing to work in rural areas, and that creating opportunities for long-term education and improving equipment are the most effective strategies to recruit physicians to rural areas. These findings show again that markets are shaped by institutional, geographical and socioeconomic contexts.

2.3.3 Social drivers of migration and retention

Humphries N, et al. (2015). "Emigration is a matter of self-preservation. The working conditions ... are killing us slowly": qualitative insights into health professional emigration from Ireland. Hum Resour Health. 13(1):35

Health workers	Emigrant physicians, nurses, midwives
Geographical area	Ireland
Research methods	Mixed: online survey through social media
Research inference	Exploratory

Staff retention remains at the core of attaining a sustainable health workforce in high-, middle- and low-income contexts alike. Humphries et al. (2015) explored the perspectives of emigrant health professionals from Ireland, innovatively using social media as a platform for data collection on this topic. The authors targeted emigrant health professionals, who, like other emigrants, are a difficult-to-reach group because there is no representative sampling frame to draw from. Through Facebook, the authors drew from a diverse convenience sample of doctors, nurses and a few midwives to elicit responses to an online survey.

Unlike other articles on migration in high-income settings, the focus of this article is on Ireland, the source country, rather than on the health professionals' destinations. Based on the analysis

A HEALTH POLICY AND SYSTEMS RESEARCH READER ON HUMAN RESOURCES FOR HEALTH

of responses to open-ended questions, the authors found two main drivers for emigration: unsatisfactory working conditions, such as long hours, and a perceived lack of respect for health professionals within the Irish health-care system. While many expressed a desire to return for personal reasons, the unsatisfactory working conditions persisted as an important disincentive. The authors emphasize that health system and retention reforms must be responsive to the perspective of health professionals who have emigrated, and that country health workforce planners must base their decisions on more comprehensive, updated routine data.

On a topic where a representative sampling frame is more often than not impossible to obtain, the authors presented an important example of how to use social media to reach emigrants. Furthermore, while social media has been used by researchers before – for example, to understand how health workers network with one another (Rolls et al., 2016) or to understand how to enhance career development opportunities (Roman, 2014) – this is one of the very few times that social media has been used as a data collection avenue for health workforce research. An article based on the same survey and reporting quantitative data is recommended as further reading (McAleese et al., 2016).

Hurley EA, et al (2014). Exploring the connectedness of rural auxiliary midwives to social networks in Koutiala, Mali. Midwifery. 30(1):123–129

Health workers	Rural auxiliary midwives
Geographical area	Mali
Research methods	Mixed: semi-structured interviews and social network case studies with midwives and village women
Research inference	Exploratory

Much work has been done to understand the factors and strategies that promote the retention of health workers, particularly in rural and difficult areas (Dolea et al., 2010). Hurley et al. (2014) present an interesting analysis on the social role of rural health practitioners, in this case rural auxiliary midwives, who represent the main providers of maternal and neonatal health services in Malian communities. Poor social relationships and working environments contribute to workforce turnover and dissatisfaction. Understanding connectedness would shed light on how to better target support to improve retention, job satisfaction, motivation and efficacy. In Mali, half of the midwives are not originally from the communities they serve but are from urban communities and move to rural areas seeking work. The authors attempt to highlight entry points to support such health professionals better and to understand how they are integrated and supported in their working environment within a community. The authors found that rural auxiliary midwives held central and influential social positions, regardless of whether they were originally from that community. These findings have implications for planning maternal and child health interventions and more broadly about the type of support that would be needed to ensure a strong health workforce in rural areas. Midwives effectively create provider–patient bridges, through which behavioural health interventions could be diffused to mothers. Furthermore, well-connected midwives could draw additional health workers to support maternal and health services.

On a topic where neither qualitative nor quantitative methods alone can adequately explain the drivers of migration and retention, this article provides an important example of how qualitative research and social network analyses can be used to obtain a richer picture of a context and to try to understand the social capital, social fabric, connectedness and belonging to a community that may influence rural retention. Nevertheless, this article is one of the few using social network theory and analysis to better understand health workforce behaviour. Existing network studies in health most often focus primarily on physicians or nurses in high-income settings (Bae et al., 2017a, 2017b; Yousefi Nooraie et al., 2017).

2.4 Research challenges, gaps and future directions

2.4.1 Better data

Despite the importance of social dimensions of health workers, numerous data gaps exist, limiting our ability to understand HRH social relations and contexts. Humanitarian crises settings challenge data collection in multiple ways, including non-existent or unconventional sampling frames, difficult data collection logistics, rapid change and weakened research capacity (Woodward et al., 2017). With respect to gender, data on health workers is more likely to be reported by cadre than by sex, eliding the possibility of a gender analysis (George, 2007). Moreover, certain gendered experiences such as sexual harassment and gender-based violence within HRH may remain invisible due to social norms that inhibit reporting. With regard to labour markets, as McPake et al. (2014a) highlighted, analyses are limited by the lack of data, for example on formal and informal earnings or income of health workers within and across countries. Previous efforts to estimate the income of health workers across countries include those of Hernandez-Peña et al. (2013), McCoy et al. (2008) and Tijdens et al. (2013). For McPake et al. (2014a, p. 78), improved datasets will help "move beyond counting the health workforce and some of its basic characteristics, to understanding the determinants and solutions to labour market disequilibrium". With regard to migration, difficulty in tracking health workers across borders makes migration and mobility a difficult phenomenon to understand. Information about annual outflows of health providers, especially of non-physician staff, remains unreliable in both high- and low-income settings, limiting our understanding of the impact migration might have on source and destination health systems and populations (WHO, 2014).

Not only is further research required about the social characteristics of health workers, as highlighted above, but certain national and subnational contexts are underrepresented, failing to reflect the diversity of national and subnational contexts in low- and middle-income countries. For example, labour market analyses can inform not only national but also subnational plans and policies. Tools already exist to conduct these studies, including guidelines, case studies and software (e.g. Dal Poz et al., 2007; Fields and Andalon, 2008; Scheffler et al., 2012; WHO, 2015), but they have yet to be used at the subnational level or at the national level beyond demonstration case studies.

Comparative research across health systems contexts in low- and middle-income countries should also be encouraged. For example, discrete choice experiments can help policy-makers understand how health workers value different job attributes, but the findings of such studies vary widely, depending on context. Further research and comparative analysis could better account for how each country's unique contexts, policies and systems shape the preferences and challenges unique to various cadres of health worker.

2.4.2 Further depth

Another challenge is the overly descriptive nature of existing research, with poor reference to social theories and little use of multidisciplinary research. For example, despite the existence of landmark reviews (George, 2007; Standing, 1997), research examining gendered dimensions of HRH rarely builds on previous research and theory, failing to capture the richness of lived experience. Our research also needs to go beyond surface descriptions to understand why and how social relations and market forces influence health workers. Such evaluations require theory-informed multidisciplinary collaborations that bridge both qualitative and quantitative approaches to better understand the dynamics of health worker behaviour within local health-care markets and their movements within and outside countries.

A HEALTH POLICY AND SYSTEMS RESEARCH READER ON HUMAN RESOURCES FOR HEALTH

We also need further depth in our analysis of how multiple social and market forces and their contextual determinants (such as class, gender, formal and informal institutions, internal and external migration, remuneration, geography, motivation, and information and power asymmetry) combine and interact in different ways to influence the profile and performance of health workers in diverse settings. Indeed, given that these social and market forces, and their determinants, are all connected, analytical approaches such as intersectionality that ensure they are not examined separately from one another need further application (Larson et al., 2016).

2.4.3 Further innovation

Researchers in HPSR can contribute methodologically through novel ways of producing and accessing information. For example, the use of social media and technology should be explored further in studies on migrating health professionals, as should engagement and mobilization of the diaspora. Social network theory and analysis could contribute further to understanding the dynamics of the formal and informal networks formed by health professionals locally and internationally. Furthermore, available data can be used better, for example by developing and using dynamic models for health workforce planning that could help decision-makers better understand the pathways through which migration and retention factors are related. Simulation models focusing on exploring health worker dynamics could be particularly useful in cases where there are limited data.

Moving from methods to broader philosophies and social relations underpinning research, feminist and participatory action research methodologies should be encouraged to express and understand health worker voices and to transform the social relations framing health worker agency. Central to these approaches are efforts to build capacity, foster trust and address the power relations between various stakeholders engaged with HRH research. These issues of research governance are relevant to all settings but are particularly important in humanitarian crises settings (Woodward et al., 2017).

Acknowledgements

References

Abimbola S, et al. (2014). Towards people-centred health systems: a multi-level framework for analysing primary health care governance in low-and middle-income countries. Health Policy Plan. 29(Suppl. 2):ii29–ii39. doi:10.1093/heapol/czu069.

Bae S-H, et al. (2017a). Nursing teams: behind the charts. J Nurs Manag. 25(5):354–365. doi:10.1111/jonm.12473.

Bae S-H, et al. (2017b). Health care provider social network analysis: a systematic review. Nurs Outlook. 63(5):566–584. doi:10.1016/j.outlook.2015.05.006.

Bertone MP, Witter S (2015). The complex remuneration of human resources for health in low-income settings: policy implications and a research agenda for designing effective financial incentives. Hum Resour Health. 13(1):62. doi:10.1186/s12960-015-0058-7.

Chaudhuri P (2010). Sexual harassment of women health workers. In George AS, Sheikh K, editors. Health providers in India: on the frontlines of change. Abingdon, UK: Routledge: 223–241.

Clemens MA (2007). Do visas kill ? Health effects of African health professional emigration. Working paper no. 114. London: Center for Global Development. doi:10.2139/ssrn.980332.

Clemens MA (2014). A case against taxes and quotas on high-skill emigration. J Glob Dev. 5(1):1–39. doi:10.1515/jgd-2014-0015.

Dal Poz MR, et al. (2007). Counting health workers: definitions, data, methods and global results. HRH discussion paper series. Geneva: World Health Organization.

Daniels K, et al. (2010). Supervision of community peer counsellors for infant feeding in South Africa: an exploratory qualitative study. Hum Resour Health. 8(1):6. doi:10.1186/1478-4491-8-6.

Di Martino V (2003). Relationship of work stress and workplace violence in the health sector. Geneva: International Labour Office, International Council of Nurses and World Health Organization.

Dolea C, Stormont L, Braichet J-M (2010). Evaluated strategies to increase attraction and retention of health workers in remote and rural areas. Bull World Health Org. 88(5):379–385.

Durham J, et al. (2015). Haïti and the health marketplace: the role of the private, informal market in filling the gaps left by the state. BMC Health Serv Res. 15:424. doi:10.1186/s12913-015-1088-5.

Fields G, Andalon M (2008). A toolkit for analyzing labor markets in the health care sector in Africa. Washington, DC: World Bank.

Fujita N, et al. (2011). A comprehensive framework for human resources for health system development in fragile and post-conflict states. PLoS Med. 8(12):e1001146. doi:10.1371/journal.pmed.1001146.

Gangotri HN, et al. (2016). Report of independent fact-finding into the incident of gang-rape and death of an ASHA worker Somwati Tyagi, in Muzaffarnagar District, Uttar Pradesh, India. Kractivist (http://www.kractivist.org/asha-gang-rape-incident-muzaffarrangar-a-fact-finding-report-vaw/).

George AS (2007). Human resources for health: a gender analysis. Review paper. Geneva: Women and Gender Equity Knowledge Network and Health Systems Knowledge Network of the World Health Organization Commission on Social Determinants of Health (https://sarpn.org/documents/d0002790/index.php).

George A, Iyer A (2013). Unfree markets: socially embedded informal health providers in northern Karnataka, India. Soc Sci Med. 96:297–304.

Gilson L, et al. (2007). Challenging inequity through health systems: final report. Geneva: Knowledge Network on Health Systems of the World Health Organization Commission on Social Determinants of Health.

Hamdan M, Abu Hamra A (2015). Workplace violence towards workers in the emergency departments of Palestinian hospitals: a cross-sectional study. Hum Resour Health. 13:28. doi:10.1186/s12960-015-0018-2.

Hedden L, et al. (2014). The implications of the feminization of the primary care physician workforce on service supply: a systematic review. Hum Resour Health. 12(1):32. doi:10.1186/1478-4491-12-32.

Hernandez-Peña P, et al. (2013). Health worker remuneration in WHO Member States. Bull World Health Org. 91(11):808–815. doi:10.2471/BLT.13.120840.

Huicho L, et al. (2010). Increasing access to health workers in underserved areas: a conceptual framework for measuring results. Bull World Health Org. 88(5):357–363. doi:10.2471/BLT.09.070920.

Humphries N, et al. (2015). "Emigration is a matter of self-preservation. The working conditions … are killing us slowly": qualitative insights into health professional emigration from Ireland. Hum Resour Health. 13(1):35. doi:10.1186/s12960-015-0022-6.

Hurley EA, et al. (2014). Exploring the connectedness of rural auxiliary midwives to social networks in Koutiala, Mali. Midwifery. 30(1):123–129. doi:10.1016/j.midw.2013.03.002.

Jones AD, Bifulco A, Gabe J (2009). Caribbean nurses migrating to the UK: a gender-focused literature review. Int Nurs Rev. 56(3):285–290. doi:10.1111/j.1466-7657.2009.00734.x.

Keuffell E, et al. (2016). Cost-effectiveness of rural incentive packages for graduating medical students in Lao PDR. Int J Health Policy Manag. 6(7):383-394. doi: 10.15171/ijhpm.2016.141.

Kim J, Motsei M (2002). "Women enjoy punishment": attitudes and experiences of gender-based violence among PHC nurses in rural South Africa. Soc Sci Med. 54(8):1243–1254. doi:10.1016/S0277-9536(01)00093-4.

Kok MC, et al. (2015a). Which intervention design factors influence performance of community health workers in low- and middle-income countries? A systematic review. Health Policy Plan. 30(9):1207–1227.

Kok MC, et al. (2015b). How does context influence performance of community health workers in low- and middle-income countries? Evidence from the literature. Health Res Policy Syst. 13(1):13. doi:10.1186/s12961-015-0001-3.

Kroezen M, et al. (2015). Recruitment and retention of health professionals across Europe: a literature review and multiple case study research. Health Policy. 119(12):1517–1528. doi:10.1016/j.healthpol.2015.08.003.

Labonté R (2015). Health worker migration from South Africa: causes, consequences and policy responses. Hum Resour Health. 13:92. doi: 10.1186/s12960-015-0093-4.

Lagarde M, Blaauw D, Cairns J (2012). Cost-effectiveness analysis of human resources policy interventions to address the shortage of nurses in rural South Africa. Soc Sci Med. 75(5):801–806. doi:10.1016/j.socscimed.2012.05.005.

Larson E, et al. (2016). Ten best resources on intersectionality with an emphasis on low- and middle-income countries. Health Policy Plan. 31(8):964–969. doi: 10.1093/heapol/czw020.

Maes KC, et al. (2011). Volunteer home-based HIV/AIDS care and food crisis in Addis Ababa, Ethiopia: sustainability in the face of chronic food insecurity. Health Policy Plan. 26(1):43–52. doi:10.1093/heapol/czq017.

Maini R, Hotchkiss DR, Borghi J (2017). A cross-sectional study of the income sources of primary care health workers in the Democratic Republic of Congo. Hum Resour Health. 15(1):17. doi:10.1186/s12960-017-0185-4.

McAleese S, et al. (2016). Gone for good? An online survey of emigrant health professionals using Facebook as a recruitment tool. Hum Resour Health. 14(Suppl. 1):34. doi:10.1186/s12960-016-0130-y..

McCoy D, et al. (2008). Salaries and incomes of health workers in sub-Saharan Africa. Lancet. 371(9613):675–681. doi:10.1016/S0140-6736(08)60306-2.

McPake B, Russo G, Tseng FM (2014b). How do dual practitioners divide their time? The cases of three African capital cities. Soc Sci Med. 122:113–121. doi:10.1016/j.socscimed.2014.10.040.

McPake B, Scott A, Edoka I (2014a). Analyzing markets for health workers: insights from labor and health economics. Washington, DC: World Bank.

Mirza NM, et al. (2012). Violence and abuse faced by junior physicians in the emergency department from patients and their caretakers: a nationwide study from Pakistan. J Emerg Med. 42(6):727–733. doi:10.1016/j.jemermed.2011.01.029.

Miyake S, et al. (2017). Community midwifery initiatives in fragile and conflict-affected countries: a scoping review of approaches from recruitment to retention. Health Policy Plan. 32(1):21–33. doi:10.1093/heapol/czw093.

Mumtaz Z, et al. (2013). The role of social geography on Lady Health Workers' mobility and effectiveness in Pakistan. Soc Sci Med. 91:48–57. doi:10.1016/j.socscimed.2013.05.007.

Nair S (2007). Rethinking citizenship, community and rights: the case of nurses from Kerala in Delhi. Indian J Gend Stud. 14(1):137–156. doi:10.1177/097152150601400108.

Namakula J, Witter S (2014). Living through conflict and post-conflict: experiences of health workers in northern Uganda and lessons for people-centred health systems. Health Policy Plan. 29(Suppl. 2):ii6–ii14. doi:10.1093/heapol/czu022.

Newman CJ (2014). Time to address gender discrimination and inequality in the health workforce. Hum Resour Health. 12(1):25. doi:10.1186/1478-4491-12-25.

Newman CJ, et al. (2011). Workplace violence and gender discrimination in Rwanda's health workforce: increasing safety and gender equality. Hum Resour Health. 9(19):1–13. doi:10.1186/1478-4491-9-19.

Ostrom E (2010). Beyond markets and states: polycentric governance of complex economic systems. Am Econ Rev. 100(3):641–672. doi:10.1257/aer.100.3.641.

Patton M (1997). Utilization focused evaluation, 3rd edition. Thousand Oaks, CA: Sage Publications.

Pavolini E, Kuhlmann E (2016). Health workforce development in the European Union: a matrix for comparing trajectories of change in the professions. Health Policy. 120(6):654–664. doi:10.1016/j.healthpol.2016.03.002.

Rolls K, et al. (2016). How health care professionals use social media to create virtual communities: an integrative review. J Med Internet Res. 18(6):e166. doi:10.2196/jmir.5312.

Roman LA (2014). Using social media to enhance career development opportunities for health promotion professionals. Health Promot Pract. 15(4):471–475. doi:10.1177/1524839914535213.

Russo G, et al. (2014). Negotiating markets for health: an exploration of physicians' engagement in dual practice in three African capital cities. Health Policy Plan. 29(6):774–783. doi:10.1093/heapol/czt071.

Scheffler R, Bruckner T, Spetz J (2012). The labour market for human resources for health in low- and middle-income countries. Geneva: Department for Health Systems Policies and Workforce, World Health Organization.

Schneider H, Lehmann U (2016). From community health workers to community health systems: time to widen the horizon? Health Syst Reform. 2(2):112–118. doi: 10.1080/23288604.2016.1166307.

Sheikh K, George AS (2010). Health providers in India: on the frontlines of change. London, New Delhi: Routledge India.

Sheikh K, George AS, Gilson L (2014). People-centred science: strengthening the practice of health policy and systems research. Health Res Policy Syst. 12(1):19. doi:10.1186/1478-4505-12-19.

Sieverding M, Liu J, Beyeler N (2015). Social support in the practices of informal providers: the case of patent and proprietary medicine vendors in Nigeria. Soc Sci Med. 143:17–25. doi:10.1016/j.socscimed.2015.08.037.

Standing H (1997). Gender and equity in health sector reform programmes: a review. Health Policy Plan. 12(1):1–18.

Tankwanchi ABS, Vermund SH, Perkins DD (2014). Has the WHO Global Code of Practice on the International Recruitment of Health Personnel been effective? Lancet Glob Health. 2(7):e390–e391. doi:10.1016/S2214-109X(14)70240-2.

Tijdens K, de Vries DH, Steinmetz S (2013). Health workforce remuneration: comparing wage levels, ranking, and dispersion of 16 occupational groups in 20 countries. Hum Resour Health. 11(1):11. doi:10.1186/1478-4491-11-11.

Tlaiss HA (2013). Women in healthcare: barriers and enablers from a developing country perspective. Int J Health Policy Manag. 1(1):23–33. doi:10.15171/ijhpm.2013.05.

Vecchio N, et al. (2013). Differences in wage rates for males and females in the health sector: a consideration of unpaid overtime to decompose the gender wage gap. Hum Resour Health. 11:9. doi:10.1186/1478-4491-11-9.

Vujicic M, et al. (2011). Physician shortages in rural Vietnam: using a labor market approach to inform policy. Soc Sci Med. 73(7):2034–2070. doi:10.1016/j.socscimed.2011.06.010.

Wildschut A, Gouws A (2013). Male(volent) medicine: tensions and contradictions in the gendered re/construction of the medical profession in South Africa. S Afr Rev Sociol. 44(2):36–53. doi:10.1080/21528586.2013.802536.
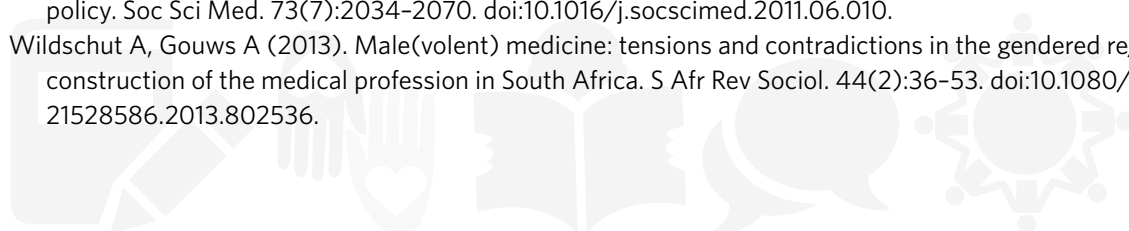
Witter S, et al. (2015). State-building and human resources for health in fragile and conflict-affected states: exploring the linkages. Hum Resour Health. 13:33. doi:10.1186/s12960-015-0023-5.

Witter S, et al. (2016). Evolution of policies on human resources for health: opportunities and constraints in four post-conflict and post-crisis settings. Confl Health. 10(1):31. doi:10.1186/s13031-016-0099-0.

Witter S, et al. (2017). Experiences of using life histories with health workers in post-conflict and crisis settings: methodological reflections. Health Policy Plan. 32(4):595–601. doi:10.1093/heapol/czw166.

Woodward A, et al. (2016). Health systems research in fragile and conflict-affected states: a research agenda-setting exercise. Health Res Policy Syst. 14(1):51. doi:10.1186/s12961-016-0124-1.

Woodward A, et al. (2017). Health systems research in fragile and conflict affected states: a qualitative study of associated challenges. Health Res Policy Syst. 15(1):44. doi:10.1186/s12961-017-0204-x.

World Health Organization (2010). WHO Global Code of Practice on the International Recruitment of Health Personnel, adopted by the 63rd World Health Assembly on 21 May 2010. Geneva: World Health Organization.

World Health Organization (2014). Migration of health workers: WHO Code of Practice and the global economic crisis. Geneva: World Health Organization (http://www.who.int/hrh/migration/14075_MigrationofHealth_Workers.pdf).

World Health Organization (2015). Workload Indicators of Staffing Need (WISN). Software. User manual (in English, French and Spanish) and case studies. Geneva: World Health Organization.

World Health Organization (2016). Monitoring progress on the implementation of the WHO Global Code of Practice on the International Recruitment of Health Personnel: second round reporting (2015–2016). Geneva: World Health Organization (http://www.who.int/hrh/migration/code/code_nri/en/).

Yousefi Nooraie R, et al. (2017). Informing the implementation of evidence-informed decision making interventions using a social network analysis perspective: a mixed-methods study. BMC Health Serv Res. 17(1):122. doi:10.1186/s12913-017-2067-9.

Part B.

How are health workers supported to deliver services?

Chapter 3.

Building health worker capacity through training and supervision

NS Prashanth and Timothy Roberton

3.1 Defining the chapter

A frequent topic in human resources for health (HRH) literature is the design and implementation of training and supervision programmes. Beyond their connection to capacity-building, the two concepts are not easy to define. Both are described in the literature as multidimensional and cover a range of activities. For training, some studies focus on the skills development of newly recruited health workers; other studies look at maintaining skills through, for example, the introduction of job aids, or efforts to expand and upgrade skills of existing health workers (Dieleman et al., 2009). For supervision, some studies examine supervisor–provider interactions specifically (Frimpong et al., 2011; Tavrow et al., 2002), while others investigate health worker supports more broadly, including, for example, changes to management structures and organizational environments (Bradley et al., 2013; Callaghan-Koru et al., 2013).

In selecting articles for this reader, we took a wide view of training and supervision that included routine activities or add-on initiatives to improve health worker skills, knowledge or attitudes, and activities related to capacity-building, support and oversight of health workers by other health system staff or community actors. We included papers that sought to (i) characterize how training or supervision are implemented; (ii) measure the quantity or quality of training or supervision; (iii) understand stakeholder perspectives and felt experiences of training or supervision; (iv) identify barriers and facilitators to effective training or supervision; (v) examine the influence of training or supervision on health worker performance; and (vi) situate training or supervision as a part of a larger development strategy within health systems or health-care organizations. While most of the papers in this chapter concern facility-based workers, other studies examine training and supervision of informal providers, lay health workers and community-based volunteers (Daniels et al., 2010; Das et al., 2016; Singh et al., 2016; Suh et al., 2007). Despite substantial contributions from the private sector to training and service provision in certain contexts, the studies in this chapter mostly concern health workers in the public sector. Little research has been conducted on processes or effects of training or supervision in the private sector.

3.2 Background on training and supervision

The literature on training and supervision draws upon the wider body of knowledge on human resources from management and organizational sciences (Salas and Cannon-Bowers, 2001; Simmonds, 1989). The disciplinary underpinnings of such research are in educational psychology (adult learning, workplace learning, learning organizations), sociology (goal-setting and performance in organizations), organizational and management sciences (high-commitment management, organizational commitment and culture), and social learning and emancipatory approaches such as participatory action research (Buchan, 2004; Chávez et al., 2006; Marchal et al., 2014; Nel, 2014; Salas et al., 2012). Human resource management literature across disciplines has contributed analytical frameworks that researchers have extended to health care, such as the Kirkpatrick framework on the evaluation of training programmes (Kirkpatrick and Kirkpatrick, 1998).

With regard to the health sector, training, supervision and other supports appear prominently in literature on health worker performance (e.g. Callaghan-Koru et al., 2013; Scott and Shanker, 2010). One of the first attempts to understand what works, for whom and under what conditions with respect to interventions to improve health worker performance is the realist review by Dieleman et al. (2009), which highlighted many studies on training and supervision. Research papers describing and evaluating capacity-building programmes within health systems in low- and middle-income countries have provided useful frameworks and emphasized the context-dependent nature of training and supervision programmes (LaFond et al., 2002; O'Malley et al., 2013; Prashanth et al., 2012; Strasser and Neusy, 2010). The multidimensionality of capacity-building in health is captured by the framework proposed by Potter and Brough (2004).

Building on this strategic, contextualized and multidimensional understanding of capacity-building in the health sector, the Lancet Commission on the education of health professionals argued that training must move beyond information (transfer of information and skills) and formation (socialization into professional norms). It prioritized transformation with an emphasis on leadership and critical thinking to support the interdependence and teamwork across health cadres needed to solve the complex health problems of the future (Frenk et al., 2010).

Despite this broader framing, many studies continue to approach training in a more instrumentalist way, wherein training programmes are seen as delivery structures for knowledge, skills or attitude transfer (especially the literature on in-service training). These studies on training are in niche journals, often with limited system-wide application or reflection, for example in disease control programmes (such as HIV/AIDS or tuberculosis literature) or in other related literature (such as quality improvement or leadership training, e.g. Mery et al., 2017). Literature on reorienting health workforce pre-service education towards more people-centred approaches and competencies (Milen, 2001), including those related to gender equality (Allotey et al., 2011; Fonn, 2003), is limited mainly to niche medical and nursing education literature (e.g. Bratt et al., 2014; Burns and Poster, 2008; Cockerham et al., 2011). Further attention to the broader aims of training and capacity-building in the health sector is needed.

With regard to supervision, the first major review of "supervision in clinical practice settings" was by Kilminster and Jolly (2000), who sought to define supervision and lay out a hypothesis for its effect on health worker performance. The review mostly included studies from high-income countries and defined supervision as "the provision of monitoring, guidance and feedback on matters of personal, professional and educational development in the context of the doctor's care of patients" (p. 829). A later review by Moran et al. (2014) addressed supervision in "rural and remote contexts" and included studies from low- and middle-income countries.
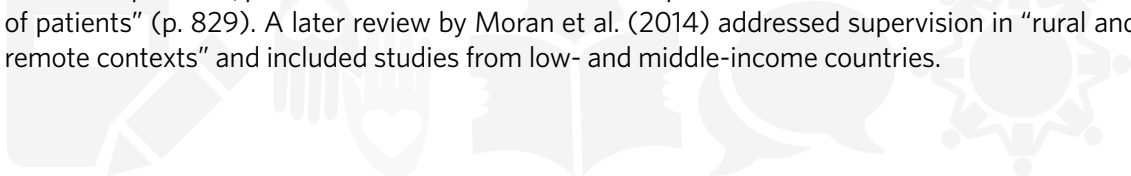
Recently, several specific models of supervision have come to the fore and been the focus of interventions and research. One model, known as "supportive supervision", has achieved prominence as a type of supervision that emphasizes the human interactions involved in supervision, with supervisors working in partnership with health workers to solve problems and overcome challenges. This term was described in detail by Marquez and Kean (2002), who outlined a framework for supportive supervision and contrasted it with previous models of supervision. Other models of supervision involve community leaders as part of the supervision process. Although such models have not been articulated in any standalone articles, they have been explored in studies (Roberton et al., 2015; Suh et al., 2007).

Clements et al. (2007) challenged some dominant assumptions of the supervision literature, arguing that the supervision models espoused for low- and middle-income countries have not been successful, have fundamental flaws, and indeed do not exist in high-income countries in the same way. Whereas supervision in low- and middle-income countries typically involves an external supervisor from outside the health facility, the authors suggest that in high-income countries, "the 'boss' is in the same building as the employees carrying out the service … thus there is a day-to-day, even moment-by-moment supervision where the boss is an integral part of the team" (p. 22). This divergent definition of supervision has implications for evaluation.

Bosch-Capblanch et al. (2011) offered the first Cochrane review of the effectiveness of supervision in improving the quality of primary health care in low- and middle-income countries. The review included only nine eligible studies, and the authors concluded that, due in part to the low quality of evidence, it was "uncertain whether supervision has a substantive, positive effect on the quality of primary health care in low- and middle-income countries" (p. 2). While acknowledging these findings, these types of systematic review are also not able to include the substantial body of qualitative literature on supervision and its felt effects. Furthermore, the diverse settings in which supervision is performed, the different tasks included in supervision packages, and the difficulty of measuring supervision quantitatively present significant challenges to generating conclusive, generalizable evidence.

3.3 Illustrative primary research articles

We selected nine articles to highlight diverse research on training and supervision from a health policy and systems perspective, highlighting different methodologies and country contexts. The selected articles include descriptive studies describing implementation and context, studies that measured the influence or effects of training and supervision, studies that explain training and supervision initiatives, and studies that give voice to the health managers and workers involved. These articles were selected from a pool collated from a doctoral seminar at the Johns Hopkins School of Public Health, a crowdsourcing exercise supported by Health Systems Global and subsequent searches using the bibliography of key articles and on relevant databases and search engines (PubMed, Google Scholar). The main criteria used to select the articles included diversity in region, cadre and methods, as well as the quality of the studies based on standard guidelines.

The first three articles provide an in-depth understanding of implementing training and supervision, whether in Zimbabwe (Tavrow et al., 2002), leading to success in Egypt (Ruck and Darwish, 1991) or rejection in an unnamed east African country (Gladwin et al., 2002). We then provide examples of testing the effects of training and supervision in Benin (Rowe et al., 2009) and in Ghana (Frimpong et al., 2011). Two health policy and systems approaches to understanding training and supervision are highlighted: a realist evaluation in India (Prashanth et al., 2014) and a participatory action intervention in multiple countries (Onyango-Ouma et al., 2001). We close with two studies that highlight the perspective of health workers and managers in Malawi and the United Republic of Tanzania (Bradley et al. 2013) and in Guatemala (Hernández et al. 2015).
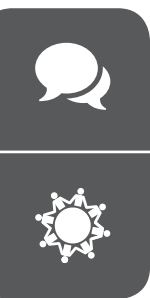
Ruck NF, Darwish OA (1991). Motivating health workers through nutrition training: an example from Egypt. Health Policy Plan. 6(2):130–140

Health workers	Multiple public sector facility based health workers
Geographical area	Egypt
Research methods	Case study
Research inference	Explanatory/Emancipatory

This is a case study of a collaborative training project for establishing the roles of primary health centre staff in nutrition and training them to fulfil these roles. In the first phase, lasting three years, a pilot intervention identified roles for health workers in nutrition drawing from multiple stakeholder engagement, including health service managers, health workers and community representatives. In the second phase, lasting four years, the activities were extended in a wider geographical area after incorporating lessons from the pilot. The case study offers a detailed description of the intervention process, appreciating the role of local context, multiple stakeholder involvement, and the rigour of implementation needed to study the effects of training programmes. The study seeks to explain the various health services and population outcomes in relation to the training and other support offered. Role clarity and supervision in improving the motivation of health workers (and hence possibly improving health worker performance) is identified as the possible driver of the intervention. The involvement of multiple levels of the health system, starting from the federal level and moving downwards, was crucial to the outcomes. The study directly links health worker motivation and training and situates the possible change from training within a given health service context and its integration into health system management structures.

Gladwin J, et al. (2002). Rejection of an innovation: health information management training materials in east Africa. Health Policy Plan. 17(4):354–361

Health workers	Public sector primary health care information system designers and users
Geographical area	East African country
Research methods	Qualitative: ethnographic case study
Research inference	Explanatory

There are few published studies that systematically document and analyse failures (in terms of a programme or project objectives not being met). This study is an interesting example of analysing responses of systems to innovations drawing from a case where externally developed training materials were used to strengthen management of primary health centres by improving the informational basis for decision-making using management information system tools for primary health care managers, in an unnamed east African country setting. The case study analyses the reception of the innovation and describes the complex and decentralizing organizational setting that shapes the outcomes of the intervention. The designer/implementer perspective of the intervention as a management training package contrasts with that of several recipients of the intervention, who saw it primarily as an organizational change tool. Despite engaging various stakeholders working at different levels in the health system (as in many successful training programmes) and drawing from a good evidence base for the training materials in other settings, the authors describe and explain the possible reasons for rejection of the innovation by invoking explanations at the level of the alignments (or lack of) between the training programme strategy, the individuals and roles within the system where it was implemented, and existing management styles, organizational structures and processes.

Health workers	Public sector primary health care facility managers
Geographical area	India
Research methods	Mixed: realist evaluation using qualitative data (interviews and observation notes) and quantitative measures of commitment, self-efficacy and supervision style
Research inference	Explanatory

This paper is an evaluation of a capacity-building programme for local health system managers in a southern Indian district. The acknowledgement of health workers' agency in steering the change agenda introduced through training and capacity-building programmes is considered an important starting point for the evaluation. The authors also assess capacity across individuals, teams and local health systems in line with a systems approach (see other papers in the series on advancing the application of systems thinking in health, summarized in Adam (2014), and other papers acknowledging the need to apply multilevel analysis of capacity in health policy and systems research, e.g. Lê et al., 2014). The study uses the realist evaluation approach wherein the focus is on developing an explanation for why the capacity-building intervention seemed to have worked in some settings and not in others. The authors describe the different outcomes at the subdistrict level and use organizational frameworks to theorize on the mixed successes or failures in relation to the ambitious nature of outputs and outcomes of capacity-building programmes, which often seek change at the systemic level (beyond individuals and teams). By critically comparing cases (within their study) where the intervention worked and others where it did not, and analysing this in relation to the particular individual and organizational attributes in these cases, the authors develop an explanation of how training programmes could contribute to organizational change in the particular local health system context in southern India.

Health workers	Public sector primary health care health workers
Geographical area	Argentina, Nigeria, Ghana, United Republic of Tanzania, Kenya
Research methods	Mixed: pre & post test, IDIs, group interviews, FGDs, time use, observation, records review
Research inference	Explanatory/Emancipatory/Influence

This paper is an evaluation of a health worker training (and other supports) programme from several settings (six settings in four African countries and one setting in Latin America). The training was delivered in a participatory workshop mode called Health Workers for Change. Given the diversity of country settings, the authors began with a common core protocol at a workshop to design a pre-test/post-test study, and then met again at the data analysis stage to learn from each other's experiences, identify commonalities and disagreements, and consolidate their analysis. The Health Workers for Change study conceptualized change at three levels (community, facility, system) and used a range of data-collection tools (including quantitative survey tools and qualitative observational tools, interviews and focus groups) to

assess change. The authors triangulated and explored contradictions that arose from data generated by these different tools to improve confidence and deepen the results. The authors discuss how health facility staff likely experienced the ongoing data collection as part of the intervention itself, resulting in the research influencing the intervention's outcomes. The study stands out for the reflexivity of the researchers in implementing a common protocol across diverse country settings in a participatory way and the discussion on the methodological challenges involved.

Other interesting papers that detail pedagogical and technological innovations on training health workers include those by Chávez et al. (2006), Greenhalgh et al. (2004) and Strasser and Neusy (2010). Additionally, Yousafzai et al. (2014) provide a synthesis of several studies of capacity development of health workers to build partnerships with families as a part of care provision. Another interesting paper is by Downing et al. (2011), which maps various studies, largely from Australian and other high-income settings, on cultural sensitivity training for health workers on indigenous health.

Rowe AK, et al. (2009). A multifaceted intervention to improve health worker adherence to integrated management of childhood illness guidelines in Benin. Am J Publ Health. 99(5):837–846

Health workers	Public sector facility based health workers
Geographical area	Benin
Research methods	Quantitative: observation and re-examination of consultations, structured interviews with health workers and caretakers, facility assessments
Research inference	Influence

This paper describes a pre-test/post-test study, with randomized intervention and control groups, to assess the impact of integrated management of childhood illness training and a package of supports (job aids, non-financial incentives, supervision) on facility-based health workers in Benin. The study is notable for its robust study design (randomized control trial with three study arms) and longitudinal data collection involving four health facility surveys over six years (1999–2004). Few studies have followed up over such a long period after initial training. The data collection methods to assess care quality were rigorous and diverse, including silent observation of consultations, gold standard re-examination, exit interviews with caretakers, health facility assessments and health worker interviews. The paper also stands out for its policy-relevant critique of the utility of training programmes when not accompanied by well-designed supports. The authors note issues brought about by initially weak implementation and the need for researchers to intervene and share findings with the programme implementers. The discussion of these real-world limitations adds to the paper's value, and the study stands out as a robust example of implementation research.

A closely related study to this in both its approach and question is that by Huicho et al. (2008). For other examples of randomized control trials that asses the influence of training or supervision on health workforce outcomes, see Das et al. (2014), Djibuti et al. (2009) and Singh et al. (2016). An interesting application of this methodology to assess the role of training informal care providers in India is found in Das et al. (2016). Using mystery patients and blinding of trainers and informal providers, the authors found that a multi-topic medical training increased correct case management for three selected conditions but did not affect prescription practice.
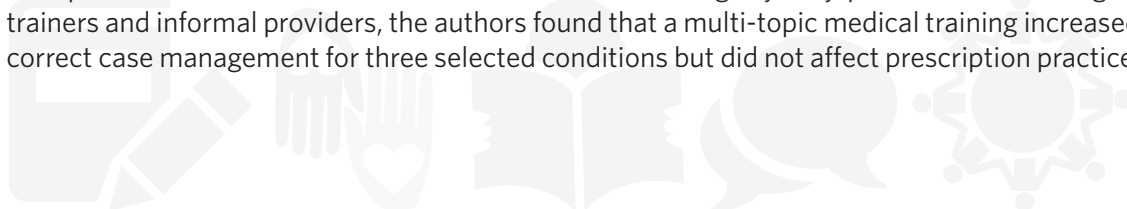
Tavrow P, et al. (2002). Measuring the quality of supervisor–provider interactions in health care facilities in Zimbabwe. Int J Qual Health Care. 14(Suppl. 1):57–66

Health workers	Multiple public sector supervisors
Geographical area	Zimbabwe
Research methods	Mixed: qualitative evaluation criteria development, quantitative ratings and time use
Research inference	Descriptive/Emancipatory

This study was one of the earliest to describe and assess in detail what happens during supervision interactions. The study explores the supervision of nurses and midwives in primary health facilities in Zimbabwe, dissecting in detail the activities that supervisors are expected to undertake, and the extent to which they actually do. Given the lack of national supervisory guidelines in Zimbabwe, the authors worked with past district-level supervisors to develop their own tools to examine supervisor–provider interactions, identifying 11 categories of supervision practice. They collected data in multiple ways: by audiotaping supervisory visits, taking minute-by-minute notes on supervisors' activities, conducting individual interviews with supervisors and supervisees, observing and ranking supervisor interactions with a structured guide, and reviewing supervisors' checklists. The authors measured the time supervisors spent performing each practice, and created scores and rankings for the quality with which they undertook these practices. The results give a comprehensive scan of what supervisors do and how well they do it, offering insight into how to improve supervision and providing a baseline from which to measure future progress.

Bradley S, et al. (2013). District health managers' perceptions of supervision in Malawi and Tanzania. Hum Resour Health. 11:43

Health workers	Public sector district and council supervisors
Geographical area	Malawi and United Republic of Tanzania
Research methods	Qualitative: semi-structured interviews
Research inference	Explanatory

Like Tavrow et al.'s (2002) study, this study sought to characterize the nature and quality of supervision, although in this case from the perspective of supervisors. The authors undertook semistructured, in-depth interviews in Malawi and the United Republic of Tanzania with district health staff responsible for supervising mid-level nurses and midwives in health facilities. Five major thematic areas emerged: "the current supervision paradigm, why supervision is important, supervision in practice, assessing performance, and challenges to implementation". As in Tavrow et al.'s (2002) study, Bradley et al. found that while supervisors articulated a need for supportive supervision involving meaningful personal interaction, the reality was often one of detached inspection and assessment.

The methodology used by Bradley et al. is not revolutionary but highlights the power of qualitative research to understand the attitudes and ethos of respondents charged with carrying out an activity, such as supervision. Hearing the views of supervisors revealed the challenges and barriers felt by supervisors, and highlighted ideas for change from the participants. The multiple study sites enabled comparison across countries. Similar methods were used in a study on training (Hawe et al., 1998), in which the authors use focus group discussions to synthesize health worker perspectives on capacity-building and adopt clear operational definitions for training-related terms, which in other studies can be jargon-laden and a cause for confusion.
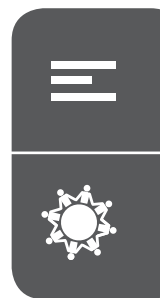
Hernández AR, et al. (2015). Integrating views on support for mid-level health worker performance: a concept mapping study with regional health system actors in rural Guatemala. Int J Equity Health. 14(1):91

Health workers	Public sector regional and district managers, primary and secondary health care workers
Geographical area	Guatemala
Research methods	Concept mapping (mixed methods)
Research inference	Exploratory/Emancipatory

This study used another methodology to examine participants' perspectives on health worker supports: concept mapping, a structured data collection and analytical technique designed to "integrate the input of multiple stakeholder groups, and produce maps that depict the composite thinking of organizations or systems" (p. 2). The goal of the study was to develop a normative model of supervision – not what is happening, but what should happen – and to use the results to identify future priorities. Regional and district managers (supervisors) and primary and secondary health-care workers (supervisees) in rural Guatemala were asked to name actions that "could be taken or are being taken" to support nursing staff, and were later asked to sort and rank the suggested actions. The rankings were analysed using statistical methods and represented in maps that were further interpreted with the participation of respondents. The study is remarkable for using an otherwise complex methodology to develop concrete, actionable results that represent a consensus of multiple stakeholders. Rarely do studies integrate the views of stakeholders at different levels of the health system, or examine the social dynamics between those stakeholders. Although concept-mapping can be resource-intensive and requires qualitative and quantitative expertise, it has great potential for extracting consensus idea for health system improvement.

Frimpong JA, et al. (2011). Does supervision improve health worker productivity? Evidence from the Upper East Region of Ghana. Trop Med Int Health. 16(10):1225–1233

Health workers	Public sector community midwives, nurses and extension workers
Geographical area	Ghana
Research methods	Quantitative: Time-use and provider survey
Research inference	Influence

Many studies of supervision seek to characterize supervision itself, implicitly assuming that supervision improves health worker performance; few studies have quantitatively measured the effect of supervision on performance. This paper describes a time-use study in Ghana to investigate the relationship between supervision and the productivity of midwives, community health officers and health extension workers. Using direct observation to collect quantitative data, and a logistic regression model for statistical analysis, the authors concluded that "supportive supervision was associated with increased productivity" (p. 1225). The study highlights the challenges associated with measuring the influence of supervision. One challenge is how to obtain a meaningful measure of health worker performance that can be used for statistical analysis. This study takes "productivity" as its outcome measure and used direct observations of provider interaction to measure the time spent by health workers on patient care. Another challenge is how to quantify supervision itself. This study used two binary measures: first, whether the health worker was visited by a supervisor in the past month; and second, whether the health worker self-reported feeling "supported" by the supervisor. Other studies (such as those above) have used more nuanced measures for the quantity and quality of supervision,

although not, as in this case, to investigate the effect of supervision on performance. For other examples of studies that examine the influence of supervision on health worker performance, see Das et al. (2014), Singh et al. (2016), Stanback et al. (2007) and Uys et al. (2005).

3.4 Research challenges, gaps and future directions

Training and supervision are often components of a larger support package for health workers to improve their performance or motivation. Disentangling the specific effect of training and supervision on outcomes of interest is challenging both methodologically and operationally. A specific challenge for quantitative assessments of the effect of training or supervision is choosing which measures to use for training or supervision. Both the quantity and quality of training and supervision are potential factors, as are other factors, such as the cultural and hierarchical relationship of supervisors to health workers and the community and organizational environment. Isolating the effect of training or supervision, and measuring its various attributes, requires extensive data collection and analytical effort. Likewise, as explored in Chapter 4, the outcome of health worker performance is multifaceted and difficult to characterize as a dependent variable. Single indicators of performance are likely too simplistic, and more nuanced, multidimensional measures require resource-intensive methods such as observation and re-examination.

Another challenge is situating training and supervision within their health system context. Many articles that discuss training and supervision are beyond mainstream public health or health systems literature and are found in discipline-specific journals. They often do not have sufficient analysis beyond very specific contexts, and more importantly they lack a health systems lens in terms of the question asked or the context under consideration (for example, literature in nursing and medical education journals, and studies in experiential learning literature).

We must also acknowledge the difficulty in standardizing training and supervision approaches and tools, given the variety of settings where they are implemented. We need to move beyond generic or globally defined tools and approaches towards greater focus on context-specific approaches, and to more participatory approaches that improve health worker ownership over the change agenda. The authors of several of the papers in this chapter developed their own tools for assessment, with criteria and benchmarks specific to the programmes they studied. The increasing use of implementation research and participatory action research approaches may be able to address some of these challenges. We should encourage comparative work that builds on context specificity rather than seeing this as a limitation.

There is also a need to further understand the perspectives of trainers and supervisors, and those of the health workers they are training and supervising. The increasing focus on building capacity within the health researcher community to undertake more long-term participatory action research with health workers, and the increased focus of research funders to involve implementers in research, could help in addressing this gap.

To address any of the above gaps, we need methodological innovation: advances in information and communications technology to improve the accuracy and feasibility of measuring training and supervision; participatory action research to promote the ownership and views of implementers and health workers; and triangulation and synthesis of multiple data sources to ensure a system-wide understanding. Methodologies drawn from research in organizational sciences and psychology could help to improve our understanding of how training, supervision and other supports could achieve organizational change. The application of approaches and theories from these fields into HRH will require collaboration across researchers and interdisciplinary engagement.

References

Adam T (2014). Advancing the application of systems thinking in health. Health Res Policy Syst. 12:50. doi:10.1186/1478-4505-12-50.

Allotey PA, et al. (2011). Sexual and reproductive health and rights in public health education. Reprod Health Matt. 19(38):56–68. doi:10.1016/S0968-8080(11)38577-1.

Bosch-Capblanch X, Liaqat S, Garner P (2011). Managerial supervision to improve primary health care in low- and middle-income countries. Cochrane Database Syst Rev. (9):CD006413. doi:10.1002/14651858.CD006413.pub2.

Bradley S, et al. (2013). District health managers' perceptions of supervision in Malawi and Tanzania. Hum Resour Health. 11:43. doi:10.1186/1478-4491-11-43.

Bratt MM, Baernholdt M, Pruszynski J (2014). Are rural and urban newly licensed nurses different? A longitudinal study of a nurse residency programme. J Nurs Manag. 22(6):779–791. doi:10.1111/j.1365-2834.2012.01483.x.

Buchan J (2004). What difference does ("good") HRM make? Hum Resour Health. 2(6):1–7.

Burns P, Poster EC (2008). Competency development in new registered nurse graduates: closing the gap between education and practice. J Contin Educ Nurs. 39(2):67–73.

Callaghan-Koru JA, et al. (2013). Health systems supports for community case management of childhood illness: lessons from an assessment of early implementation in Malawi. BMC Health Serv Res. 13(1):55. doi:10.1186/1472-6963-13-55.

Chávez V, Turalba R-AN, Malik S (2006). Teaching public health through a pedagogy of collegiality. Am J Publ Health. 96(7):1175–1180. doi:10.2105/AJPH.2005.062950.

Clements CJ, Streefland PH, Malau C (2007). Supervision in primary health care: can it be carried out effectively in developing countries? Curr Drug Safety. 2(1):19–23.

Cockerham J, et al. (2011). Supporting newly hired nurses: a program to increase knowledge and confidence while fostering relationships among the team. Nurs Forum. 46(4):231–239. doi:10.1111/j.1744-6198.2011.00236.x.

Daniels K, et al. (2010). Supervision of community peer counsellors for infant feeding in South Africa: an exploratory qualitative study. Hum Resour Health. 8:6. doi:10.1186/1478-4491-8-6.

Das A, et al. (2014). Strengthening malaria service delivery through supportive supervision and community mobilization in an endemic Indian setting: an evaluation of nested delivery models. Malaria J. 13(1):482. doi:10.1186/1475-2875-13-482.

Das J, et al. (2016). The impact of training informal health care providers in India: a randomized controlled trial. Science. 354(6308):aaf7384. doi:10.1126/science.aaf7384.

Dieleman M, Gerretsen B, van der Wilt GJ (2009). Human resource management interventions to improve health workers' performance in low and middle income countries: a realist review. Health Res Policy Syst. 7(1):7. doi:10.1186/1478-4505-7-7.

Djibuti M, et al. (2009). The role of supportive supervision on immunization program outcome: a randomized field trial from Georgia. BMC Int Health Hum Rights. 9(Suppl. 1):S11. doi:10.1186/1472-698X-9-S1-S11.

Downing R, Kowal E, Paradies Y (2011). Indigenous cultural training for health workers in Australia. Int J Qual Health Care. 23(3):247–257. doi:10.1093/intqhc/mzr008.

Fonn S (2003). Not only what you do, but how you do it: working with health care practitioners on gender equality. Women Health. 37(4):105–120. doi:10.1300/J013v37n04_08.

Frenk J, et al. (2010). Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. Lancet. 376(9756):1923–1958. doi:10.1016/S0140-6736(10)61854-5.

Frimpong JA, et al. (2011). Does supervision improve health worker productivity? Evidence from the Upper East Region of Ghana. Trop Med Int Health. 16(10):1225–1233. doi:10.1111/j.1365-3156.2011.02824.x.

Gladwin J, Dixon RA, Wilson TD (2002). Rejection of an innovation: health information management training materials in east Africa. Health Policy Plan. 17(4):354–361.

Greenhalgh T, et al. (2004). Diffusion of innovations in health service organizations: a systematic literature review. Milbank Q. 82(4):581–629.

Hawe P, et al. (1998). Working invisibly: health workers talk about capacity-building in health promotion. Health Promot Int. 13(4), 285–295. doi:10.1093/heapro/13.4.285.

Hernández AR, et al. (2015). Integrating views on support for mid-level health worker performance: a concept mapping study with regional health system actors in rural Guatemala. Int J Equity Health. 14(1):91. doi:10.1186/s12939-015-0225-4.
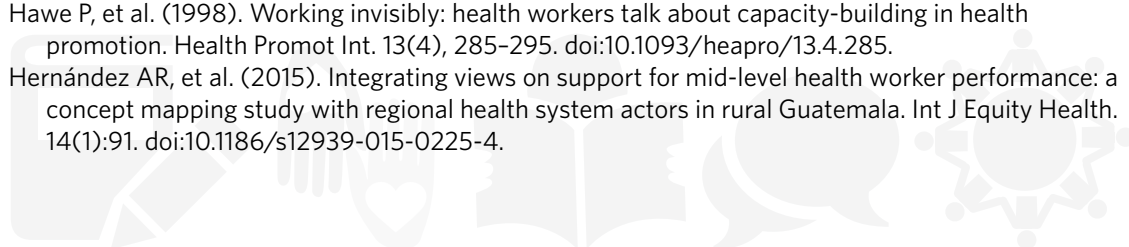
Huicho L, et al. (2008). How much does quality of child care vary between health workers with differing durations of training? An observational multicountry study. Lancet. 372(9642):910–916. doi:10.1016/S0140-6736(08)61401-4.

Kilminster SM, Jolly BC (2000). Effective supervision in clinical practice settings: a literature review. Med Educ. 34(10):827–840. doi:10.1046/j.1365-2923.2000.00758.x.

Kirkpatrick DL, Kirkpatrick JD. (1998). Evaluating training programmes: the four levels, 2nd edn. San Francisco, CA: Berrett-Koehler Publishers.

LaFond AK, Brown L, Macintyre K (2002). Mapping capacity in the health sector: a conceptual framework. Int J Health Plann Manage. 17(1):3–22. doi:10.1002/hpm.649.

Lê G, et al. (2014). A new methodology for assessing health policy and systems research and analysis capacity in African universities. Health Res Policy Syst. 12(1):59. doi:10.1186/1478-4505-12-59.

Marchal B, et al. (2014). Building on the EGIPPS performance assessment: the multipolar framework as a heuristic to tackle the complexity of performance of public service oriented health care organisations. BMC Publ Health. 14(1):378. doi:10.1186/1471-2458-14-378.

Marquez L, Kean L (2002). Making supervision supportive and sustainable: new approaches to old problems. Washington, DC: United States Agency for International Development.

Mery G, et al. (2017). Evaluating investment in quality improvement capacity building: a systematic review. BMJ Open. 7(2):e012431. doi:10.1136/bmjopen-2016-012431.

Milen A (2001). What do we know about capacity building? An overview of existing knowledge and good practice. Geneva: World Health Organization (http://apps.who.int/iris/handle/10665/67394).

Moran AM, et al. (2014). Supervision, support and mentoring interventions for health practitioners in rural and remote contexts: an integrative review and thematic synthesis of the literature to identify mechanisms for successful outcomes. Hum Resour Health. 12(1):10. doi:10.1186/1478-4491-12-10.

Nel H (2014). The evaluation of a training programme based on Paulo Freire's views on community practice: a South African example. Soc Work. 50(2):193–217. doi:10.15270/50-2-395.

O'Malley G, Perdue T, Petracca F (2013). A framework for outcome-level evaluation of in-service training of health care workers. Hum Resour Health. 11(1):50. doi:10.1186/1478-4491-11-50.

Onyango-Ouma W, et al. (2001). An evaluation of Health Workers for Change in seven settings: a useful management and health system development tool. Health Policy Plan. 16(Suppl. 1):24–32. doi:10.1093/heapol/16.suppl.

Potter C, Brough R (2004). Systemic capacity building: a hierarchy of needs. Health Policy Plan. 19(5):336–345. doi:10.1093/heapol/czh038.

Prashanth NS, et al. (2012). How does capacity building of health managers work? A realist evaluation study protocol. BMJ Open. 2(2):e000882. doi:10.1136/bmjopen-2012-000882.

Prashanth NS, et al. (2014). Advancing the application of systems thinking in health: a realist evaluation of a capacity building programme for district managers in Tumkur, India. Health Res Policy Syst. 12(1):42. doi:10.1186/1478-4505-12-42.

Roberton T, et al. (2015). Initial experiences and innovations in supervising community health workers for maternal, newborn, and child health in Morogoro region, Tanzania. Hum Resour Health. 13(1):19. doi:10.1186/s12960-015-0010-x.

Rowe AK, et al. (2009). A multifaceted intervention to improve health worker adherence to integrated management of childhood illness guidelines in Benin. Am J Publ Health. 99(5):837–846. doi:10.2105/AJPH.2008.134411.

Ruck NR, Darwish OA (1991). Motivating health workers through nutrition training: an example from Egypt. Health Policy Plan. 6(2):130–140. doi:10.1093/heapol/6.2.130.

Salas E, Cannon-Bowers JA (2001). The science of training: a decade of progress. Ann Rev Psychol. 52(1):471–499. doi:10.1146/annurev.psych.52.1.471.

Salas E, et al. (2012). The science of training and development in organizations: what matters in practice. Psychol Sci Public Interest. 13(2):74–101. doi:10.1177/1529100612436661.

Scott K, Shanker S (2010). Tying their hands? Institutional obstacles to the success of the ASHA community health worker programme in rural north India. AIDS Care. 22(Suppl. 2):1606–1612. doi:10.1080/09540121.2010.507751.

Simmonds S (1989). Human resource development: the management, planning and training of health personnel. Health Policy Plan. 4(3):187–196. doi:10.1093/heapol/4.3.187.

Singh D, et al. (2016). Supportive supervision for volunteers to deliver reproductive health education: a cluster randomized trial. Reprod Health. 13(1):126. doi:10.1186/s12978-016-0244-7.

Stanback J, et al. (2007). Improving adherence to family planning guidelines in Kenya: an experiment. Int J Qual Health Care. 19(2):68–73. doi:10.1093/intqhc/mzl072.

Strasser R, Neusy A-J (2010). Context counts: training health workers in and for rural and remote areas. Bull World Health Org. 88(10):777–782. doi:10.2471/BLT.09.072462.

Suh S, Moreira P, Ly M (2007). Improving quality of reproductive health care in Senegal through formative supervision: results from four districts. Hum Resour Health. 5:26. doi:10.1186/1478-4491-5-26.

Tavrow P, Kim Y-M, Malianga L (2002). Measuring the quality of supervisor-provider interactions in health care facilities in Zimbabwe. Int J Qual Health Care. 14(Suppl. 1):57–66.

Uys LR, et al. (2005). The effect of two models of supervision on selected outcomes. J Nurs Scholarsh. 37(3):282–288. doi:10.1111/j.1547-5069.2005.00048.x.

Yousafzai AK, et al. (2014). Capacity building in the health sector to improve care for child nutrition and development. Ann N Y Acad Sci. 1308(1):172–182. doi:10.1111/nyas.12322.

Chapter 4.

Health worker performance, practice and improvement

Stephanie M. Topp

4.1 Defining the chapter

Health worker performance is a complex and contested concept. The World Health Report defines health worker performance as a composite function of health worker availability, competence, productivity and responsiveness (World Health Organization (WHO), 2006). A well-performing health workforce is thus one that "works in ways that are responsive, fair and efficient to achieve the best health outcomes possible, given the available resources and circumstances" (WHO, 2006, p. 67). This inclusive definition factors in both technical and relational aspects of health worker performance and forms a touchstone for this chapter's examination of different approaches to performance measurement and evaluation. Nonetheless, this chapter clearly distinguishes health worker performance from the related concept of quality, viewing quality of care as the product of concurrent and synergistic actions to ensure effective, efficient, equitable, patient-centred and timely care (Institute of Medicine, 2001). Health worker performance is thus a critical and necessary – but not sufficient or always dominant – component of overall quality of care (Table 4.1).

Although a large body of performance literature focuses on clinicians' (mainly doctors') performance in high-income settings (Chan et al., 2017; Chauhan et al., 2017), this chapter focuses on the different epistemologies and methodologies that shape health worker performance research in low- and middle-income countries. In particular, it explores the differences between research that aims to quantify and map trends in health worker performance (labelled here as performance evaluation literature); research that aims to explore and expound on health worker decisions, actions and interactions in a given context (labelled here as performance as practice literature); and research that aims to examine strategies for improving health worker performance (labelled here as performance improvement literature). While recognizing that motivation is both a driver and a consequence of health worker performance, this chapter does not deal directly with motivation as a theme, since it is afforded a deeper exploration in Chapter 5.

Table 4.1 Key definitions for performance, practice and quality of care

Performance	Composite of an individual's or team's degree of competency, productivity and responsiveness (WHO, 2006)
Performance as practice	Contextualized decisions, behaviours and relationships that influence human resources for health performance and overall quality of care
Quality of care	Capacity of a health system to deliver safe, effective, patient-centred care in an efficient, timely and equitable manner (Institute of Medicine, 2001)

4.2 Background on performance and practice

The literature on health worker performance is broad, drawing on disciplines and associated methodologies that include clinical sciences, health economics, management sciences, anthropology and policy analysis (Rowe et al., 2005). Such diversity is warranted given the different geographies, systems, cultures and polities within which human resources for health (HRH) operate globally. Table 4.2 provides a non-exclusive summary of some of the major bodies of performance literature and the constructs and indicators used. Bodies of work are grouped broadly according to a "performance evaluation", "performance as practice" or "performance improvement" focus.

Table 4.2 Performance literature groupings adapted from Dieleman et al. (2006)

Literature grouping	Construct	Examples of indicators/concepts	Key disciplines	Exemplar references
Performance evaluation	Availability	Waiting time, staff ratios, overtime, staff turnover, absenteeism/ occupancy rate	Management sciences, health economics	Lindelöw et al. (2003) McPake et al. (2014) Tani et al. (2016)
	Competencies	Knowledge, training	Quality improvement, public health epidemiology	Das and Sohnesen (2007)
	Adherence	Adherence to clinical or practice-related (e.g. communication) rules or standards; proxies include readmission rates, case fatalities, measures of "effort" (e.g. patient satisfaction, non-task performance)	Public health and clinical sciences, health economics	Boquiren et al. (2015) Jayasuriya et al. (2014) Leonard and Masatu (2005) Leonard and Masatu (2010) Namuyinga et al. (2017)
	Productivity	Patient contacts per worker per day, cost–effectiveness, pro-social organizational behaviour	Health economics	Frimpong et al. (2011)

Table 4.2 Performance literature groupings adapted from Dieleman et al. (2006) continued

Literature grouping	Construct	Examples of indicators/concepts	Key disciplines	Exemplar references
Performance as practice	Social and organizational context	Provider identity, social norms, practical norms	Political sciences, social psychology, anthropology	Campbell et al. (2015) Hahonou (2015) Jewkes et al. (1998) Razee et al. (2012)
	Governance	Accountability, posting and transfer, power dynamics, resilience	Governance theory, sociology, management sciences	George et al. (2016) Gilson et al. (2017) Hernández et al. (2015) Purohit et al. (2016) Tavrow et al. (2002) Topp et al. (2015)
	Responsiveness (patient–provider interaction)	Respect, disrespect and abuse, trust, patient-centredness, cultural competency	Political sciences, social psychology, medical anthropology, medical sociology, health systems research	Amroussia et al. (2017) Gilson et al. (2005) Kendall and Barnett (2015)

Literature grouping	Construct	Examples of indicators/concepts	Key disciplines	Exemplar references
Performance improvement	Empowerment	Collective action, organizational capacities, transformed institutions, open governance, equitable community conditions	Participatory action research	Bradley et al. (2002) Hawe et al. (1998) Lehmann and Gilson (2015) Peacock et al. (2011)
	Quality improvement	Plan–do–study–act cycles, Six Sigma, Lean Thinking, continuous quality improvement	Educational sciences, management sciences	Rowe et al. (2010)
	Performance management	Training and supervision, regulatory space, decision space, ability–motivation–opportunity	Human resource management	Das et al. (2016) Frimpong et al. (2011)
	Incentives and remuneration	Performance-based financing	Health economics, management sciences	Shen et al. (2017) Witter et al. (2011)
	Social accountability	Voice, enforceability	Political sciences, development studies	Lodenstein et al. (2013
	Social franchising	Service contracts, common brand, quality control	Management sciences	Koehlmoos et al. (2009)

4.2.1 Performance evaluation

Performance evaluation research mixes descriptive research and economic theory to quantify aspects of HRH availability, competency, adherence and productivity (Schleffer, 2016). While acknowledging the potential influence of structural conditions on health worker actions, performance evaluation literature typically focuses on individual-level determinants such as clinical competence, adherence to guidelines or demonstration of pro-social values, and the interventions (behavioural, education or material) that might improve these individual health provider factors. Notable examples of this approach have been carried out in India (Das and Hammer, 2004), Paraguay (Das and Sohnesen, 2007) and the United Republic of Tanzania (Leonard and Masatu, 2005). With a few exceptions, performance evaluation research is conducted within a positivist knowledge paradigm.

4.2.2 Performance as practice

Research that views performance as practice has pushed the boundaries of our understanding of performance by drawing on theories of governance, anthropology, sociology and management sciences to explore the ways in which proximate and broader social and health system contexts influence health workers' practices. Invoking a traditional sociological focus on the intersecting roles of structure and agency, for example, one branch of this literature explores the way in which vertical and horizontal governance arrangements intersect with micro-level power dynamics to influence frontline health workers' decisions and practices in different settings (Isosaari, 2011; Topp et al., 2015). Informed by anthropological traditions, another facet of enquiry examines the intersection between health workers' and patients' social identity and health workers' behaviours (Campbell et al., 2015; Gross et al., 2012). A further contribution of the performance as practice literature has been to expand performance evaluation beyond the traditional focus on nurses and physicians, to include community health workers, district managers and many other non-clinical cadres (Vareilles et al., 2017), and to flag the importance of understanding health workers' performance from patients' perspectives, invoking concepts of "patient satisfaction" (Boquiren et al., 2015), "cultural competence" (Kendall and Barnett, 2015) and "person-centred care" (Mead and Bower, 2000; Scholl et al., 2014), among others. This latter body of work has been instrumental in uncovering widespread experiences of disrespect and abuse among women in low- and middle-income countries and in highlighting the intersection between poverty, gender norms and social stigmas and the way these shape health workers' responses to female clients (Amroussia et al., 2017; Freedman and Kruk, 2014; Kim and Motsei, 2002).

Although highly heterogeneous, research on performance as practice is typically conducted from a relativist or critical realist perspective, enabling researchers to invoke varied epistemologies and methodologies to generate important knowledge that takes account of different levels and types of performance and of patient expectations and experiences regarding those practices. This approach does not preclude more traditional and quantitative approaches to performance evaluation, but it does help to promote a deeper understanding of performance as the product of a range of decisions and actions, networks and relationships that influence the delivery of services.

4.2.3 Performance improvement

A third grouping of performance literature, albeit diffuse, focuses on performance improvement. Some of the most frequently used performance improvement strategies include supportive supervision, mentorship and tools and aids (Vasan et al., 2017). This section highlights five types of performance improvement literature with diverse epistemological and philosophical bases.

At one end of the spectrum are empowerment-based performance improvement approaches, of which participatory action research is a key example. Participatory action research seeks to transform the role of people usually participating as the subjects of research (such as health care providers) and involves them instead as active researchers in an agenda for change. Participatory action research involves developing, implementing and reflecting on actions as part of the research and knowledge-generation process and is informed by, and rooted in, processes of social empowerment defined as "people's ability to act through collective participation, strengthening their organizational capacities, challenging power inequities and achieving outcomes on reciprocal levels" (Loewenson et al., 2014, p. 11).

At the other end of the spectrum lie various types of quality improvement (including Six Sigma, Continuous Quality Improvement and Lean Thinking) that use adaptions of the improvement cycle, involving a series of steps from data collection, problem description and diagnosis to the generation and selection of potential changes for implementation (Walshe, 2009). Most quality improvement approaches acknowledge the importance of engaging and involving frontline staff and the need for supportive leadership and organizational commitment. Compared with participatory action research, however, quality improvement adopts a more instrumental lens linked to organizational management, and consideration of what drives or motivates HRH to behave in certain ways tends to be weak.

Three other discrete and identifiable bodies of work exist on the quality improvement continuum. One is performance improvement literature that focuses on remuneration and incentives, of which performance-based financing and pay for performance are examples (Basinga et al., 2011; Kalk et al., 2010). The centre piece of performance-based financing interventions is payment based on performance, defined as "outputs verified for certain quality measures" (Renmans et al., 2017). The literature highlights a fierce debate over the potential for performance-based financing to have unintended consequences on the intrinsic motivation of HRH and, increasingly, health systems researchers argue that performance-based financing should be viewed as a package of reforms rather than just a payment mechanism for discrete (service) outputs (Renmans et al., 2017; Witter et al., 2011).

A smaller body of work focuses on social accountability, which draws on theories of governance and social psychology to promote various forms of collective action as a way to realize citizen rights (Fox, 2015). Social accountability literature suggests that HRH performance can be strengthened through a combination of social pressure and threat of public exposure or embarrassment and mechanisms to build trust and enable joint problem-solving (Berlan and Shiffman, 2012; Lodenstein et al., 2013; Molyneux et al., 2012; Schaaf et al., 2017). Although experimentation with a range of social accountability approaches is fast expanding, rigorous evaluation of the impact of social accountability interventions on the health sector or HRH performance is in its infancy.

Finally, a small body of work relates to social franchising. A social franchise is a network of private health-care providers linked through an agreement or contract to provide certain services under a common brand (the franchise). The model posits that performance of previously unregulated or poorly regulated private providers is improved via provision of training in clinical and business management practices, a contractual obligation to follow protocols and meet standards, and various mechanisms of quality oversight. To date, however, evidence of the performance-strengthening effect of social franchising – as opposed to more commonly documented improvements in service coverage and access (Aung et al., 2017; Chakraborty et al., 2016; Koehlmoos et al., 2009; Munroe et al., 2015) – remains weak (Sieverding et al., 2015).

4.3 Illustrative primary research articles

This section showcases seven articles across the three major areas of performance evaluation, performance as practice and performance improvement literature. These articles were selected from a pool collated from a doctoral seminar at the Johns Hopkins School of Public Health, a crowdsourcing exercise supported by Health Systems Global searches of relevant databases and search engines (PubMed, Scopus, Google Scholar) and subsequent searches using the bibliography of key articles.. The main criteria used to select the articles included diversity in region, cadre and methods, and the quality of the studies based on standard guidelines.
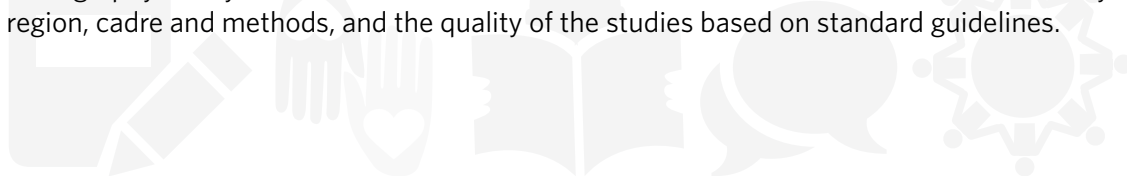
4.3.1 Performance evaluation

Leonard KL, Masatu MC (2010). Professionalism and the know–do gap: exploring intrinsic motivation among health workers in Tanzania. Health Econ. 19(12):1461–1477

Health workers	Public and private sector medical officers, assistant medical officers, clinical officers, clinical assistants and nurses
Geographical area	United Republic of Tanzania
Research methods	Quantitative: protocol checklist completion through direct clinician observation and clinician testing using vignettes
Research inference	Influence

Leonard and Masatu (2010) provide a detailed description of their use of case-study patients (vignettes) to gather data on different aspects of clinician performance in the United Republic of Tanzania. Using data gathered from repeated case-study interactions, they measure the clinical performance of different categories of clinician (for example, those operating in public versus private clinics) and explore how that performance is influenced by skills and knowledge and the practice values and goals of the individual clinicians involved. Their elegant use of regression analysis to ascertain the determinants of the know–do gap (such as the degree to which peer scrutiny influences the application of skills and knowledge), and highlighting of the role of intrinsic motivations in provider performance, underpins their assertion that multilevel performance measurement is essential for developing more sophisticated and effective performance improvement interventions. Other researchers who have used similar approaches to performance evaluation notably include Das and Hammer (2004) and Das and Sohnesen (2007). Huicho et al. (2008) provide an important example of comparing clinical performance across different cadres of health-care workers and across countries.

Jayasuriya R, Jayasinghe UW, Wang Q (2014). Health worker performance in rural health organizations in low- and middle-income countries: do organizational factors predict non-task performance? Soc Sci Med. 113:1–4

Health workers	Rural public and private health extension officers, nurses and community health workers
Geographical area	Papua New Guinea
Research methods	Quantitative: Provider survey administered during national training
Research inference	Influence

Jayasuriya et al. (2014) use survey data and multilevel analysis from a large sample of primary health workers in Papua New Guinea to examine the effects of organizational culture and climate on "non-task" behaviours (defined as behaviours not specified as service outputs, such as treating clients with respect and working effectively in a team). Incorporating concepts from organizational management and psychology, this article is unusual in its application of quantitative methodologies to measure non-task behaviours. The article demonstrates a pragmatic approach to data collection, leveraging a national competency training for a new malaria diagnosis and treatment protocol that was provided to all health workers nationally, to conduct a self-administered survey, with results collected in person by provincial-level trainers present at the training. In low- and middle-income country settings with geographically

disparate health services, pragmatic approaches such as these can generate research evidence that informs more equity-oriented reforms. The article additionally provides a strong example of the use of regression modelling to measure and test the relationship between individual factors (such as age, sex and professional background) and health-centre-level factors (for example, governmental versus church-run, or catchment population) on health workers' performance.

4.3.2 Performance as practice

Jewkes R, Abrahams N, Mvo Z (1998). Why do nurses abuse patients? Reflections from South African obstetric services. Soc Sci Med. 47(11):1781–1795

Health workers	Public sectors nurses and midwives
Geographical area	South Africa
Research methods	Qualitative: ethnographic non-participant observation, in-depth interviews, focus group discussions with women, nurses and midwives, along with historical analysis
Research inference	Exploratory

In this classic article, Jewkes et al. (1998) provide an in-depth qualitative examination of the way social factors (including gender and other power dynamics) influence South African nurses' treatment of patients. The authors showcase an approach that is historically and culturally attuned and that cuts across political, sociological and health systems issues, demonstrating the interconnectedness of factors influencing nurse (and, by implication, most HRH) behaviours and choices. The article serves as an important example of the way ethnographic methods can create space for new, unexpected findings. Acknowledging that patient abuse was not an initial theme of their research, the authors demonstrate how minimally structured interviews, focus groups and non-participant observation facilitated an in-depth exploration of the emergent theme of patient abuse. The presentation of findings according to "grounded" themes acts as a useful guide to younger researchers seeking to develop an approach to data synthesis in the absence of a broad, deep literature. This article is a forerunner of what has become a more substantial body of work documenting various aspects of disrespect and abuse by health workers in low- and middle-income countries.

Hahonou EK (2015). Juggling with the norms: informal payment and everyday governance of healthcare facilities in Niger. In: de Herdt T, Olivier de Sardan J-P, editors. Real governance and practical norms in sub-Saharan Africa: the game of the rules. London and New York: Routledge

Health workers	Public sector hospital emergency ward providers and users
Geographical area	Niger
Research methods	Qualitative: ethnography; five months participant observation
Research inference	Exploratory

This exploratory account produces "thick" descriptions of the co-production of practical norms (with perverse and protective outcomes) that guide the decisions and behaviours of health workers in a busy hospital department in Niger. The author uses ethnographic methods, embedding himself in the day-to-day routines of a large teaching hospital to develop deeper insights into the reasoning and rationales for seemingly corrupt or uncaring behaviours by health workers that frequently leave patients destitute. In so doing, Hahonou provides a nuanced explanation for health worker performance, and demonstrates the value of questioning

dominant theories or explanations of common practices. Such "thick" descriptions of the inconsistences and perceived irrationalities in health worker practices have a long history in health systems and policy research, with notable other examples including Aitken's (1994) and Justice's (1990) work in Nepal, and George's (2009) work on accountability in the Indian public health sector.

Gilson L, Palmer N, Schneider H (2005). Trust and health worker performance: exploring a conceptual framework using South African evidence. Soc Sci Med. 61(7):1418–1429

Health workers	Public and private primary health centre doctors and nurses
Geographical area	South Africa
Research methods	Mixed: Focus group discussions with younger and older women; provider open-ended interviews and self-administered questionnaires
Research inference	Exploratory

This seminal article from Gilson et al. (2005) develops a conceptual framework for exploring the intersecting role of workplace and patient–provider trust in health worker performance and service responsiveness. The article reflects on the multilayered nature of health workers' performance, which is simultaneously influenced by their trust in employers, supervisors and colleagues, and their expectations of and relationships with patients. The authors demonstrate how these multiple human relationships (collegial, supervisorial, patient–provider) are at the centre of understanding health worker and health system behaviours. Further, the use of mixed methods to build and then critique the framework in the South African setting provides an example of how to carry out exploratory research and apply the principles of qualitative validation.

4.3.3 Performance improvement

Bradley JE, et al. (2002). Participatory evaluation of reproductive health care quality in developing countries. Soc Sci Med. 55(2):269–282

Health workers	Multiple public sector facility based health workers
Geographical area	United Republic of Tanzania
Research methods	Qualitative: description of long term participatory process
Research inference	Emancipatory

Bradley et al. (2002) describe an emancipatory, participatory action research project designed to evaluate and strengthen health worker performance and service quality in the reproductive health units of Tanzanian primary health centres. The article describes a range of strategies used in a long-term participatory quality-improvement project. These strategies include defining quality of care, identifying problems in health facilities, developing locally owned solutions, and monitoring and evaluation methods. In the course of describing these strategies, the article stresses the importance of building relationships at the subnational level, which in turn enable iterative adjustments to health workers' mindsets, and evaluation approaches that support more flexible and arguably more sustainable approaches to service delivery. The authors suggest that the participatory action research approach, although slower, is more effective than more traditionally technocratic, target-oriented methods of performance improvement. The article provides one example of a useful and accessible introduction to the concept and logic of participatory action research and its relevance to HRH management and performance. A number of other excellent examples, including Peacock et al.'s (2011) exploration of how lay health workers can contribute to participatory evaluation, may be found in Loewenson et al. (2014).

Witter S, et al. (2011). Paying health workers for performance in Battagram district, Pakistan. Hum Resour Health. 9:23

Health workers	Multiple public sector facility based health workers
Geographical area	Pakistan
Research methods	Mixed: health management information system data, financial records and project documents; qualitative interviews and focus group discussions with providers and community members
Research inference	Explanatory

Witter et al. (2011) make use of a pragmatic, wide-ranging, mixed-method study to develop a rich picture of the historical and contextual contingencies surrounding a performance-based financing project in Pakistan. The authors demonstrate how performance-based financing programme theories often make "black box" assumptions about the motivational mechanisms in play; they provide an example of how other researchers might expand the parameters of traditional performance improvement evaluations to explore the multilayered and intersecting factors influencing the success (or otherwise) of similar interventions. This study, among others (e.g. Paul et al., 2014), builds on earlier important work by Ssengooba et al. (2012), which sought to challenge the assumptions of many emerging performance-based financing evaluations and to explore the reasons for variable success of performance-based financing policy and programmes.

4.4 Research challenges, gaps and future directions

Health policy and systems research (HPSR) draws on a range of disciplinary perspectives and embraces a wide range of understandings about social and political reality (Gilson, 2012). The following reflections on the methodological and definitional challenges in performance measurement and evaluation draw from the critical realist and relativist knowledge paradigms within HPSR.

Overall there is significant blurring between the concepts of "performance" and "quality" in the broader performance literature. This blurring is problematic as it places implicit responsibility for overall quality of care on (typically) frontline health workers; and yet at the individual, service or system level, quality is necessarily dependent on a range of intersecting health system functions (Hanefeld et al., 2017; Topp, 2017). Indeed, much of the literature on health worker performance focuses on the difference between whether health workers "can do" and "will do" certain tasks (for example, performance research focused on measurement of competency and adherence; see Table 4.2), often assuming the gap between the two relates primarily to individual motivation (Das et al., 2016). In fact, as discussed above, basic conditions and other important social, organizational and cultural cues necessary for health workers to be effective may be lacking (Gilson et al., 2017; Hou et al., 2016; Jaskiewicz and Tulenko, 2012).

Performance measurement provides a critical gauge for policy-makers, programmers and managers to plan and respond to. But efforts to improve health outcomes and strengthen health systems in many low- and middle-income countries still rely to a large degree on globally defined standards and indicators of health worker performance, with many studies selecting only one or two dimensions of focus (although some attempts have been made to bring together more dimensions, albeit with limited empirical data (Asabir et al., 2013)). Globally accepted indicators (such as rates of maternal or infant mortality, or numbers of births attended by skilled attendants) can and do provide important information (Mace et al., 2014; Rowe, 2013). But intentionally or unintentionally, such measures decontextualize and oversimplify aspects of health worker practice (Spangler, 2012), are punitive in approach, and

focus on negative indicators such as absenteeism. Focus on such internationally accepted indicators may also overshadow locally acknowledged need for investment in other aspects of health system operations (Storeng and Béhague, 2017). Closer regard for the ethics and cost of performance evaluation methodologies, in particular the use of mystery patients without disclosure to health workers, is also required (Rhodes and Miller, 2012).

To date, based on the search done for this Reader, self-identified health worker performance research, including health economic evaluations, has been dominated by public-sector hospital-based studies focusing on measures of clinical performance among nurses and doctors. Although some low- and middle-income country work investigates performance of health workers in the private sector (Coarasa et al., 2017; Lindelöw et al., 2003) and performance of non-clinical cadres and non-allopathic practitioners (Jaskiewicz and Tulenko, 2012; Vareilles et al., 2017), examples of such research remain less common and methodologically less evolved. Partly as a result of widespread reliance on globally accepted performance indicators, examples of theory-driven performance evaluation remain comparatively rare, with efforts to improve performance typically directed towards "'tactical" interventions – that is, interventions that target localized behaviour and decision-making among frontline health workers – rather than "strategic" actions taking place at the policy or institutional governance level (Fox, 2015). Yet, as illustrated by Gilson et al. (2005), knowledge derived from theory-driven research is important not only as a basis for more appropriate understanding of the way performance is constituted in context but also for its contribution and advancement to understanding of performance and performance improvement more broadly.

HSPR views performance as the product of contextualized decisions, behaviours and relationships. Recognizing such, this chapter has sought to highlight the importance of HSPR researchers embracing the concept of performance as practice, and investing far more in exploratory and explanatory work to improve the state of knowledge about the contexts in which health workers live and work. Improved understanding of these contexts should in turn inform the development of performance measures more sensitive to the resource-constrained realities of many low- and middle-income country service settings and to locally applicable improvement strategies (Pawson, 2013; Storeng and Béhague, 2017). The examples of participatory action research and social accountability interventions alluded to above, which often rely on longer timeframes and theory-driven design, provide two examples of such an "embedded" approach to performance evaluation and improvement – an approach that aims to produce locally meaningful indicators in the context of deeper systemic changes to health system relationships or resourcing (Bradley et al., 2002; Schaaf et al., 2017). To deliver on the promise of such methods, however, HSP researchers are challenged to place the voices of health workers, clients and patients at the centre of enquiry (Sheikh et al., 2014).

Acknowledgements

References

Aitken J-M (1994). Voices from the inside: managing health district services in Nepal. Int J Health Plann Manage. 9(4):309–340. doi:10.1002/hpm.4740090405.

Amroussia N, et al. (2017). "Is the doctor God to punish me?!" An intersectional examination of disrespectful and abusive care during childbirth against single mothers in Tunisia. Reprod Health. 14(1):32. doi:10.1186/s12978-017-0290-9.

Asabir K, et al. (2013). The performance of health workers: toward interventions in human resources for health in Ghana. Washington, DC: World Bank.

Aung T, Hom NM, Sudhinaraset M (2017). Increasing family planning in Myanmar: the role of the private sector and social franchise programs. BMC Womens Health. 17(1):46. doi:10.1186/s12978-017-0290-9.

Basinga P, et al. (2011). Effect on maternal and child health services in Rwanda of payment to primary healthcare providers for performance: an impact evaluation. Lancet. 377(9775):1421–1428. doi:10.1016/S0140-6736(11)60177-3.

Berlan D, Shiffman J (2012). Holding health providers in developing countries accountable to consumers: a synthesis of relevant scholarship. Health Policy Plan. 27(4):271–280. doi:10.1093/heapol/czr036.

Boquiren VM, et al. (2015). What do measures of patient satisfaction with the doctor tell us? Patient Educ Couns. 98(12):1465–1473. doi:10.1016/j.pec.2015.05.020.

Bradley JE, et al. (2002). Participatory evaluation of reproductive health care quality in developing countries. Soc Sci Med. 55(2):269–282. doi:10.1016/S0277-9536(01)00170-8.

Campbell C, et al. 2015. A good patient? How notions of "a good patient" affect patient–nurse relationships and ART adherence in Zimbabwe. BMC Infect Dis. 15(1):404. doi:10.1016/S0277-9536(01)00170-8.

Chakraborty NM, Mbondo M, Wanderi J (2016). Evaluating the impact of social franchising on family planning use in Kenya. J Health Popul Nutr. 35(1):19. doi:10.1186/s41043-016-0056-y.

Chan WV, et al. (2017). ACC/AHA Special Report: Clinical Practice Guideline Implementation Strategies: A Summary of Systematic Reviews by the NHLBI Implementation Science Work Group: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. J Am Coll Cardiol. 69(8):1076–1092. doi:10.1016/j.jacc.2016.11.004.

Chauhan BF, et al. (2017). Behavior change interventions and policies influencing primary healthcare professionals' practice: an overview of reviews. Implement Sci. 12(1):3. doi:10.1186/s13012-016-0538-8.

Coarasa J, et al. (2017). A systematic tale of two differing reviews: evaluating the evidence on public and private sector quality of primary care in low and middle income countries. Glob Health. 13(1):24. doi:10.1186/s12992-017-0246-4.

Das J, Hammer JS (2004). Which doctor? Combining vignettes and item response to measure doctor quality. World Bank Policy Research Working Paper no. 3301. Washington, DC: World Bank (https://ssrn.com/abstract=610346).

Das J, Sohnesen TP (2007). Variations in doctor effort: evidence from Paraguay. Health Aff (Millwood). 26(3):w324–w337. doi:10.1377/hlthaff.26.3.w324.

Das J, et al. (2016). The impact of training informal health care providers in India: a randomized controlled trial. Science. 354(6308):pii. doi:aaf7384-aaf7384.

Dieleman M, Harnmeijer JW, Royal Tropical Institute the Netherlands (2006). Improving health worker performance: in search of promising practices. evidence and information for policy. Geneva: Department of Human Resources for Health, World Health Organization.

Fox JA (2015). Social accountability: what does the evidence really say? World Dev. 72:346–361. doi:10.1016/j.worlddev.2015.03.011.

Freedman LP, Kruk ME (2014). Disrespect and abuse of women in childbirth: challenging the global quality and accountability agendas. Lancet. 384(9948):e42–e44. doi:10.1016/S0140-6736(14)60859-X.

Frimpong JA, et al. (2011). Does supervision improve health worker productivity? Evidence from the Upper East Region of Ghana. Trop Med Int Health. 16(10):1225–1233. doi:10.1111/j.1365-3156.2011.02824.x.

George A (2009). "By papers and pens, you can only do so much": views about accountability and human resource management from Indian government health administrators and workers. Int J Health Plann Manage. 24(3):205–224. doi:10.1002/hpm.986.

George AS, et al. (2016). Sparking, supporting and steering change: grounding an accountability framework with viewpoints from Nigerian routine immunization and primary health care government officials. Health Policy Plan. 31(9):1326–1332. doi:10.1093/heapol/czw057.

Gilson L, editor (2012). Health policy and systems research: a methodology reader. Geneva: World Health Organization.

Gilson L, Palmer N, Schneider H (2005). Trust and health worker performance: exploring a conceptual framework using South African evidence. Soc Sci Med. 61(7):1418–1429. doi:10.1016/j.socscimed.2004.11.062.

Gilson L, et al. (2017). Everyday resilience in district health systems: emerging insights from the front lines in Kenya and South Africa. BMJ Glob Health. 2(2):1–15. doi:10.1136/bmjgh-2016-000224.

Gross K, Pfeiffer C, Obrist B (2012). "Workhood": a useful concept for the analysis of health workers' resources? An evaluation from Tanzania. BMC Health Serv Res. 12(1):55. doi:10.1186/1472-6963-12-55.

Hahonou EK (2015). Juggling with the norms: informal payment and everyday governance in healthcare facilities Niger. In: de Herdt T, Olivier de Sardan J-P, editors. Real governance and practical norms in sub-Saharan Africa: the game of the rules. London and New York: Routledge.

Hanefeld J, Powell-Jackson T, Balabanova D (2017). Understanding and measuring quality of care: dealing with complexity. Bull World Health Organ. 95(5):368–374. doi:10.2471/BLT.16.179309.

Hawe P, et al. (1998). Working invisibly: health workers talk about capacity-building in health promotion. Health Promot Int. 13(4):285–295. doi:10.1093/heapro/13.4.285.

Hernández AR, et al. (2015). Integrating views on support for mid-level health worker performance: a concept mapping study with regional health system actors in rural Guatemala. Int J Equity Health. 14:91. doi:10.1186/s12939-015-0225-4.

Hou X, et al. (2016). What do health workers in Timor-Leste want, know and do? Findings from a national health labour market survey. Hum Resour Health. 14(1):69. doi:10.1186/s12960-016-0164-1.

Huicho L, et al. (2008). How much does quality of child care vary between health workers with differing durations of training? An observational multicountry study. Lancet. 372(9642):910–916. doi:10.1016/S0140-6736(08)61401-4

Institute of Medicine, Committee on Quality of Health Care in America (2001). Crossing the quality chasm: a new health system for the 21st century. Washington, DC: Institute of Medicine and Committee on Quality of Health Care in America.

Isosaari U (2011). Power in health care organizations: contemplations from the first-line management perspective. J Health Organ Manag. 25(4):385–399. doi:10.1108/14777261111155029.

Jaskiewicz W, Tulenko K (2012). Increasing community health worker productivity and effectiveness: a review of the influence of the work environment. Hum Resour Health. 10:38. doi:10.1186/1478-4491-10-38.

Jayasuriya R, Jayasinghe UW, Wang Q (2014). Health worker performance in rural health organizations in low- and middle-income countries: do organizational factors predict non-task performance? Soc Sci Med. 113:1–4. doi:10.1016/j.socscimed.2014.04.042.

Jewkes R, Abrahams N, Mvo Z (1998). Why do nurses abuse patients? Reflections from South African obstetric services. Soc Sci Med. 47(11):1781–1795. doi:10.1016/S0277-9536(98)00240-8.

Justice J (1990). Policies, plans and people: foreign aid and health development. Berkeley, CA: University of California Press.

Kalk A, Paul FA, Grabosch E (2010). "Paying for performance" in Rwanda: does it pay off? Trop Med Int Health. 15(2):182–190. doi:10.1111/j.1365-3156.2009.02430.x.

Kendall E, Barnett L (2015). Principles for the development of Aboriginal health interventions: culturally appropriate methods through systemic empathy. Ethn Health. 20(5):437–452. doi:10.1080/13557858.2014.921897.

Kim J, Motsei M (2002). "Women enjoy punishment": attitudes and experiences of gender-based violence among PHC nurses in rural South Africa. Soc Sci Med. 54(8):1243–1254. doi:10.1016/S0277-9536(01)00093-4.

Koehlmoos TP, et al. (2009). The effect of social franchising on access to and quality of health services in low- and middle-income countries. Cochrane Database Syst Rev. (1):CD007136. doi:10.1002/14651858.CD007136.pub2.

Lehmann U, Gilson L (2015). Action learning for health system governance: the reward and challenge of co-production. Health Policy Plan. 30(8):957–963. doi:10.1093/heapol/czu097.

Leonard KL, Masatu MC (2005). The use of direct clinician observation and vignettes for health services quality evaluation in developing countries. Soc Sci Med. 61(9):1944–1951. doi:10.1016/j.socscimed.2005.03.043.

Leonard KL, Masatu MC (2010). Professionalism and the know-do gap: exploring intrinsic motivation among health workers in Tanzania. Health Econ. 19(12):1461–1477. doi:10.1002/hec.1564.

Lindelöw M, Reinikka R, Svensson J (2003). Health care on the frontline: survey evidence on public and private providers in Uganda. Africa Region Human Development Working Paper Series no. 38. Washington, DC: World Bank.

Lodenstein E, et al. (2013). A realist synthesis of the effect of social accountability interventions on health service providers' and policymakers' responsiveness. Syst Rev. 2:98. doi:10.1186/2046-4053-2-98.

Loewenson R, et al., editors (2014). Participatory action research in health systems: a methods reader. Harare: Regional Network for Equity in Health in East and Southern Africa, Training and Research Support Centre, Alliance for Health Policy and Systems Research, World Health Organization and International Development Research Centre Canada.

Mace KE, et al. (2014). An evaluation of methods for assessing the quality of case management for inpatients with malaria in Benin. Am J Trop Med Hyg. 91(2):354–360. doi:10.4269/ajtmh.13-0389.

McPake B, Russo G, Tseng FM (2014). How do dual practitioners divide their time? The cases of three African capital cities. Soc Sci Med. 122:113–121. doi:10.1016/j.socscimed.2014.10.040.

Mead N, Bower P (2000). Patient-centredness: a conceptual framework and review of the empirical literature. Soc Sci Med. 51(7):1087–1110. doi:10.1016/S0277-9536(00)00098-8.

Molyneux S, et al. (2012). Community accountability at peripheral health facilities: a review of the empirical literature and development of a conceptual framework. Health Policy Plan. 27(7):541–554. doi:10.1093/heapol/czr083.

Munroe E, Hayes B, Taft J (2015). Private-sector social franchising to accelerate family planning access, choice, and quality: results from Marie Stopes International. Glob Health Sci Pract. 3(2):195–208. doi:10.9745/GHSP-D-15-00056.

Namuyinga RJ, et al. (2017). Health worker adherence to malaria treatment guidelines at outpatient health facilities in southern Malawi following implementation of universal access to diagnostic testing. Malar J. 16(1):40. doi:10.1186/s12936-017-1693-3.

Paul E, Sossouhounto N, Eclou DS (2014). Local stakeholders' perceptions about the introduction of performance-based financing in Benin: a case study in two health districts. Int J Health Policy Manag. 3(4):207–214. doi:10.15171/ijhpm.2014.93.

Pawson R (2013). The science of evaluation: a realist manifesto. London: Sage.

Peacock N, et al. (2011). An innovative method to involve community health workers as partners in evaluation research. Am J Publ Health. 101(12):2275–2280. doi:10.2105/AJPH.2011.300263.

Purohit B, Martineau T, Sheikh K (2016). Opening the black box of transfer systems in public sector health services in a western state in India. BMC Health Serv Res. 16(1):419. doi:10.1186/s12913-016-1675-0.

Razee H, et al. (2012). Listening to the rural health workers in Papua New Guinea: the social factors that influence their motivation to work. Soc Sci Med. 75(5):828–835. doi:10.1016/j.socscimed.2012.04.013.

Renmans D, et al. (2017). Performance-based financing: the same is different. Health Policy Plan. 32(6):860–868. doi:10.1093/heapol/czx030.

Rhodes KV, Miller FG (2012). Simulated patient studies: an ethical analysis. Milbank Q. 90(4):706–724. doi:10.1111/j.1468-0009.2012.00680.x

Rowe AK (2013). The effect of performance indicator category on estimates of intervention effectiveness. Int J Qual Health Care. 25(3):331–339. doi:10.1093/intqhc/mzt030.

Rowe AK, et al. (2005). How can we achieve and maintain high-quality performance of health workers in low-resource settings? Lancet. 366(9490):1026–1035. doi:10.1016/S0140-6736(05)67028-6.

Rowe AK, et al. (2010). The rise and fall of supervision in a project designed to strengthen supervision of integrated management of childhood illness in Benin. Health Policy Plan. 25(2):125–134. doi:10.1093/heapol/czp054.

Schaaf M, Topp SM, Ngulube M (2017). From favours to entitlements: community voice and action and health service quality in Zambia. Health Policy Plan. 32(6):847–859. doi:10.1093/heapol/czx024.

Schleffer RM (2016). Health labor market analyses in low- and middle-income countries: an evidence based approach. Washington, DC: World Bank.

Scholl I, et al. (2014). An integrative model of patient-centeredness: a systematic review and concept analysis. PLoS ONE. 9(9):e107828. doi:10.1371/journal.pone.0107828.

Sheikh K, George A, Gilson L (2014). People-centred science: strengthening the practice of health policy and systems research. Health Res Policy Syst. 12(19):1-8. doi:10.1186/1478-4505-12-19.

Shen GC, et al. (2017). Incentives to change: effects of performance-based financing on health workers in Zambia. Hum Resour Health. 15(1):20. doi:10.1186/s12960-017-0179-2.

Sieverding M, Briegleb C, Montagu D (2015). User experiences with clinical social franchising: qualitative insights from providers and clients in Ghana and Kenya. BMC Health Serv Res. 15:49. doi:10.1186/s12913-015-0709-3.

Spangler SA (2012). Assessing skilled birth attendants and emergency obstetric care in rural Tanzania: the inadequacy of using global standards and indicators to measure local realities. Reprod Health Matters. 20(39):133–141. doi:10.1016/S0968-8080(12)39603-4.

Ssengooba F, McPake B, Palmer N (2012). Why performance-based contracting failed in Uganda: an "open-box" evaluation of a complex health system intervention. Soc Sci Med. 75(2):377–383. doi:10.1016/j.socscimed.2012.02.050.

Storeng KT, Béhague DP (2017). "Guilty until proven innocent": the contested use of maternal mortality indicators in global health. Crit Publ Health. 27(2):163–176. doi:10.1080/09581596.2016.1259459.

Tani K, et al. (2016). A time–use study of community health worker service activities in three rural districts of Tanzania (Rufiji, Ulanga and Kilombero). BMC Health Serv Res. 16(1):461. doi:10.1186/s12913-016-1718-6.

Tavrow P, Kim Y-M, Malianga L (2002). Measuring the quality of supervisor–provider interactions in health care facilities in Zimbabwe. Int J Qual Health Care. 14(S1):57–66. doi:10.1093/intqhc/14.suppl_1.57.

Topp SM (2017). The Lancet Global Health Commission on High Quality Health Systems: where's the complexity? Lancet Glob Health. 5(6):e571. doi:10.1016/S2214-109X(17)30176-6.

Topp SM, Chipukuma JM, Hanefeld J (2015). Understanding the dynamic interactions driving Zambian health centre performance: a case-based health systems analysis. Health Policy Plan. 30(4):485–499. doi:10.1093/heapol/czu029.

Vareilles G, et al. (2017). Understanding the performance of community health volunteers involved in the delivery of health programmes in underserved areas: a realist synthesis. Implement Sci. 12(1):22. doi:10.1186/s13012-017-0554-3.

Vasan A, et al. (2017). Support and performance improvement for primary health care workers in low- and middle-income countries: a scoping review of intervention design and methods. Health Policy Plan. 32(3):437–452. doi:10.1093/heapol/czw144.

Walshe K (2009). Pseudoinnovation: the development and spread of healthcare quality improvement methodologies. Int J Qual Health Care. 21(3):153–159. doi:10.1093/intqhc/mzp012.

Witter S, et al. (2011). Paying health workers for performance in Battagram district, Pakistan. Hum Resour Health. 9:23. doi:10.1186/1478-4491-9-23.

World Health Organization (2006). Working together for health: World Health Report 2006. Geneva: World Health Organization.

Part C.

How are human resources for health governed?

Chapter 5.

Health worker motivation: individual, organizational and cultural factors

Aarushi Bhatnagar

5.1 Defining the chapter

Motivation is both a driver and a consequence of health worker performance (Bhatnagar, 2014; Borkowski, 2009). Motivated health workers are likely to attend to their clients and provide better care, and their improved performance affirms and drives them to achieve their goals further. This relationship between motivation and performance is influenced further by the organizational climate and social context within which health workers are positioned. The objective of this chapter is to present innovative health policy and systems research (HPSR) carried out to understand what motivates human resources for health (HRH). It aims to describe research that has used different theoretical and methodological approaches to measure motivation among various health worker cadres. In particular, this chapter describes research that has studied the role of organizational and social environments within which health workers perform in affecting their motivation, including specific interventions such as performance-based financing. Finally, it seeks to collate research carried out to understand job preferences for and retention in remote and rural areas, because these in turn are influenced by motivation to serve in such conditions. This chapter excludes primary research on the role of meso-level determinants such as leadership, management, governance, and the policy and political environment in motivating HRH, because these themes are covered in other chapters of this reader.

5.2 Background on health worker motivation

Motivation can be understood as a psychological process aimed at achieving both personal and organizational goals, developed among workers due to a combination of their personal needs and desires, the organizational context within which they work, and the community of which they are a part (Bhatnagar, 2014). Motivation has been studied extensively in a variety of disciplines, including psychology, organizational behaviour and economics, particularly in high-income countries. In the context of organizational psychology and behaviour, motivation is generally explained by two sets of overlapping theories classified as content and process theories. Classic textbooks in these fields by Borkowski (2009) and Burns et al. (2012) provide a rich summary of these theories and their inception, and also present empirical evidence from the health sector that supports them. Content theories of motivation postulate that people are motivated by the desire to satisfy their inner needs and values. On the other hand, process theories of motivation focus more on the cognitive processes underlying motivation, including factors that initiate, direct, sustain and halt behaviour. These cognitive processes shed light on the overall context, highlighting practices and interactions in which work is done and the reactions of employees to work (Burns et al., 2012). While the empirical evidence presented in these textbooks is predominantly from high-income countries, Dolea and Adams (2005), in their review of motivation theories, highlight their application in several low- and middle-income countries.

Motivation is a complex construct, closely interrelated with the concepts of job satisfaction, retention and performance. While motivation in the context of work is typically defined as "willingness to exert and maintain an effort towards organizational goals" (Franco et al., 2002), job satisfaction is referred to as "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experience" (Locke, 1976, p. 1300). Although highly related, and often used interchangeably, motivation and job satisfaction are distinct constructs (Cummings and Bigelow, 1976). While the former pertains to a person's intention to achieve organizational goals, the latter is a reference to his or her attitude or emotional state related to that organizational setting. Despite these differences, the two concepts, fundamental to any human resource, are interdependent and hence influenced by a similar set of individual, organizational and sociocultural factors (Dolea and Adams, 2005; Franco et al., 2002). Given that motivated individuals are likely to remain in their jobs for longer and perform better, determinants of retention and performance of health workers are also associated closely with factors influencing motivation.

The seminal work carried out by Franco et al. (2002) was one of the first to apply various theories of motivation to develop a conceptual framework for understanding determinants of motivation for the health workforce, especially people working in low-resource settings. As described above, Franco et al. (2002, p. 1255) defined motivation in the work context as the "willingness to exert and maintain an effort towards organizational goals". The key attribute of their conceptual framework, however, was the postulation that motivation develops in individuals as a result of the interaction between individual processes, immediate organizational work context and cultural dynamics. Individual processes pertain to a person's goals, values and expectations along with self-efficacy. The framework further characterizes organizational factors into organizational resources (infrastructure, medicines, supplies, human resources, monetary funds), structures (hierarchies, autonomy, management, feedback), processes (communication, procedures of work) and culture (set of shared norms, leadership). The broader cultural factors include association between existing social norms and functioning of an organization as well as societal values and expectations manifested as relationships between clients and health workers. Most of the subsequent research on health worker motivation has adapted and used Franco et al.'s framework.

Many economists have also applied psychological theories of motivation to better understand labour markets. The most common postulation pertains to "crowding out" of intrinsic motivation due to extrinsic incentives (Frey and Jegen, 2000). It is assumed that individuals are motivated from within and by external stimuli of different kinds (Gagné and Deci, 2005); and while higher motivation from intrinsic and extrinsic factors results in greater efforts exerted for a task, there could also be certain instances in which the two types of motivation may not move in the same direction (Frey, 1997). This has relevant application for the health workforce as well, especially in the context of low- and middle-income countries, where low wages are systemic. Several performance-based financing schemes have been initiated to improve performance of service delivery indicators, and these affect motivation of health workers. While performance-based financing has typically been criticized for crowding out intrinsic motivation of health workers, an article by Lohmann et al. (2016), by applying the self-determination theory of motivation, argues that performance-based financing does not necessarily have an adverse effect on intrinsic motivation but could in fact affect both intrinsic and extrinsic motivations, depending on how it is designed, implemented and evaluated.

Several reviews and international agency reports have attempted to collate research carried out on understanding what motivates health workers in low- and middle-income countries. Willis-Shattuck et al. (2008), in their review of primary research articles based in low- and middle-income countries, concluded that financial rewards, career development, continuing

education, facility infrastructure, resource availability, facility management, and recognition and appreciation were some of the main motivating factors among health workers. Similarly, Mathauer and Imhoff (2006) synthesized studies that have explored the role of non-financial incentives in motivating health workers across African countries. More recently, Okello and Gilson (2015) carried out a review to ascertain the role of trust relationships between health workers and their supervisors, managers, employing organizations, co-workers and patients in directly or indirectly motivating health workers. Hongoro and Normand (2006) and Singh et al. (2015) have studied community health worker programmes in various contexts to review organizational factors, including incentive schemes, for motivating community health workers. Given that community health workers across low- and middle-income countries typically come from a different socioeconomic background than professional health workers such as doctors, nurses and midwives, and have a different mandate in terms of the services that they provide, understanding their motivation to work warrants special attention and efforts.

In addition, several reviews have been carried out to synthesize evidence on retention and job preferences of health workers. Dieleman et al. (2011) conducted a realist review to collate findings on factors that influence health workers to remain and work in rural and remote postings. Similarly, a systematic review of discrete choice experiments, a technique to elicit stated job preferences, particularly in the context of rural and remote postings, concluded that bonus payments and postgraduate training opportunities were the most sought after choices, typically among doctors and medical students (Mandeville et al., 2014). While these reviews do not directly address the question of what motivates health workers, they do provide a comprehensive understanding of various individual, organizational and cultural factors that influence job preferences of health workers. Many of these factors in turn are closely interlinked with motivation of health workers and drive them towards achieving their professional goals.

As complex as it may be to define and measure, motivation is an essential ingredient for determining the performance of health workers and is key to any effort towards strengthening the health workforce. While several reviews and studies have gathered evidence on factors influencing motivation of health workers, this chapter aims to describe selected primary research on health worker motivation carried out in recent years across different low- and middle-income countries and pertaining to various cadres of the health workforce. These articles were selected from a pool collated from a doctoral seminar at the Johns Hopkins School of Public Health, a crowdsourcing exercise supported by Health Systems Global and subsequent searches using the bibliography of key articles and on relevant databases and search engines (PubMed and Google Scholar). The main criteria used to select the articles included diversity in region, cadre and methods, as well as the quality of the studies based on standard guidelines.

5.3 Illustrative primary research articles

This section describes the seven articles selected for this reader that demonstrate innovative research carried out to understand motivation of health workers over the past decade. An attempt has been made to showcase articles using different quantitative and qualitative methodologies, focusing on various types of health provider working in low-resource settings across different geographical regions. The first two articles (Chandler et al., 2009; Smith et al., 2013) illustrate different techniques to measure motivation, while the next two articles (Huicho et al., 2015; Razee et al., 2012) focus on factors that inspire health workers to serve in rural and remote areas. The fifth article (Shen et al., 2017) describes an impact evaluation of a specific intervention, namely performance-based financing, designed to improve health service delivery and motivation of health workers. The final two articles (Aberese-Ako et al., 2014; Choi et al., 2016) highlight the role of meso-level determinants such as leadership and organizational justice in creating a more enabling environment for health workers.

5.3.1 Measuring health worker motivation

Chandler CIR, et al. (2009). Motivation, money and respect: a mixed-method study of Tanzanian non-physician clinicians. Soc Sci Med. 68(11):2078–2088

Health workers	Public sector non-physician clinicians
Geographical area	United Republic of Tanzania
Research methods	Mixed: ethnography in two district public hospitals over 6 months and Likert scale development with clinical officers in 13 public hospitals and assistant medical officers in other smaller public hospitals
Research inference	Exploratory

This article adapted the Franco et al. (2002) framework to measure motivation among non-physician clinicians working in district hospitals with poor-quality service delivery in two regions of the United Republic of Tanzania. Using a combination of ethnographic research to understand the working environment of non-physician clinicians and quantitative measurement of motivation constructs, the authors distinguished between intrinsic and environmental factors of motivation. The ethnographic research included interviews with clinicians and observations of clinician–patient consultations, meetings attended by clinicians, and clinician daily routines. Based on these qualitative findings, and using existing quantitative questionnaires, the authors developed a scale, with 62 items on a five-point Likert scale, to measure various constructs of motivation for non-physician clinicians. While various studies attempting to measure motivation have used context-specific scales (Mbindyo et al., 2009; Peters et al., 2010; Purohit et al., 2016), this study is distinctive in its adaptation of the Franco et al. (2002) conceptual framework and subsequent application of the measurement scale, given the rich ethnographic research carried out to validate the above-mentioned framework. Additionally, the article focused on motivation of non-physician clinicians, a cadre rarely studied, especially given its relevance to task-shifting in low- and middle-income countries.

Smith R, et al. (2013). Appealing to altruism: an alternative strategy to address the health workforce crisis in developing countries? J Publ Health. 35(1):164–170

Health workers	Nursing students
Geographical area	South Africa, Kenya, Thailand
Research methods	Quantitative dictator games
Research inference	Exploratory

This article describes the use of economic field experiments to measure intrinsic motivation of health workers, thereby contributing to evidence on the role of personal values such as altruism in encouraging health workers to work in the public sector. This study was based in three low- and middle-income countries (Kenya, South Africa, Thailand) and used a standard dictator game, where nursing students were given a real financial endowment to split between themselves and others in order to detect "the presence and power of altruism in decision-making" (p. 165). Each nursing student was asked to split the endowment between him- or herself, a patient and a poor person. In general, the study found nursing students demonstrate greater altruistic behaviour compared with other professionals, although there were variations across countries, genders and age groups. The innovative techniques used in this study to measure altruistic behaviour allow for greater consideration for personal values, rather than only job characteristics, in order to understand determinants of motivation. The cross-country comparison also reveals the significance of

socioeconomic contexts for influencing altruistic behaviour. For example, the authors conclude that the relatively lower levels of altruism exhibited by respondents in South Africa and Kenya compared with Thailand could be due to higher inequalities and lower solidarity existing in those societies.

5.3.2 Social factors of motivation and job preferences

Razee H, et al. (2012). Listening to the rural health workers in Papua New Guinea: the social factors that influence their motivation to work. Soc Sci Med. 75(5):828–835

Health workers	Public and private sector health extension workers, community health workers, nurses
Geographical area	Papua New Guinea
Research methods	Qualitative: in-depth interviews
Research inference	Exploratory

This article describes the social environment and its interactions with health worker motivation and performance of health extension workers, community health workers and nurses in Papua New Guinea. Using a qualitative research design, Razee et al. (2012) carried out in-depth interviews with and observations of several types of primary health-care provider serving in rural Papua New Guinea in both government and private facilities. The article concludes that the identity of health workers and perceptions of the community about them are important factors contributing to their motivation. In particular, the article highlights how respect received from the community and community ownership of health service delivery are significant enablers. The authors also describe the process of building trust and cooperation between health workers and the community. The article explores the role of health worker gender and family life, shedding light on the dual burden of managing work and family responsibilities, particularly among female health workers. Furthermore, this study describes how violence in the workplace and in the community at large results in demotivation of female health workers. On the whole, this article provides a rich narrative on the social context and interactions affecting health worker motivation in a very diverse country, where the evidence base for HRH is limited.

Huicho L, et al. (2015). Factors behind job preferences of Peruvian medical, nursing and midwifery students: a qualitative study focused on rural deployment. Hum Resour Health. 13(1):90

Health workers	Medical, nursing and midwifery public university students
Geographical area	Peru
Research methods	Qualitative: in-depth interviews and focus group discussions
Research inference	Explanatory

This article focuses on a similar topic as above but uses a different methodological approach. The authors interview medical, nursing and midwifery students to understand reasons behind their career choices and their preferences for rural postings in Peru. Using a rich qualitative study design, from two distinct regions in the country, the article describes career choices among medical, nursing and midwifery students to be driven mostly by vocation and for the opportunity to improve the health of their communities. Interestingly, medical students also considered that their profession would improve their socioeconomic status in the society, a belief not validated by labour market conditions in Peru, as noted by the authors. In addition, the study found a mixed reaction to rural postings. While medical students understood the

importance of such postings, both from the point of view of serving people most in need and as valuable professional experience, they expressed reservations about difficult working environments and in general had a stronger predilection for working in urban areas. Nursing and midwifery students, however, especially those from rural backgrounds, expressed a stronger willingness to serve in rural areas.

Although preferences of students are likely to be different from people who are actually serving in remote areas, this article opens a discussion for policy-makers and medical education institutions to acknowledge these preferences and incorporate them in HRH policies and interventions to attract students to work in difficult-to-serve areas. A study conducted in a rural Indian setting aiming to understand why doctors have stayed on to serve in remote areas finds some similarities to the above findings, namely geographical and ethnic tribal affinities, rural origins and personal values of service (Sheikh et al., 2012); however, it also sheds light on a host of other factors, including benefits to family life (location of spouse, availability of school for children), relationships with co-workers and surrounding communities, and "acclimatization over time to rural life" (p. 192).

5.3.3 Evaluating the impact of motivation interventions

Shen GC, et al. 2017. Incentives to change: effects of performance-based financing on health workers in Zambia. Hum Resour Health. 15(1):20

Health workers	Multiple public sector facility based health workers
Geographical area	Zambia
Research methods	Quantitative: randomized control design for pre-post changes
Research inference	Influence/Explanatory

Shen at al. (2017) describe a quantitative impact assessment of a performance-based financing scheme on the motivation of health workers in Zambia. While several studies have tried to assess the effectiveness of performance-based financing on service delivery and quality of care outcomes (Basinga et al., 2011; Binyaruka et al., 2015; Engineer et al., 2016), very few have attempted to measure its impact on health worker motivation, although a few studies have aimed to understand the mechanisms through which performance-based financing affects motivation (Bertone et al., 2016; Bhatnagar & George, 2016; Witter et al., 2011). This article is one of the first to measure impact of performance-based financing on motivation, job satisfaction and retention and to understand the pathways that explain the changes in a low- and middle-income country setting. This study, based on a quasi-experimental design, used existing theoretical frameworks and instruments, albeit not developed originally in a low- and middle-income country setting, to measure motivation and job satisfaction of health workers receiving performance-based financing compared with those who are not. The study subsequently carried out qualitative interviews to explore the channels through which incentive payments affected motivation, thereby filling in an obvious lacuna in the performance-based financing evidence base. The authors found that performance-based financing had a positive impact on job satisfaction and a negative impact on attrition, although it did not have "marked effects on motivation" (p. 10). The qualitative study corroborated not only these findings but also more recent postulation that performance-based financing could improve both extrinsic and intrinsic motivations by providing a better platform for serving the community and opportunities for professional development and professional dedication.

While the previous article demonstrates the role of financial incentives in bringing about a change, a case study by Ruck and Darwish (1991) (described in detail in Chapter 3) explains how the introduction of a training programme for improving nutrition services increased motivation and lowered absenteeism among health workers in Egypt. The training programme not only was didactic but also included regular feedback and reinforced supervision, thereby appreciating the value of health workers' efforts to a greater extent.

In addition to the articles above, two articles included in Chapter 6 on leadership and management explore the role of meso-level organizational determinants in motivating health workers (Aberese-Ako et al., 2014; Choi et al., 2016). These are described briefly below.

5.3.4 Meso-level determinants of motivation

Aberese-Ako M, et al. (2014). "Your health our concern, our health whose concern?": perceptions of injustice in organizational relationships and processes and frontline health worker motivation in Ghana. Health Policy Plan. 29(Suppl. 2):ii15–ii28

Health workers	Multiple public sector hospital based health workers
Geographical area	Ghana
Research methods	Qualitative: Ethnography; participant observation, conversation and in depth interviews over 16 months in two public hospitals
Research inference	Exploratory

Aberese-Ako et al. (2014) conducted an ethnographic study including direct observations, conversations and in-depth interviews to understand the level and nature of perceived organizational justice and its implications on motivation and responsiveness of health workers in Ghana. The authors found that health workers perceived procedural, distributive and interactional injustice at the national policy level in terms of poor conditions of service, and inequitable distribution of incentives, lack of respect and protection at the organizational level. The authors described that while those who were intrinsically motivated were able to overcome their discontentment with these attributes in their working environment and respond to the needs of their clients, there were some health workers, especially those on the front line, who were not as responsive. The authors argued that health workers should be considered internal clients of a health system, and their perceptions of fairness and justice in organizational and governance structures should be given importance.

Choi SL, et al. (2016). Transformational leadership, empowerment, and job satisfaction: the mediating role of employee empowerment. Hum Resour Health. 14(1):73

Health workers	Public and private sector nurses
Geographical area	Malaysia
Research methods	Quantitative: provider Likert survey and regression analysis
Research inference	Exploratory

Choi et al. (2016) measured the role of transformational leadership and employee empowerment in improving job satisfaction perceived by nurses in Malaysia. The authors hypothesized and subsequently proved, using data from a cross-sectional survey, that transformational leadership enhances empowerment, especially among the nursing cadre, which is considered

to be of relatively low status. They also found that transformational leadership has a positive association with job satisfaction. Moreover, they showed that there was a partial mediating effect, suggesting that employee empowerment explained at least some component of the positive association between transformational leadership and job satisfaction. The contribution of this article extends from using innovating and rigorous methods to measure these complex constructs, to explaining that transformational leadership must be encouraged among managers of nursing staff while empowerment among the nursing cadre should be simultaneously inculcated.

5.4 Research challenges

The main difficulty faced in selecting articles for this chapter was the complexity of how motivation is defined, given its various theoretical underpinnings and influencing factors. Similarly, various theories of motivation have their own definition of what constitutes intrinsic versus extrinsic motivation, or what determinants are from within the individual and what belong to the broader context within which he or she is working. This also made it difficult to compare and contrast studies that used different theoretical paradigms for understanding motivation. In addition, it was difficult to select among studies that used similar methods, albeit in varied contexts and for different cadres of HRH. For example, most studies measured motivation using qualitative or ethnographic methods, or descriptive quantitative techniques using self-reported responses on structured scales.

In addition, this section attempted to put forth research from across all regions but did not succeed in generating a pool of good-quality articles that were equally representative of all parts of the world. A large proportion of research on the issue of health worker motivation was based in sub-Saharan Africa and south Asia, with a smaller regional focus on other middle-income country settings such as those in Latin America and eastern and central Asia. Although contributions from all languages were invited during crowdsourcing of articles for the reader, all subsequent searches were carried out among articles published in English, resulting in excluding those in, for example, Spanish, Portuguese and Russian. Similarly, the bulk of the current evidence base focused on medical doctors and nurses; there is an emerging body of work on community health workers, but less on other cadres of the health workforce. Additionally, most of the research on health worker motivation uses cross-sectional study designs. Longitudinal study designs, such as following a cohort of students over a period of time to see how their attitudes and choices evolve, would enable research to account for the dynamic and complex nature of human behaviours.

5.5 Future research directions and gaps

As mentioned above, there is no agreement in the literature on the correct course for defining and measuring motivation. Moreover, to date no study has critically examined the existing methods, especially in the context of low- and middle-income countries, used for doing the same. As researchers in the field of HPSR, it is necessary for us to take a step back and question whether we are using appropriate methodologies, drawing adequately from theoretical disciplines and understanding motivation of health workers as a set of human behaviours and not only as organizational processes. In this regard, future endeavours for measuring motivation of health workers should be critical of existing methods and strive continuously to develop more innovative techniques to measure this complex construct. For example, further experimentation could be done with existing techniques to elicit choice, building on classic dictator games, to understand motivation for performing different tasks. In addition, measures such as speed, accuracy and persistence with which tasks are completed could also be used to gauge motivation of health workers (Touré-Tillery & Fishbach, 2014). It is also important to

move beyond descriptive studies on what motivates health workers to assess effectiveness of different interventions for improving motivation. Future research of this nature should use a mixed-methods approach, aiming not only to assess interventions but also to understand why and how changes are taking place.

As described above, most of the evidence base for health worker motivation studies, using quantitative methods, is based on self-reported responses on structured scales measured at a give timepoint. Very few of these scales, however, have been validated using appropriate statistical methodologies or measured with advanced techniques such as structural equation modelling (Lohmann et al., 2017). For future researchers attempting to design context-specific scales for measuring motivation, it is essential to follow a theoretical framework and validate the scale against that framework using appropriate techniques. It is also important to note that these ratings are likely to be influenced by social desirability bias as well as events that have taken place just before the conduct of the study (such as an altercation in the workplace or a positive patient outcome) and may not necessarily reflect the true opinions of the respondents. Similarly, the rigour in qualitative methods for measuring motivation needs to be strengthened, with studies demonstrating various ways in which the trustworthiness, namely credibility, dependability, transferability and confirmability (Jensen, 2008), of their findings were assessed.

As mentioned above, most of the literature on health worker motivation includes studies exploring determinants of motivation, but very few studies have aimed to measure the impact of specific programmes carried out to motivate health workers. This is particularly puzzling as there have been many initiatives, especially in low-resource settings, targeted at improving motivation and performance of health workers, such as but not restricted to performance-based financing and performance management interventions (Dieleman et al., 2006; Shen et al., 2017). While impact evaluations are methodologically difficult for social science research, time-consuming and resource-intensive, there is a need to expand the current evidence base for such studies and hence an area for future investigation and investment.

Acknowledgements

References

Aberese-Ako M, et al. (2014). "Your health our concern, our health whose concern?": perceptions of injustice in organizational relationships and processes and frontline health worker motivation in Ghana. Health Policy Plan. 29(Suppl. 2):ii15–ii28. doi:10.1093/heapol/czu068.

Basinga P, et al. (2011). Effect on maternal and child health services in Rwanda of payment to primary healthcare providers for performance: an impact evaluation. Lancet. 377(9775):1421–1428. doi:10.1016/S0140-6736(11)60177-3.

Bertone MP, Lagarde M, Witter S (2016). Performance-based financing in the context of the complex remuneration of health workers: findings from a mixed-method study in rural Sierra Leone. BMC Health Serv Res. 16(1):286. doi:10.1186/s12913-016-1546-8.

Bhatnagar A (2014). Determinants of motivation and job satisfaction among primary health workers: case studies from Nigeria and India. Baltimore, MD: Johns Hopkins School of Public Health.

Bhatnagar A, George AS (2016). Motivating health workers up to a limit: partial effects of performance-based financing on working environments in Nigeria. Health Policy Plan. 31(7):868–877. doi:10.1093/heapol/czw002.

Binyaruka P, et al. (2015). Effect of paying for performance on utilisation, quality, and user costs of health services in Tanzania: a controlled before and after study. PLoS ONE. 10(8):e0135013. doi:10.1371/journal.pone.0135013.

Borkowski N (2009). Organizational behavior in health care. Burlington, MA: Jones & Bartlett Learning.

Burns LR, Bradley EH, Weiner BJ (2012). Shortell and Kaluzny's health care management: organization design and behavior, 6th edn. Clifton Park, NY: Delmar.

Chandler CIR, et al. (2009). Motivation, money and respect: a mixed-method study of Tanzanian non-physician clinicians. Soc Sci Med. 68(11):2078–2088. doi:10.1016/j.socscimed.2009.03.007.

Choi SL, et al. (2016). Transformational leadership, empowerment, and job satisfaction: the mediating role of employee empowerment. Hum Resour Health. 14(1):73. doi:10.1186/s12960-016-0171-2.

Cummings TG, Bigelow J (1976). Satisfaction, job involvement, and intrinsic motivation: an extension of Lawler and Hall's factor analysis. J Appl Psychol. 61(4):523–525. doi:10.1037/0021-9010.61.4.523.

Dieleman M, et al. (2006). The match between motivation and performance management of health sector workers in Mali. Hum Resour Health. 4:2. doi:10.1186/1478-4491-4-2.

Dieleman M, et al. (2011). Realist review and synthesis of retention studies for health workers in rural and remote areas: increasing access to health workers in rural and remote areas. Technical report no. 1. Geneva: World Health Organization.

Dolea C, Adams O (2005). Motivation of health care workers: review of theories and empirical evidence. Cah Sociol Demogr Med. 45(1):135–161.

Engineer CY, et al. (2016). Effectiveness of a pay-for-performance intervention to improve maternal and child health services in Afghanistan: a cluster-randomized trial. Int J Epidemiol. 45(2):451–459. doi:10.1093/ije/dyv362.

Franco LM, Bennett S, Kanfer R (2002). Health sector reform and public sector health worker motivation: a conceptual framework. Soc Sci Med. 54(8):1255–1266. doi:10.1016/S0277-9536(01)00094-6.

Frey BS (1997). Not just for the money: an economic theory of personal motivation. Cheltenham, UK, Northampton, MA: Edward Elgar.

Frey BS, Jegen R (2000). Motivation crowding theory: a survey of empirical evidence, revised version. Working paper no. 49. Zurich: Institute for Empirical Research in Economics (https://ideas.repec.org/p/zur/iewwpx/049.html).

Gagné, M, Deci EL (2005). Self-determination theory and work motivation. J Organ Behav. 26(4):331–362. doi:10.1002/job.322.

Hongoro C, Normand C (2006). Health workers: building and motivating the workforce. In: Jamison DT, et al., editors. Disease control priorities in developing countries, 2nd edn. New York: Oxford University Press: 1309–1322.

Huicho L, et al. (2015). Factors behind job preferences of Peruvian medical, nursing and midwifery students: a qualitative study focused on rural deployment. Hum Resour Health. 13(1):90. doi:10.1186/s12960-015-0091-6.

Jensen D (2008). Credibility. In: The SAGE encyclopedia of qualitative research methods. Thousand Oaks, CA: SAGE Publications.

Locke EA (1976). The nature and causes of job satisfaction. In: Dunnette MD, editor. Handbook of industrial and organizational psychology. Chicago, IL: Rand McNally: 1297–1349.

Lohmann J, Houlfort N, De Allegri M. (2016). Crowding out or no crowding out? A self-determination theory approach to health worker motivation in performance-based financing. Soc Sci Med. 169:1–8. doi:10.1016/j.socscimed.2016.09.006.

Lohmann J, et al. (2017). Measuring health workers' motivation composition: validation of a scale based on self-determination theory in Burkina Faso. Hum Resour Health. 15(1):33. doi:10.1186/s12960-017-0208-1.

Mandeville KL, Lagarde M, Hanson K (2014). The use of discrete choice experiments to inform health workforce policy: a systematic review. BMC Health Serv Res. 14(1):367. doi:10.1186/1472-6963-14-367.

Mathauer I, Imhoff I (2006). Health worker motivation in Africa: the role of non-financial incentives and human resource management tools. Hum Resour Health. 4:24. doi:10.1186/1478-4491-4-24.

Mbindyo PM, et al. (2009). Developing a tool to measure health worker motivation in district hospitals in Kenya. Hum Resour Health. 7(1):40. doi:10.1186/1478-4491-7-40.

Okello DRO, Gilson L (2015). Exploring the influence of trust relationships on motivation in the health sector: a systematic review. Hum Resour Health. 13(1):16. doi:10.1186/s12960-015-0007-5.

Peters DH, et al. (2010). Job satisfaction and motivation of health workers in public and private sectors: cross-sectional analysis from two Indian states. Hum Resour Health. 8:27. doi:10.1186/1478-4491-8-27.

Purohit B, Maneskar A, Saxena D (2016). Developing a tool to assess motivation among health service providers working with public health system in India. Hum Resour Health. 14(1):15. doi:10.1186/s12960-016-0111-1.

Razee H, et al. (2012). Listening to the rural health workers in Papua New Guinea: the social factors that influence their motivation to work. Soc Sci Med. 75(5):828–835. doi:10.1016/j.socscimed.2012.04.013.

Ruck NF, Darwish OA (1991). Motivating health workers through nutrition training: an example from Egypt. Health Policy Plan. 6(2):130–140. doi:10.1093/heapol/6.2.130.

Sheikh K, et al. (2012). Location and vocation: why some government doctors stay on in rural Chhattisgarh, India. Int Health. 4(3):192–199. doi:10.1016/j.inhe.2012.03.004.

Shen GC, et al. (2017). Incentives to change: effects of performance-based financing on health workers in Zambia. Hum Resour Health. 15(1):20. doi:10.1186/s12960-017-0179-2.

Singh D, et al. (2015). The effect of payment and incentives on motivation and focus of community health workers: five case studies from low- and middle-income countries. Hum Resour Health. doi:10.1186/s12960-015-0051-1.

Smith R, et al. (2013). Appealing to altruism: an alternative strategy to address the health workforce crisis in developing countries? J Publ Health. 35(1):164–170. doi:10.1093/pubmed/fds066.

Touré-Tillery M, Fishbach A (2014). How to measure motivation: a guide for the experimental social psychologist. Soc Personal Psychol Compass. 8(7):328–341. doi:10.1111/spc3.12110.

Willis-Shattuck M, et al. (2008). Motivation and retention of health workers in developing countries: a systematic review. BMC Health Serv Res. 8(1):247. doi:10.1186/1472-6963-8-247.

Witter S, et al. (2011). Paying health workers for performance in Battagram district, Pakistan. Hum Resour Health. 9(23):1–12. doi:10.1186/1478-4491-9-23.

examines organizational and contextual factors affecting health worker motivation and their performance; and Dieleman & Harnmeijer (2006), who complement these insights with an assessment of the role of incentives. This was accompanied by a body of literature on approaches to the strengthening of human resource management systems, often commissioned and published by international development agencies (see, for example, USAID, 2009). While this literature was concerned with leadership and management development, it was predominantly interested in systems, tools and instruments, rather than in the people who inhabit and drive the systems.

Running parallel to this in the early 2000s was a growing literature on leadership (and to a lesser degree management) in the health sector, which has received considerable attention. Chief among these was the comprehensive report on management and leadership produced for the Joint Learning Initiative (Egger, Travis & Dovlo, 2005). Arguing that "good managers who practice good leadership" are key for improved health-systems performance (p.1), this report reviewed major approaches to, and interventions in, the improvement of management and leadership, and it developed a framework for strengthening management capacity, aimed at reaching health-related goals. This literature, however, was not without its critics. Dussault (2008), for example, argues that leadership and management challenges remain essentially the same in the health sector, whether in high-, low- or middle-income countries. Dussault argues that most management systems in all kinds of settings do not support managers or recognize and reward good management. This has been echoed in other, more recent reviews (Bradley et al., 2012; Kwamie, van Dijk & Agyepong, 2014).

More recently there has been growing interest in complexity science and systems thinking within the HPSR field, particularly how these concepts can be applied to leadership and management (de Savigny & Adam, 2009). This literature critiques linear and deterministic models of leadership and management. A recent example is the paper by Gilson, Elloker & Olckers (2014), which examines the application of sense-making and complex adaptive leadership (i.e. distributed leadership) to support health workers at the front line, and how these approaches can be used to positively influence the interpretations and actions of health workers in the implementation of health policy. Complexity and systems thinking perspectives emphasize the role of relationships within systems, and thus shift towards the "software" of health systems (values, norms, ideas, interests, relationships, power) that have been identified as central to systems performance (Sheikh et al., 2011). The body of literature on how this software plays out specifically in the context of leadership and management is still relatively small, but it is critical and growing (Elloker et al., 2012).

focuses on the mechanisms and impacts of decentralization on human resource management; and Bossert (1998), who describes the decision space of managers in decentralized health systems). Leadership and management have also been considered in the context of complex adaptive systems; for example, see Plsek and Wilson (2001), who point to the importance of viewing organizations as complex adaptive systems in order to bring about more innovative management styles in health. Leadership and management, then, both have a role in shaping organizational cultures and in turn are shaped by them.

In 2007 WHO issued a series of working papers on strengthening leadership and management in low- and middle-income countries as a way of supporting overall health system strengthening (WHO, 2007a, 2007b), resulting in a framework to answer the question "What conditions are necessary for good leadership and management?" (WHO, 2007b, p. 2). The framework points to the interaction of four main organizational factors (adequate numbers of managers; adequate competencies; functional support systems; enabling working environments) as necessary for good leadership and management to emerge, which in turn can lead to improved health services and health goals (Figure 6.1).

Figure 6.1 Leadership and management in health systems

OVERALL ACTIONS TO STRENGTHEN HEALTH SYSTEMS

LEADERSHIP AND MANAGEMENT STRENGTHENING FRAMEWORK

Adequate number of managers

Appropriate competences

Functional support systems

Enabling working environment

Improved health services and sector goals, e.g. Millennium Development Goals
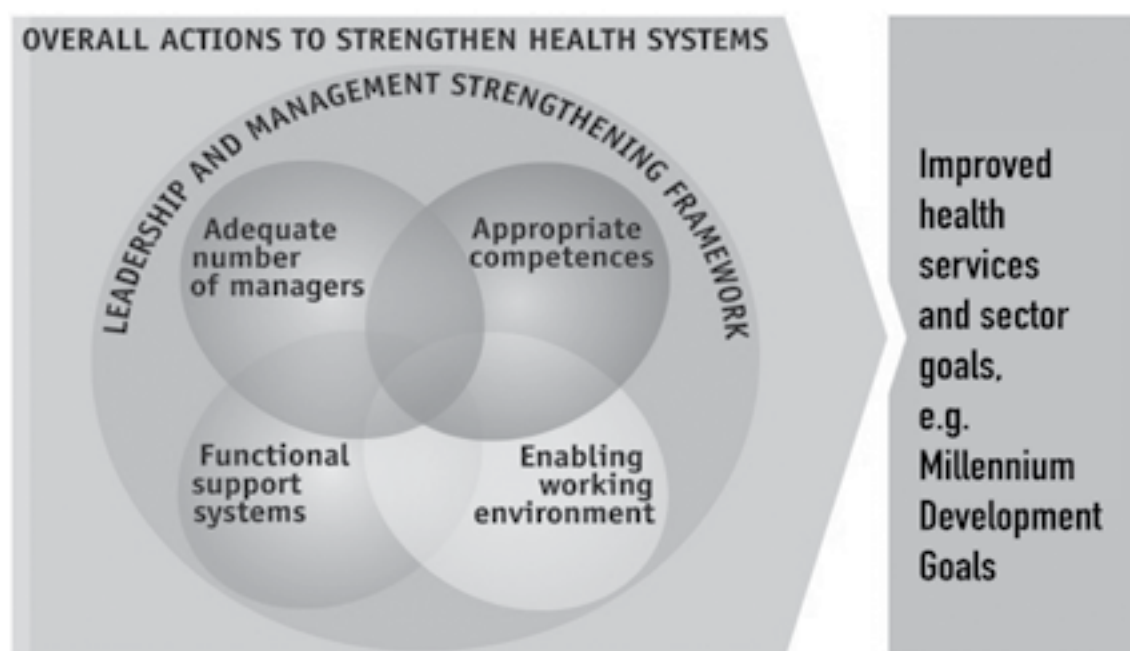
Reprinted with permission from World Health Organization (2007). WHO/HSS/health systems/2007.3. Towards better leadership and management in health: report on an international consultation on strengthening leadership and management in low- and middle-income countries. Working paper no. 10. Geneva: World Health Organization (http://www.who.int/management/working_paper_10_en_opt.pdf.)

Since then, as the appreciation for the complexity and interconnectivity of health systems has deepened, so too has our understanding of leadership, management and organizational cultures. Gilson and Daire (2011), for example, highlight the importance of leadership as the enabler to allow actors within organizations to face challenges and yet still achieve results despite complex contexts. This involves creating vision and strategic direction for the organization, and then communicating, inspiring and maintaining the attainment of that vision. Key is the notion that leadership is not found only in particular positions or at the organizational apex but is distributed throughout the organization. Bradley et al. (2015) focus on a definition of management that brings human, financial and technical resources to bear on achieving predetermined objectives, supported by a suite of core competencies. Kwamie (2015) stresses the need to view leadership and management as interactive and emergent,

and argues that weaknesses in leadership and management are linked to organizational challenges beyond individual competencies alone. Taken together, these three papers point to (i) the capacity for leadership and management reforms to challenge traditionally hierarchical organizational structures and cultures that characterize most health-care settings in low- and middle-income countries; (ii) the dual nature of leadership and management being both an individual and systemic capacity, which has implications for the transformative power of capacity-strengthening interventions; and (iii) the need for more policy and practice research on leadership, management and organizational cultures.

The 2016 flagship report of the Alliance for Health Policy and Systems Research on participatory leadership for health echoes these notions and further presents "the role of context, the reciprocal influence actors have upon one another's interests and priorities, and the enabling environment within the health eco-system [as] important considerations in understanding, supporting and creating leadership that addresses the needs of the population in future-thinking health systems" (WHO, 2016, p. 8). This suggests a need for greater research to understand the effects of these dimensions on leadership, management and organizational cultures.

6.2.1 Research approaches for investigating leadership, management and organizational cultures

Diverse methodological approaches have been used to investigate the domains of leadership, management and organizational cultures. Some critical examples are presented here, mainly conducted within districts and hospitals, the operational "grounds" of much leadership and management practice, and where organizational cultures and structures are experienced by managers and staff.

Employing the use of theory has been important in deepening understandings of leadership, management and organizational cultures. Lipsky's (1980) "street-level bureaucracy" theory has shed much light on how frontline public servants use discretion in enforcing their mandates in light of organizational contexts (and particularly when the lack of resources can cause them to shorten decision-making routines, which can affect policy intent). As another theory on discretion, Bossert's decision-space theory has been applied (e.g. Kwamie et al., 2015a) and combined with complex leadership theory (Uhl-Bien et al., 2007), which conceptualizes organizations as complex contexts with unknowable futures that leaders cannot control. Instead, those in leadership and management draw on, and are part of, the interactions within organizational structures, giving rise to adaptive leadership and management patterns that seek to enable the future. The authors' findings from Ghana demonstrate that top-down policy implementation constrained local managerial decision space, thereby giving rise to a local leadership type that was less responsive to local-level challenges and more geared towards serving the health system bureaucracy.

Theories of organizational trust have also been applied to health-care and hospital settings to effectively unwind complexities of the discrete elements at play within the organization (Gilson, 2006; Kramer, 1999). Trust, operating at individual and institutional levels, exists as an organizational mechanism of coordination and cooperation and is bound by perceptions of risk, uncertainty and vulnerability, and individual motivation, expectation and responsibility. The degree of organizational credibility will depend on how much the visible structures of the organization (vision, mission, operating policies) align with the invisible structures of the organization (individual needs, interpersonal and power relations). For example, Cogin et al. (2016) investigate hospital management in Australia through the use of a commitment-versus-control theoretical framework and in-depth interviews. They find that management controls designed to regulate staff behaviours (including standardized jobs, rules and close staff monitoring) are used more to manage nurses, allied health professionals and junior doctors, while more commitment-based approaches (such as goal-setting, socializing staff to organizational values and greater staff discretion) are used to manage senior physicians. Such

transactional forms of leadership focused on supervision, performance, role differentiation between staff cadres, and compliance through reward and punishment lead to negative job attitudes, staff frustration and operational inefficiencies. This is in contrast to theories on more transformational forms of leadership, which focus on motivating staff to perform beyond expected levels by helping them identify with organizational goals and interests, and engaging with individual staff values to encourage innovation and shape organizational context (Sarros et al., 2008).

Many qualitative research methods have been used in low- and middle-income countries to probe the human interactions that underpin these dynamics. For example, Aitken (1994) uses ethnography and organizational theory to study district health managers in Nepal. She finds the coexistence of two value systems underpinning the district health system – one official (based on the quality and number of health services delivered) and one actual (based on receiving and accounting for funds through progress reporting and providing staff with an income). These value systems have divergent aims and expectations and yet thrive together owing to a lack of organizational clarity; their existence explains managerial decision-making that may appear outwardly irrational but follows an internal logic. George (2009) also uses an ethnographic approach to explore issues of supervision and disciplinary action as they relate to managerial accountability in a district in India. The findings demonstrate the ongoing negotiation processes of accountability mediated by social relationships to the benefit and detriment of the health system at various times.

In highlighting the role of key actors that are often underrepresented, O'Meara et al. (2011) assess community participation and accountability as part of local budgeting and planning processes in Kenya. They find that lacking established community-planning units created challenges to realizing comprehensive community representation, and furthermore caused mismatch between evidence-based and demand-based planning.

The application of realist approaches is also useful in explicitly seeking causal explanations by linking the observed outcomes of interventions to the contexts in which they are deployed. From a realist perspective, especially with regard to interventions (whether policies or programmes), intended and unintended outcomes arise not only because of intervention design but also as a result of the interactions between the people engaging with the intervention and the overarching context into which the intervention is introduced. Marchal et al. (2010) use realist case studies to demonstrate how high-commitment practices (that is, bundles of balanced management practices, sound administration and participatory decision-making) work in two hospitals in Ghana. Dieleman et al (2009) use realist synthesis and find that globally, combining interventions that consist of participatory training and health system strengthening successfully lead to improving health worker performance through increasing health worker knowledge and skill, improving motivation, and encouraging health worker obligations to change.

Action learning – that is, the application of cycles of reflection and action to solve real problems – has proven a particularly suitable methodological approach to examining leadership, management and organizational cultures. An exemplar in this regard is the long-term District Innovation and Action Learning for Health Systems Development (DIALHS) project in South Africa, which partnered researchers and managers in cycles of action learning and systematic reflection to examine leadership typologies within district health systems. In particular, the project team was interested in understanding the challenges of centrally initiated interventions that aim to strengthen local-level leadership and management. Gilson et al. (2014) argue that new forms of leadership are needed to support systemic organizational change, and that managerial sense-making is important in mediating health worker discretion; Scott et al.'s (2014) findings determine that dissonance in organizational cultures at central levels can affect local-level leadership, governance and organizational relationships.

Several efforts have been made to measure leadership, management and organizational culture using quantitative techniques. These methods have been applied for testing different theoretical propositions and typically include creating composite indices for these latent constructs with reliable and validated psychometric properties. For example, Cummings et al. (2010) conducted a multidisciplinary literature review to collate several measurements of leadership styles and their association with various performance measures in nursing job satisfaction. They found that relational leadership styles were associated with higher nursing job satisfaction, whereas leadership styles focused on tasks alone do not achieve optimum satisfaction outcomes. Similarly, Scott et al. (2003) carried out a systematic review of quantitative questionnaires designed to measure organizational culture and change; they found 13 such instruments, varying in their underlying theory, scope, length and scientific properties. A low- and middle-income country example is found in the work of Jayasuriya et al. (2014), who examine the impact of organizational culture and climate on staff attitudes towards behaviours that build organizational citizenship (treating colleagues respectfully, and being helpful, efficient and effective). Using a self-administered questionnaire of a national sample of rural health workers in Papua New Guinea and multilevel regression analysis, their key finding is that an enhanced work climate results in higher levels of organizational citizenship (this article is highlighted in Chapter 4 on health worker performance).

Research on leadership, management and organizational cultures has usefully incorporated the use of theory, and spanned diverse research methods, both qualitative and quantitative. There do exist evidence gaps in both research topics and methodology, however; for example, there are few empirical articles on leadership and gender in low- and middle-income countries and community-level leadership (see section 6.4).

6.3 Illustrative primary research articles

Seven state-of-the-art primary research articles are included in this section. These articles reflect innovation, rigour and illuminating findings across the breadth of the above-noted methods and diverse geographical regions. These articles were selected from a pool collated from a doctoral seminar at the Johns Hopkins School of Public Health, a crowdsourcing exercise supported by Health Systems Global and subsequent searches using the bibliography of key articles and on relevant databases and search engines (PubMed and Google Scholar). The main criteria used to select the articles included diversity in region, cadre and methods, as well as the quality of the studies based on standard guidelines.

The inherent hierarchical and authoritative nature of public services in many countries, and how this filters into health leadership and management, is a theme that emerges in the work of Rocha et al. (2014) and Kwamie et al. (2015b). Rocha et al. (2014) and Choi et al. (2016) reflect on broader social and historical trends in Brazilian and Malaysian society, respectively, and how the embeddedness of organizational cultures within broader societal values in turn affects the health workforce. The ongoing implications of decentralization processes, particularly as they relate to power, resources and governance, and how these affect district- and facility-level leadership and management, are themes that emerge from the work of Nyikuri et al. (2015) and Kwamie et al. (2015b). Both papers demonstrate the complexities of decentralization as a critical health system reform that directly affects leadership and management, although its implementation may be varied. The social relations and negotiations involved in accountability emerge through Aberese-Ako et al.'s (2014) work on frontline staff perceptions of organizational fairness. Lehmann and Gilson's (2015) methodological reflections and Prashanth et al.'s (2014) research strongly present how new and different approaches to capacity-strengthening can support sustainable organizational change. The balance and duality of organizational versus individual capacities for leadership and management is an overarching theme that emerges from all the articles, signalling the interplay of actors and their behaviours and decisions within organizations, and how the structures and procedures of organizations shape actors' choices.

These seven articles have been defined broadly under the following three headings: understanding and measuring management, leadership and organizational cultures; effects of management and organizational cultures on health workers; and initiatives to improve leadership and organizational cultures.

6.3.1 Understanding and measuring management, leadership and organizational cultures

Rocha FLR, et al. (2014). The organizational culture of a Brazilian public hospital. Rev Esc Enferm USP. 48(2):308–314

Health workers	Hospital-based nurses and auxiliary staff
Geographical area	Brazil
Research methods	Quantitative: provider survey
Research inference	Descriptive

Rocha et al. (2014) in Brazil use a cross-sectional study design to survey nurses and auxiliary staff in a public hospital to describe its organizational culture. The article uses a conceptual framework of the embeddedness of organizational cultures within broader social and historical contexts, and seeks to describe organizational culture in terms of the shared beliefs and values, collective identity and process of construction, and how these in turn influence workplace functioning. The findings point to the presence of hierarchical rigidity and power centralization, and insufficient recognition of staff well-being, satisfaction and motivation, although there is cooperation between staff. The authors argue that such process- and work-oriented organizational cultures reflect the broader Brazilian authoritative administrative cultures seen across several public organizations and that are historical in nature. This analysis usefully pushes understandings of HRH forward from the health policy and systems view that health systems are social and historical constructions, and thus the knowledge, standards and behaviours that give rise to organizational cultures are learned and transmitted through the prevailing values and beliefs.

Nyikuri M, et al. (2015). Crises and resilience at the frontline: public health facility managers under devolution in a sub-county on the Kenyan coast. PLoS ONE. 10(12):e0144768

Health workers	Public sector primary health care managers
Geographical area	Kenya
Research methods	Qualitative: Learning site collaborative research based on in-depth interviews and observation
Research inference	Explanatory/Emancipatory

In Kenya, Nyikuri et al. (2015) collected data from a "learning site" – a long-term collaborative research process between health managers and researchers in a set geographical location. Through cycles of action learning, which included formal and informal interviews and observation of managers' daily routines over a 12-month period, and the analytical use of a framework examining the "hardware" (infrastructural, technological and financial inputs) and "software" (values, norms and behaviours), the authors address issues of primary health-care managers and their multiple accountabilities, daily routines and coping strategies amidst changing contexts of devolution. These changing contexts include the transfer of health facility ownership from national to county levels, and the simultaneous removal of user fees from public primary-level facilities and maternity services from public hospitals. The authors highlight the resilience and

adaptability needed by primary health-care managers to cope with resource scarcity and change; and they comment on the importance of relationships and governance as "micro-processes" – the ongoing, daily negotiation of power and decisions between local actors.

Kwamie A, et al. (2015b). The path dependence of district manager decision-space in Ghana. Health Policy Plan. 31(3):356–366

Health workers	Public sector district managers
Geographical area	Ghana
Research methods	Qualitative: historical analysis based on literature review and key informant interviews
Research inference	Explanatory

Using a theory-driven historical case study, Kwamie et al. (2015b) examine the historical processes and critical junctures between the development of the district health system and broader democratic governance developments as a way of explaining current configurations of district manager decision space in Ghana. In particular, the authors discuss the importance of the sequencing of decentralization processes (administrative, fiscal and political) in the actual shift in power to local levels, and the self-reinforcing centralizing tendencies of government decision-making over time that affect local leadership and management. Similar to Rocha et al.'s (2014) findings on the influence of social and historical forces on organizational cultures, this article forefronts historical patterns at both the macro- and micro-level on leadership and management capacities to perform their mandated functions. Additionally, this article highlights the complexities of decentralization for local managers and the challenges in translating the rhetoric of power transfers into practice. From a methodological perspective, this article uses an explicitly historical analysis, which remains an underused methodology in both HRH studies and HPSR.

6.3.2 Effects of management and organizational cultures on health workers

Aberese-Ako M, et al. (2014). "Your health our concern, our health whose concern?": perceptions of injustice in organizational relationships and processes and frontline health worker motivation in Ghana. Health Policy Plan. 29(Suppl. 2):ii15–ii28

Health workers	Multiple public sector hospital based health workers
Geographical area	Ghana
Research methods	Qualitative: Ethnography; participant observation, conversation and in depth interviews over 16 months in two public hospitals
Research inference	Exploratory

Aberese-Ako et al. (2014) use hospital ethnography in two public facilities in Ghana to examine how frontline health workers perceive the fairness of the organizational support they receive, and how this in turn influences their motivation to be responsive to clients' health-care needs. The authors find that frontline staff perceptions of unfairness and mistreatment by the management of their facilities hamper their own ability to deliver good-quality, people-centred care to clients; in essence, there exists a discontinuity of organizational values between what is expected to be delivered to external clients and what is being received by internal clients (that is, staff). Intrinsic motivation among some frontline staff, however, does appear to be a factor

to support responsive care despite the organizational culture. This article importantly makes the case for organizational credibility as a means of supporting health workers in meeting their prescribed duties. As with the other articles in this section, the interplay of various elements of the organizational context on health worker decision-making and behaviour is detected.

Choi SL, et al. (2016). Transformational leadership, empowerment, and job satisfaction: the mediating role of employee empowerment. Hum Resour Health. 14(1):73

Health workers	Public and private sector nurses
Geographical area	Malaysia
Research methods	Quantitative: provider Likert survey and regression analysis
Research inference	Exploratory

Choi et al. (2016) in Malaysia conduct a quantitative survey with a five-point Likert scale investigating the constructs of transformational leadership, empowerment and job satisfaction with nursing students in private and public facilities. The authors discuss hierarchical structures within hospitals that position nurses beneath physicians, commonplace across clinical settings, and suggest the need for new forms of leadership and empowerment to increase nursing job satisfaction. This study adds a key finding that employee empowerment mediates the relationship between transformational leadership and job satisfaction. The role of employee empowerment has been little explored previously, and the authors convincingly argue for transformational leadership and employee empowerment as effective human resource practices to improve management and enhance job satisfaction among staff.

6.3.3 Initiatives to improve leadership and organizational cultures

Prashanth N, et al. (2014). Advancing the application of systems thinking in health: a realist evaluation of a capacity building programme for district managers in Tumkur, India. Health Res Policy Syst. 12:42

Health workers	Public sector primary health care facility managers
Geographical area	India
Research methods	Mixed: realist evaluation using qualitative data (interviews and observation notes) and quantitative measures of commitment, self-efficacy and supervision style
Research inference	Explanatory

In two districts in India, Prashanth et al. (2014) conducted a realist case study with both qualitative and quantitative methods to explain the observed outcomes of a district manager capacity-strengthening programme over time. The authors examine the individual, institutional and contextual influences for arriving at the outcomes of interest based on exposure to the programme (for example, manager intention to make positive change, seeking opportunities to make positive organizational change, and improved annual action planning), and find that responses to the same intervention differ by subdistrict. Variations in manager commitment, self-efficacy and supervision style are highlighted as mechanisms that affect the programme outcomes. Alignment of existing relationships between individual managers and their
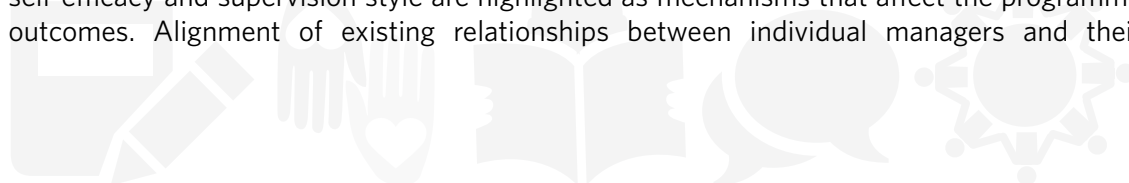
organizations and the broader policy and sociopolitical environment are equally important. The authors demonstrate how the individuality of health managers, organizational factors in which they are embedded, and guiding contexts interact and influence the ability of a training programme to bring about change. (This article is also highlighted in Chapter 3 on health worker training and supervision.)

Lehmann U, Gilson L (2015). Action learning for health system governance: the reward and challenge of co-production. Health Policy Plan. 30(8):957–963

Health workers	Public sector district managers
Geographical area	South Africa
Research methods	Qualitative: action learning on routine district health operations through document review, in-depth interviews, observation, review of notes from field researchers, presentation and workshops notes, and meetings
Research inference	Emancipatory

From the DIALHS project, Lehmann and Gilson (2015) write up a methodological reflection on the utility of long-term action learning and co-production – that is, the collective and collaborative development of research questions and articulation of evidence between researchers and practitioners (in this case, health managers). Specifically, their article highlights the central focus of HPSR on people and their relationships within the health system, the challenges of interdisciplinary work as a way of studying these interactions and the embedded nature of HPSR research. They discuss the themes of working with diversity and managing the complexity of researchers and practitioners in co-production; theorizing relationships of co-production; and characterizing co-production evidence. For example, both practitioners and researchers in this learning site had to grapple with the complexities of transcending distinctions and hierarchies of the researcher–practitioner divide (along with its differing knowledge bases and power dynamics), had to work at forming mutual learning (instead of assuming that it would occur naturally), and had to agree on the nature of evidence. These insights point to the value of new (shared) forms of seeing and understanding leadership and co-creating interventions for leadership development.

6.4 Research challenges, gaps and future directions

While the literature reviewed was rich in management capacity-strengthening, organizational change, organizational cultures and workforce planning (drawing from the classic HRH literature as well as from studies that locate themselves explicitly in the HPSR literature), there exist some challenges in this topic area. These relate mainly to methodology gaps and research topic gaps.

6.4.1 Methodology gaps

While most of the literature on leadership, management and organizational cultures in the context of low- and middle-income countries uses qualitative methods, in high-income country contexts and in non-health sectors such constructs are also measured using quantitative techniques. The insufficient degree of quantitative research in this domain presents a challenge because it potentially limits the understandings of leadership, management and organizational
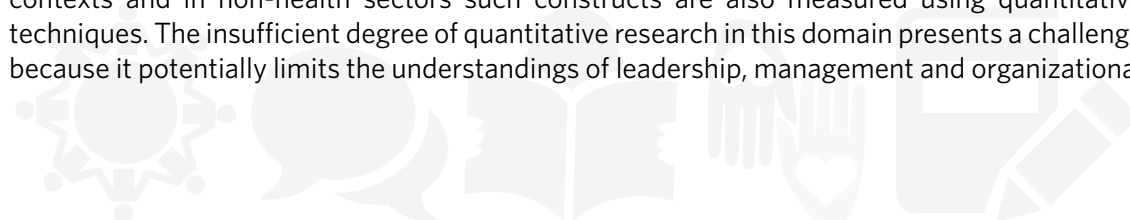
cultures in low- and middle-income countries. There may be a gap in the low- and middle-income country evidence base because existing theoretical and measurement frameworks either are not valid (hence the need to develop them) or are not applicable (that is, the political economy of primary health care services in low- and middle-income countries differs from that in tertiary hospitals in high-income countries or other profit-making sectors). There is a need for more innovation and adaptation for quantitative research techniques to measure leadership, management and organizational cultures and their influence on HRH performance more suited to the context of low- and middle-income countries.

6.4.2 Research topic gaps

A limitation in the current literature is a leanness of empirical articles on gender and leadership, especially in low- and middle-income countries. This is in stark contrast to the "feminized" nature of health-care work and the fact that the literature on gender and HRH tends to focus on frontline nursing or community health work, while issues of gendered leadership and management remain an area of further research. Exceptions are a study from Lebanon that describes the macro-, meso- and micro-level barriers and enablers to women advancing into managerial health-care roles (Tlaiss, 2013), and research that undertakes an exploratory cross-country case study investigating four large-scale European academic health centres to understand institutional support to advancing gender equality at mid- and top-level leadership (Kuhlmann et al., 2017). Clearly, further research on gender and leadership, management and organizational cultures, particularly in the context of low- and middle-income countries, is required.

There also appears to be a gap in evidence on community-level leadership – that is, leadership and management at the community outreach level. Research to date on community governance has focused on the role of community health workers, community voice and participation, and the functioning of health facility committees (see, for example, the body of work developed on accountability, trust and health service performance by the Consortium for Research on Equitable Health Systems, e.g. Macha et al., 2011; Uzochukwu et al., 2011). While this work has discussed the challenges of unclear member roles, questions around true representativeness and power dynamics, and linkages to formal governing structures, this literature has not to date delineated meanings of community leadership and management, and thus raises questions about the forms community leadership takes: how does it manifest, how is it recognized, how is it fostered, and how can it be measured and assessed? This represents a rich gap worthy of further research.

Acknowledgements

References

Aberese-Ako M, et al. (2014). "Your health our concern, our health whose concern?": perceptions of injustice in organizational relationships and processes and frontline health worker motivation in Ghana. Health Policy Plan. 29(Suppl. 2):ii15-ii28. doi:10.1093/heapol/czu068.

Aitken JM (1994). Voices from the inside: managing district health services in Nepal. Int J Health Plann Manage. 9(4):309–340.

Bossert T (1998). Analyzing the decentralization of health systems in developing countries: decision space, innovation and performance. Soc Sci Med. 47(10):1513–1527. doi:10.1016/S0277-9536(98)00234-2.

Bradley EH, Taylor LA, Cuellar CJ (2015). Management matters: a leverage point for health systems strengthening in global health. Int J Health Policy Manage. 4(7):411–415. doi:10.15171/ijhpm.2015.101.

Buchan J (2004). What difference does ("good") HRM make? Hum Resour Health. 2(6). doi:10.1186/1478-4491-2-6.

Choi SL, et al. (2016). Transformational leadership, empowerment, and job satisfaction: the mediating role of employee empowerment. Hum Resour Health. 14(1):73. doi:10.1186/s12960-016-0171-2.

Cogin JA, Ng JL, Lee I (2016). Controlling healthcare professionals: how human resource management influences job attitudes and operational efficiency. Hum Resour Health. 14(55). doi:10.1186/s12960-016-0149-0.

Cummings GG, et al. (2010). Leadership styles and outcome patterns for the nursing workforce and work environment: a systematic review. Int J Nurs Stud. 47(3):363–385. doi:10.1016/j.ijnurstu.2009.08.006.

Dieleman M, Gerretsen B, Van Der Wilt GJ (2009). Human resource management interventions to improve health workers' performance in low and middle income countries: a realist review. Health Res Policy Syst. 7(7). doi:10.1186/1478-4505-7-7.

George A (2009). "By papers and pens, you can only do so much": views about accountability and human resource management from Indian government health administrators and workers. Int J Health Plann Manage. 24(3):205–224. doi:10.1002/hpm.986.

Gilson L (2006). Trust in health care: theoretical perspectives and research needs. J Health Organ Manage. 20(5):359–375. doi: 10.1108/14777260610701768.

Gilson L, Daire J (2011). Leadership and governance within the South African health system. In: Padarath A, English R, editors. South African health review. Durban: Health Systems Trust.

Gilson L, et al. (2014). Advancing the application of systems thinking in health: South African examples of a leadership of sensemaking for primary health care. Health Res Policy Syst. 12(30). doi:10.1186/1478-4505-12-30.

Jayasuriya R, Jayasinghe UW, Wang Q (2014). Health worker performance in rural health organizations in low- and middle-income countries: do organizational factors predict non-task performance? Soc Sci Med. 113:1–4. doi:10.1016/j.socscimed.2014.04.042.

Kolehmainen-Aitken RL (2004). Decentralization's impact on the health workforce: perspectives of managers, workers and national leaders. Hum Resour Health. 2(1):5.

Kramer R (1999). Trust and distrust in organisations: emerging perspectives, enduring questions. Ann Rev Psychol. 50:569–598. doi:10.1146/annurev.psych.50.1.569.

Kuhlmann E, et al. (2017). Closing the gender leadership gap: a multi-centre cross-country comparison of women in management and leadership in academic health centres in the European Union. Hum Resour Health. 15(2). doi:10.1186/s12960-016-0175-y.

Kwamie A (2015). Balancing management and leadership in complex health systems; comment on "Management matters: a leverage point for health systems strengthening in global health". Int J Health Policy Manage. 4(12):849–851. doi:10.15171/ijhpm.2015.152.

Kwamie A, Agyepong IA, Dijk H (2015a). What governs district manager decision making? A case study of complex leadership in Dangme West District, Ghana. Health Syst Reform. 1(2):167–177. doi:10.1080/23288604.2015.1032475.

Kwamie A, et al. (2015b). The path dependence of district manager decision-space in Ghana. Health Policy Plan. 31(3):356–366. doi:10.1093/heapol/czv069.

Lehmann U, Gilson L (2015). Action learning for health system governance: the reward and challenge of co-production. Health Policy Plan. 30(8):957–963. doi:10.1093/heapol/czu097.

Lipsky M (1980). Street-level bureaucracy: dilemmas of the individual in public services. New York: Russell Sage Foundation.

Macha J, Mushi H, Borghi J (2011). Examining the links between accountability, trust and performance in health service delivery in Tanzania. London: Consortium for Research on Equitable Health Systems.

Mansour J, Vriesendorp S, Ellis A (2005). Managers who lead: a handbook for improving health services. Cambridge, MA: Management Sciences for Health.

Marchal B, Dedzo M, Kegels G (2010). A realist evaluation of the management of a well-performing regional hospital in Ghana. BMC Health Serv Res. 10:24. doi:10.1186/1472-6963-10-24.

Nyikuri M, et al. (2015). Crises and resilience at the frontline: public health facility managers under devolution in a sub-county on the Kenyan Coast. PLoS ONE. 10(12):e0144768. doi:10.1371/journal.pone.0144768.

O'Meara WP, et al. (2011). Community and facility-level engagement in planning and budgeting for the government health sector: a district perspective from Kenya. Health Policy. 99(3):234–243. doi:10.1016/j.healthpol.2010.08.027.

Plsek PE, Wilson T (2001). Complexity, leadership, and management in healthcare organisations. BMJ. 323:746–749. doi:10.1136/bmj.323.7315.746.

Prashanth N, et al. (2014). Advancing the application of systems thinking in health: a realist evaluation of a capacity building programme for district managers in Tumkur, India. Health Res Policy Syst. 12:42. doi:10.1186/1478-4505-12-42.

Rocha FLR, et al. (2014). The organizational culture of a Brazilian public hospital. Rev Esc Enferm USP. 48(2):308–314.

Sarros JC, Cooper BK, Santora JC (2008). Building a climate for innovation through transformational leadership and organizational culture. J Leader Organ Stud. 15:145–158. doi:10.1177/1548051808324100.

Scott T, et al. (2003). The quantitative measurement of organizational culture in health care: a review of the available instruments. Health Serv Res. 38(3):923–945. doi:10.1111/1475-6773.00154.

Scott V, et al. (2014). Exploring the nature of governance at the level of implementation for health system strengthening: the DIALHS experience. Health Policy Plan. 29(Suppl. 2):ii59–ii70. doi:10.1093/heapol/czu073.

Tlaiss H (2013). Women in healthcare: barriers and enablers from a developing country perspective. Int J Health Policy Manage. 1(1):23–33. doi:10.15171/ijhpm.2013.05.

Uhl-Bien M, Marion R, McKelvey B (2007). Complexity leadership theory: shifting leadership from the industrial age to the knowledge era. Leader Q. 18(4):298–318. doi:10.1016/j.leaqua.2007.04.002.

Uzochukwu B, et al. (2011). Examining the links between accountability, trust and performance in health service delivery in Orumba South Local Government Area, Nigeria. London: Consortium for Research on Equitable Health Systems.

World Health Organization (2007a). Managing the health Millennium Development Goals: the challenge of management strengthening, lessons from three countries – making health systems work. Geneva: World Health Organization.

World Health Organization (2007b). Towards better leadership and management in health: report on an international consultation on strengthening leadership and management in low-incomes countries, 29 January–1 February 2007, Accra, Ghana – making health systems work. Geneva: World Health Organization.

World Health Organization (2016). Open mindsets: participatory leadership for health. Geneva: World Health Organization.

Chapter 7.

Brokering policies and politics for human resources for health

Veena Sriram

7.1 Defining the chapter

Policy-making is a critical component of human resources for health (HRH) governance, concerning the development and implementation of rules and regulations that shape the health workforce (Dieleman et al., 2011; Fryatt et al., 2017). Significant normative and technical work supports the content of HRH policy, such as rural retention of health workers (World Health Organization (WHO), 2010a), task-shifting (WHO, 2007) and international recruitment (WHO, 2010b). Policy-making pertaining to HRH remains highly uneven, however, with many policies often unadopted or inadequately implemented (Fieno et al., 2016). From a research standpoint, scarce attention is given to the process of policy-making, including the role and interests of stakeholders (Buse et al., 2005). Politics and power often lie behind these phenomena, and, therefore, examining policy-making through these lenses is critical for a more holistic and realistic understanding of health workforce policy-making in low- and middle-income countries (Buse et al., 2005; Dieleman et al., 2011; Mitchell and Bossert, 2013).

This chapter highlights exemplary research on HRH policy-making and politics in low- and middle-income countries, with a particular focus on policy development and its underlying power dynamics (Table 7.1). Research that informs the technical basis of HRH policy or that evaluates HRH policies is found throughout the reader. For example, Shen et al. (2017) in Chapter 4 review the impact of performance-based financing on health worker motivation in Zambia; and Kwamie et al. (2014) in Chapter 6 assess the implementation of a decentralized management and leadership initiative in Ghana.

Table 7.1 Key definitions for governance, policy, politics and power

Governance	"… governance entails transferring some decision-making responsibility from individuals to a governing entity, with implementation by one or more institutions, and with accountability mechanisms to monitor and assure progress on decisions made" (Fryatt et al., 2017, pp. 1–2) "Governance is about the rules that distribute roles and responsibilities among societal actors and that shape the interactions among them" (Brinkerhoff and Bossert, 2008, p. 3)
Policy	"Broad statement of goals, objectives and means that create the framework for activity. Often take the form of explicit written documents, but may also be implicit or unwritten" (Buse et al., 2005, p. 4)
Politics	"The art or science concerned with guiding or influencing governmental policy" (Merriam-Webster) "Who gets what, when, how" (Lasswell, 1936)
Power	"The ability or capacity to do something or act in a particular way" (Oxford Dictionaries) "The capacity or ability to direct or influence the behaviour of others or the course of events" (Oxford Dictionaries)

7.2 Background on politics and policies

Policy-making is an inherently political process, characterized by ambiguity, competition, limited windows of opportunity and decision-making, interests, incentives and disruption (Fieno et al., 2016). Underlying any policy-making are clear political dimensions – the relationships of stakeholders involved in the policy process, their interests and negotiating positions, and the broader political system in which these interactions occur. This section reviews key characteristics of HRH policy-making and the social science approaches that have been used to examine this topic.

HRH policy is differentiated from other forms of health policy-making by the direct involvement of various organized forms of professions and occupations, the implicit and explicit hierarchies within and across health worker cadres, and the interests, skills and social positioning (gender, class, ethnicity, sexuality and race) of these groups (AbuAlRub and Foudeh, 2017; Blaauw et al., 2014; Daniels et al., 2012; Ditlopo et al., 2014; Pick et al., 2012). Beyond representatives of the health workforce, several other state and non-state actors are involved (Table 7.2), including ministries, central government agencies, local government, educational institutions, international agencies and civil society (Fieno et al., 2016; Martinez and Martineau, 1998; Mitchell and Bossert, 2013). The role of power in stakeholder engagement is also deeply intertwined in the policy process. Further, the influence of these stakeholders is driven by context, including regime type, political and economic stability, and nature of reform (Healy and McKee, 1997; Mitchell and Bossert, 2013; Witter et al., 2016).

Table 7.2 Stakeholders impacting on human resources for health policy (adapted from Martinez and Martineau, 1998; Mitchell and Bossert, 2013)

Government	Health (national, regional, local government) Executive leadership (president, prime minister, cabinet) Legislative bodies Finance Education Labour Defence and military Civil service agencies and commissions Statutory professional councils
Employers	Private for profit businesses Public–private partnerships Voluntary or non-profit-making organizations
Representatives of health workers	Professional and occupational associations Professional and occupational unions
International stakeholders	Bilateral and multilateral agencies Philanthropic organizations Professional and occupational organizations
Civil society	Community-based organizations Patients' rights organizations
Other stakeholders	Media Pharmaceutical and medical device companies

The diverse stakeholder interests that drive HRH policies mean there are various overlapping spheres of policy content – health policy, health workforce policy, broader civil service policy, and other social policies (Figure 7.1). Most health policies have implications for the health workforce (Dussault and Dubois, 2003; Rigoli and Dussault, 2003). For example, introducing new financing mechanisms, integrating health services and enforcing standards of care all have a direct impact on health workers and therefore require HRH considerations during the policy-making process. Next are those health workforce policies that impact directly on entry (recruitment, selection and induction), training, supervision, promotion and performance (Dussault and Dubois, 2003; Vujicic et al., 2009). Such policies might be specific to public-sector employees but could also involve the regulation of health workers in the private or non-profit sectors. For example, while ministries or departments of health might coordinate or set policy pertaining to remuneration, supervision, performance and dual practice for public-sector workers (De Geyndt, 2017; Kiwanuka et al., 2010; Pierantoni and Garcia, 2011), professional councils might set training or ethical conduct policy for both public-sector and private-sector health workers (Hongoro and Kumaranayake, 2000). Following this are civil service policies that apply to central, state or local government employees, such as policies pertaining to recruitment, remuneration, benefits, posting and transfer and ethical conduct (De Geyndt, 2017; Vujicic et al., 2009). Finally, broader social policies strongly influence the development of the health workforce, including education, emigration and decentralization (Clemens, 2014; Martinez and Martineau, 1998).

Figure 7.1 Different spheres for human resources for health policy

One way of trying to understand the policymaking process, and its underlying politics, is to view the process as a series of phases, otherwise known as the stages heuristic: agenda-setting, formulation, implementation and evaluation (Walt et al., 2008). This framework has been criticized, however, for assuming a linearity in policy-making that is rarely found in practice (Walt et al., 2008). Some studies have examined HRH policy-making during the agenda-setting phase, when certain policy issues rise to the top of decision-makers' agendas – for example, the development of a lay community health worker programme in South Africa (Daniels et al., 2012) or the initiation of pay for performance in the Tanzanian health sector (Chimhutu et al., 2015). Other studies have examined the agenda-setting and formulation phases in conjunction; examples include nursing education reform in South Africa (Blaauw et al., 2014) and overtime allowance for public-sector health workers in Ghana (Agyepong et al., 2012). Strikingly, despite their centrality to the policy process, research on the perspectives and involvement of frontline health workers in agenda-setting and policy formulation is more limited (AbuAlRub and Foudeh, 2017; Agartan, 2015; Ditlopo et al., 2014; Scott et al., 2012).

A greater proportion of HRH policy studies have explored the implementation of particular HRH policies. Some studies have examined the perspectives of health workers in interpreting and implementing policy objectives. Relevant examples include participation in a new community health worker programme in Ethiopia (Maes et al., 2015), implementation of a health financing intervention in South Africa (Walker and Gilson, 2004), and experiencing decentralization policy in Uganda (Kyaddondo and Whyte, 2003) and South Africa (McIntyre and Klugman, 2003). Others have used systems thinking to explore the intended and unintended impacts of decisions taken during the policy process, such as around overtime allowance for Ghanaian public-sector health workers (Agyepong et al., 2012). In addition, researchers have examined how health workers develop informal mechanisms for addressing policy-deficient human resource issues, such as posting and transfer in the Nigerian health sector (Abimbola et al., 2016).

Finally, a variety of social science approaches have been applied to various research questions concerning HRH policy, allowing us to broaden the discourse from the "technical" nature of policies to the complex factors underlying policy-making at each stage, and the intended and unintended consequences that emerge as a result (Fieno et al., 2016). The stages heuristic emerged from political science, and other theoretical frameworks rooted in that discipline allow

for further depth in examining policy-making (Berlan et al., 2014; Erasmus, 2014; Kingdon, 1995; Shiffman and Smith, 2007; Walt and Gilson, 1994). Closely related are those studies drawing upon political economy frameworks to understand HRH policy-making by exploring the interplay between structure (institutions and context) and agency (actors, incentives and behaviours) (Bertone and Witter, 2015; Chimhutu et al., 2015; Fieno et al., 2016). Sociology provides an array of theories by which to understand professions and occupations, shedding light on how these groups interact and organize, and how they use their power to engage in policy-making (Freidson, 1970; Saks, 2016), although such analyses in low- and middle-income countries are less common (Jeffrey, 1977). Finally, historically grounded analyses have helped trace the evolution of HRH policy, for example in Brazil, India, Sierra Leone and Mexico (Bertone et al., 2014; Buchan et al.; 2011; Maru, 1985; Nigenda and Solorzano, 1997).

7.3 Illustrative primary research articles

The six articles presented below illustrate health policy and systems research (HPSR) methodologies that unpack the politics involved in brokering HRH policy-making. These articles were selected from a pool collated from a doctoral seminar at the Johns Hopkins School of Public Health, a crowdsourcing exercise supported by Health Systems Global and subsequent searches using the bibliography of key articles and on relevant databases and search engines (PubMed and Google Scholar). The main criteria used to select the articles included diversity in region, cadre and methods, as well as the quality of the studies based on standard guidelines.

7.3.1 Historical and political analyses of human resources for health policy-making

Nigenda G, Solorzano A (1997). Doctors and corporatist politics: the case of the Mexican medical profession. J Health Polit Policy Law. 22(1):73–99

Health workers	Physicians
Geographical area	Mexico
Research methods	Qualitative: Historical and political analysis using historical data, document review and interviews
Research inference	Explanatory

Nigenda and Solorzano (1997) provide a rich analysis of the development of the medical profession in Mexico, vis-à-vis its relationship with the state. The dynamic between the medical profession and the state strongly influences issues of health worker training, performance and quality. A key dimension of this dynamic is the organization of the medical profession – the degree to which doctors are organized into associations or unions, their lobbying power with the state, and the state's control over key health workforce issues, such as medical education and licensing. Critical explorations into these aspects of the medical profession remain underresearched in the context of low- and middle-income countries. In this article, the authors describe the shifting interactions between the state and the profession during three time periods from 1917 to 1988, finding that efforts taken by the medical profession to influence medical education, licensing, market forces or workplace policies were met with "continuous and systematic interference by the state", resulting in the fragmentation of the profession into multiple, relatively weak organizations with minimal power and cohesion. Their findings are a notable departure from the dominant literature on the topic from high-income settings, where organized medicine has a major, often unified role in influencing policy. Drawing on historical data, available literature and select interviews, the authors carefully construct a case study of each of these time periods, detailing the interests and power base of each stakeholder involved in the process. Their research helps shed light on more contemporary issues facing

the profession, such as intraprofessional class imbalances and high rates of unemployment or underemployment. This study is therefore a strong example of using in-depth longitudinal case studies, grounded in historical analysis, to explain the current scenario of a particular health workforce by tracing its evolution through time.

Bertone MP, et al. (2014). A window of opportunity for reform in post-conflict settings? The case of human resources for health policies in Sierra Leone, 2002–2012. Confl Health. 8(1):11

Health workers	Multiple health workers
Geographical area	Sierra Leone
Research methods	Qualitative: political economy, stakeholder mapping workshop, document review, key informant interviews
Research inference	Explanatory

Bertone et al. (2014) address a key gap in the HRH policy literature – the evolution of HRH policy in post-conflict settings. In this comprehensive, in-depth case study of the HRH "policy story" in post-conflict Sierra Leone, the authors explore the period between 2002 and 2012 to understand the nature of decision-making and the factors and actors influencing these processes. Importantly, this paper seeks to deepen our understanding of whether HRH policy in post-conflict Sierra Leone developed due to path dependency or due to windows of opportunity. This study was also part of a comparative assessment of post-conflict HRH policy-making with three other countries – Uganda, Cambodia and Zimbabwe (Witter et al., 2016). The study is qualitative in nature and uses policy analysis to examine the dynamism between contextual factors, such as the political system and historical factors, the actors involved and their power bases, and changing formal and informal institutional contexts. To do this, the authors draw upon varied sources of information, including a stakeholder mapping workshop, document review and in-depth interviews. The authors helpfully describe the iterative use of these three data sources, noting that each source builds upon the other and allows for both comparison and triangulation, important particularly due to lack of available documentation and the difficulty of participants in recollecting details about the period. The findings are structured by time period, allowing readers to immerse themselves in the details of the case, before delving into the intricate analysis. A weakness of some policy analyses is the lack of interpretive analysis of data; this article represents a strong example of looking deeper into the data and connecting threads to hypothesize why policy scenarios evolve in certain patterns, and what this might tell us about existing theories of policy development in post-conflict settings.

Health workers	Public and private sector nurses
Geographical area	Lebanon
Research methods	Qualitative: case study research using key informant interviews and stakeholder panel discussion
Research inference	Explanatory

A good example of HRH policy analysis is a comprehensive qualitative case study pertaining to the development of a nursing profession practice law in Lebanon conducted by El-Jardali et al. (2014). The authors use the Walt and Gilson (1994) triangle to outline key facets in the 13-year development of the law and build on the framework by examining multiple stages of the law's development, the role of power, and issues such as the role of gender and sectarianism in policy-making. This study represents an excellent example of applying policy analysis in the context of a legislative process, detailing the interests and positions of a variety of stakeholders (ministries, professional orders, educational institutions, private hospitals and parliamentarians) in a manner that explains the basis for current inaction and delay in passing the law. The case study is also strongly grounded in context, with richly detailed information on the political and health-care systems. The authors are also reflective on their own position as researchers, particularly on how their insider status may have facilitated access to high-level stakeholders. To address potential resulting biases, they involved "outsiders" and those from other disciplines. Finally, the use of a stakeholder panel discussion as a methodological technique appears a useful validation technique. Other studies using similar qualitative policy analysis of HRH policy making processes include research by Daniels et al. (2012) and Blaauw et al. (2014), both on health worker policy in South Africa.

7.3.2 Contemporary human resources for health policy dynamics

Health workers	Multiple health workers
Geographical area	China, India and Viet Nam
Research methods	Qualitative: comparative case study analysis of policy coherence across countries and between policy spheres
Research inference	Explanatory

This study involves comparative analysis of coherence between health policy and human resource strategy. Using data from a comparative analysis of maternal health policy across Viet Nam, India and China, the authors examined the level of coherence between the development and implementation of maternal health policy and human resource strategy in each country. The authors also explored the various factors that influenced coherence in the cases. The analysis is anchored by a framework from Torrington et al. (2002) that categorizes the relationship between organizational and human resource strategy (separation, fit, dialogue, holistic, human resource-driven). Drawing upon country reports that used semistructured interviews, document review and participatory stakeholder workshops, researchers on the team analysed human resource data pertaining to human resource planning and workforce deployment, training and financing, continuing professional development and performance management. The authors present a comparative analysis based on the Torrington framework during both

the policy development and implementation stages, and then they discuss the various factors that could explain the reasons for the levels of coherence found in the analysis. This paper represents an excellent example of using analytical frameworks from diverse disciplines, in this case from human resource management, to provide a robust comparative analysis. The authors also make a compelling case for integrating human resource questions into broader health systems and health policy studies.

Brugha R, et al. (2010). Health workforce responses to global health initiatives funding: a comparison of Malawi and Zambia. Hum Resour Health. 8(1):19

Health workers	Public sector frontline workers and district managers
Geographical area	Malawi, Zambia
Research methods	Mixed: cross-country comparative analysis using health facility data and in-depth interviews
Research inference	Influence

This study represents a solid example of using a mixed-method comparative approach to understand the impacts of policy shifts on health workers, specifically the impact of global health initiative funding for human immunodeficiency virus (HIV) services. The authors hypothesize that countries with more coordinated global health funding would experience fewer barriers to a coordinated national human resource strategy compared with countries with a more crowded global health funding landscape. To test this hypothesis, the authors compared Malawi, with HIV funding from the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund), and Zambia, with funding from both the Global Fund and the United States President's Emergency Plan for AIDS Relief (PEPFAR). The careful use of health facility data in this study demonstrates the value and also "messiness" of using routine data, strengthened by extensive interviews with a range of frontline and district staff. The intent behind the mixing of methods is evident, as the qualitative data were used to deepen the quantitative findings, highlighting the issues and challenges perceived by health workers regarding scale-up of HIV services. In doing so, the authors bring forward clear evidence for the different impacts of Global Fund and PEPFAR funding on human resources for health, suggesting that the power dynamics emerging from more contested policy environments have direct consequences on governments' abilities to coordinate human resource policy more effectively. Other HPSR studies exploring the impact of global health initiatives on the health workforce include qualitative policy analysis (Chimhutu et al., 2015; Hanefeld and Musheke, 2009), systematic document review (Vujicic et al., 2012) and comparative case analysis (Witter et al., 2016).

Purohit B, Martineau T, Sheikh K (2016). Opening the black box of transfer systems in public sector health services in a Western state in India. BMC Health Serv Res. 16(1):419

Health workers	Public sector physicians
Geographical area	India
Research methods	Qualitative: interview and document review, contrasting policy architecture with practice
Research inference	Explanatory

A key governance challenge impacting health workers in low- and middle-income country settings remains the ambiguity around their posting and transfer; however, the deeply sensitive nature of these issues makes research efforts challenging (Abimbola et al., 2016; Schaaf and Freedman, 2015). Purohit et al. (2016) make a valuable contribution to the literature by opening

up the "black box" of posting and transfer policy in one Indian state. Specifically, the authors set out to unpack the linkages between human resource policy as intended, human resource policy as practised, the perceptions of frontline medical officers regarding these policies, and the connection between these policies, staff behaviour and organizational policies. The authors use a two-step approach. First, they developed a "systems map" consisting of existing transfer policies; second, they conducted a "systems audit" through in-depth interviews with medical officers. The interview data were used to construct job histories to examine how posting and transfer policy is actually implemented. The findings as presented are compelling, indicating considerable ambiguity in terms of transfer policy, and even further ambiguity and dissonance in their actual practice. Specifically, the information provided on the interplay between Public Service Commission policy and the Health Department is illuminating, given the scarcity of research on civil service agencies in HPSR. The findings are interwoven with numerous quotes, giving readers insight into how medical officers perceive and experience the system. The authors also engage with highly sensitive issues of political and financial influence during postings and transfers. Finally, the multifaceted nature of the issue comes through clearly, including the complicated hierarchies of health workers in the public sector, and the myriad push and pull factors underlying decision-making on postings and transfers.

7.4 Research challenges, gaps and future directions

Despite growing recognition regarding its importance, research on HRH policy-making and its underlying politics in low- and middle-income country settings remains sparse. The following methodological challenges in conducting this type of research were noted in the articles reviewed in developing this chapter.

Researchers focusing on national- and state-level processes that require input from high-level policy-makers might also run into obstacles in gaining access and obtaining permission for interviews, document review or observation. Related ethical challenges include respondents possibly revealing highly sensitive data, necessitating that researchers adhere to the strictest standards of confidentiality in their reporting. These sorts of challenges also lead us to question the positionality of researchers working on policy and politics (Walt et al., 2008), and one could argue that researchers who are junior or who do not belong to elite institutions might face unfairly disproportionate difficulties in accessing possible informants. Similarly, senior researchers with good access to, and trust with, policy-makers or other stakeholders might be challenged in reporting findings that could negatively impact these relationships.

Studies on this topic are primarily qualitative and often rely solely on in-depth interviews as a data source. While such an approach may be valuable, and sometimes the only feasible way forward, the studies in this section suggest that thinking innovatively about complementary data sources can lead to richer findings and analysis through triangulation across data sources. Broadening data sources is particularly important, as respondents do not always recall or reveal key details about HRH policy-making. In addition to triangulating interview sources (due to the issue of stakeholders often having divergent and competing perspectives), triangulating interview data with a robust document review, media reports, routine staffing data, auditing data, stakeholder panels or non-participant observation can greatly strengthen data quality and trustworthiness (Bryman, 2004; Gilson et al., 2011). Such approaches may also be used iteratively, adaptively building on one another to sharpen research questions and analysis, and could be strengthened further by prolonged engagement, contextual analysis and other techniques to improve rigor (Gilson et al., 2011).

The importance of the social sciences to research on HRH policy-making has been discussed previously; from a methodological standpoint, expanding the use of social science theory and methods will be critical to strengthening the knowledge base in this area. For example, ethnography might be valuable in determining the underlying parameters for decision-making

in policy-making or understanding the institutional and organizational contexts in which health workers are situated (Maes and Kalofonos, 2013; Ruddock, 2016); sociology can help us examine the interests and interactions of various health worker organizations, groups and associations; and political science can unpack the linkages between political systems, regulatory systems and HRH policies (Fieno et al., 2016).

Finally, using mixed-method approaches may also be highly appropriate for many research questions. Quantitative or mixed-methods approaches can add critical perspectives. For example, social network analysis is increasingly being applied to questions of policy-making, strengthening our understanding of the positioning and relative power of various stakeholders (Jessani et al., 2016). Data pertaining to more latent performance variables, such as satisfaction, stress and burnout, can contribute to examining impacts of policy implementation on health workers. Mixed-method approaches, such as studies by Brugha et al. (2010) and Bowser et al. (2014), can qualify quantitative indicators, such as those measuring service delivery or financing, with the perspectives of key policy actors, including frontline health workers, managers and policy-makers, in order to make inferences about the broader policy environment.

From a thematic perspective, further research on the politics of HRH policy-making could proceed in several exciting directions.

HRH policy represents several policy spheres (as noted in Figure 7.1), and research on policy-making in each of these domains is vastly underrepresented in the literature, particularly health worker policy, civil service policy and social policy. Researchers can make significant contributions by conducting studies that examine policy-making in these spheres from a range of perspectives – civil society organizations, patients' rights organizations, professional associations and unions, a multitude of government agencies, and multiple types of cadre (informal to formal, lay to specialized, public to private, allopathic to non-allopathic) (Sheikh et al., 2017). Applying an approach that is grounded in a people-centred understanding of health policy and systems would also allow us to integrate questions of power (Sheikh et al., 2014), a driving force in policy-making of any kind.

Regulation is a key aspect of health workforce policy but remains understudied in low- and middle-income country contexts. The nature of health worker regulation involves critical questions around the involvement of the state, the role of professions and occupations, and the nature of formal and informal regulatory mechanisms. For methodological guidance, researchers may look towards the rigorous work of Hongoro and Kumaranayake (2000), in their research on regulating private providers in Zimbabwe; Sheikh et al. (2013), in their mapping of health sector regulation in two Indian states; and Doherty (2015), in her document review of regulatory legislation from southern and eastern African countries.

Finally, studies concerning accountability and transparency in the policy process are important but often sensitive topics for empirical work. For example, examining the ways in which health workers, community groups or patients' rights advocates are involved in HRH policy is poorly understood, perhaps reflecting the relatively exclusive and elite nature of these policy-making processes (Daniels et al., 2012). As another example, studies regarding corruption in HRH policy-making are still largely untapped due to the highly sensitive nature of the topic (Rispel et al., 2016; Vian, 2008). Such studies, while challenging to implement, are essential to providing a more accurate and grounded understanding of the power dynamics embedded within policy-making and to facilitating improved accountability and transparency in health policy-making.

Acknowledgements

References

Abimbola S, et al. (2016). Where there is no policy: governing the posting and transfer of primary health care workers in Nigeria. Int J Health Plann Manage. doi:10.1002/hpm.2356. [Epub ahead of print]

AbuAlRub RF, Foudeh FN (2017). Jordanian nurses' involvement in health policy: perceived benefits and barriers. Int Nurs Rev. 64(1):13–21. doi:10.1111/inr.12249.

Agartan TI (2015). Health workforce policy and Turkey's health care reform. Health Policy. 119(12):1621–1626.

Agyepong IA, et al. (2012). When "solutions of yesterday become problems of today": crisis-ridden decision making in a complex adaptive system (CAS) – the additional duty hours allowance in Ghana. Health Policy Plan. 27(Suppl. 4):iv20–iv31.

Berlan D, et al. (2014). The bit in the middle: a synthesis of global health literature on policy formulation and adoption. Health Policy Plan. 29(Suppl. 3):iii23–iii34.

Bertone MP, Witter S (2015). An exploration of the political economy dynamics shaping health worker incentives in three districts in Sierra Leone. Soc Sci Med. 141:56–63. doi:10.1016/j.socscimed.2015.07.028.

Bertone MP, et al. (2014). A window of opportunity for reform in post-conflict settings? The case of human resources for health policies in Sierra Leone, 2002–2012. Confl Health. 8(1):11.

Blaauw D, Ditlopo P, Rispel LC (2014). Nursing education reform in South Africa: lessons from a policy analysis study. Glob Health Action. 7(1):26 401. doi:10.3402/gha.v7.26401.

Bowser D, et al. (2014). Global Fund investments in human resources for health: innovation and missed opportunities for health systems strengthening. Health Policy Plan. 29(8):986–997. doi:10.1093/heapol/czt080.

Brinkerhoff D, Bossert T (2008). Health governance: concepts, experience, and programming options. Health Systems 20/20 Project. Washington, DC: United States Agency for International Development.

Brugha R, et al. (2010). Health workforce responses to global health initiatives funding: a comparison of Malawi and Zambia. Hum Resour Health. 8(1):19.

Bryman A (2004). Social research methods. New York: Oxford University Press.

Buchan J, Fronteira I, Dussault G (2011). Continuity and change in human resources policies for health: lessons from Brazil. Hum Resour Health. 9:17. doi:10.1186/1478-4491-9-17.

Buse K, Mays N, Walt G (2005). Making health policy. Maidenhead, UK: Open University Press.

Chimhutu V, et al. (2015). Introducing payment for performance in the health sector of Tanzania: the policy process. Glob Health. 11:38. doi:10.1186/s12992-015-0125-9.

Clemens M (2014). A case against taxes and quotas on high-skill emigration. J Glob Dev. 5(1):1–39. doi:10.1515/jgd-2014-0015.

Daniels K, Clarke M, Ringsberg KC (2012). Developing lay health worker policy in South Africa: a qualitative study. Health Res Policy Syst. 10:8. doi:10.1186/1478-4505-10-8.

De Geyndt W (2017). Does autonomy for public hospitals in developing countries increase performance? Evidence-based case studies. Soc Sci Med. 179:74–80. doi:10.1016/j.socscimed.2017.02.038.

Dieleman M, Shaw DM, Zwanikken P (2011). Improving the implementation of health workforce policies through governance: a review of case studies. Hum Resour Health. 9:10. doi:10.1186/1478-4491-9-10.

Ditlopo P, et al. (2014). Contestations and complexities of nurses' participation in policy-making in South Africa. Glob Health Action. 7(1):25 327. doi:10.3402/gha.V7.25327.

Doherty JE (2015). Regulating the for-profit private health sector: lessons from east and southern Africa. Health Policy Plan. 30(Suppl. 1):i93–i102. doi:10.1093/heapol/czu111.

Dussault G, Dubois C-A (2003). Human resources for health policies: a critical component in health policies. Hum Resour Health. 1(1):1.

El-Jardali F, et al. (2014). The making of nursing practice law in Lebanon: a policy analysis case study. Health Res Policy Syst. 12:52.

Erasmus E (2014). The use of street-level bureaucracy theory in health policy analysis in low- and middle-income countries: a meta-ethnographic synthesis. Health Policy Plan. 29(Suppl. 3):iii70–iii78. doi:10.1093/heapol/czu112.

Fieno JV, et al. (2016). A political economy analysis of human resources for health (HRH) in Africa. Hum Resour Health. 14(1):44. doi:10.1186/s12960-016-0137-4.

Freidson E (1970). Profession of medicine: a study of the sociology of applied knowledge. New York: Dodd, Mead and Company.

Fryatt R, Bennett S, Soucat A (2017). Health sector governance: should we be investing more? BMJ Glob Health. 2(2):e000343. doi:10.1136/bmjgh-2017-000343.

Gilson L, et al. (2011). Building the field of health policy and systems research: social science matters. PLoS Med. 8(8):e1001079. doi:10.1371/journal.pmed.1001079.

Hanefeld J, Musheke M (2009). What impact do global health initiatives have on human resources for antiretroviral treatment roll-out? A qualitative policy analysis of implementation processes in Zambia. Hum Resour Health. 7:8. doi:10.1186/1478-4491-7-8.

Healy J, Mckee M (1997). Health sector reform in central and eastern Europe: the professional dimension. Health Policy Plan. 12(4):286–295.

Hongoro C, Kumaranayake L (2000). Do they work? Regulating for-profit providers in Zimbabwe. Health Policy Plan. 15(4):368–377. doi:10.1093/heapol/15.4.368.

Jeffrey R (1977). Allopathic medicine in India: a case of deprofessionalization? Soc Sci Med. 11(10):561–573.

Jessani NS, Boulay MG, Bennett SC (2016). Do academic knowledge brokers exist? Using social network analysis to explore academic research-to-policy networks from six schools of public health in Kenya. Health Policy Plan. 31(5):600–611. doi:10.1093/heapol/czv107.

Kingdon JW (1995). Agendas, alternatives and public policies. New York: HarperCollins.

Kiwanuka SN, et al. (2010). Dual practice regulatory mechanisms in the health sector: a systematic review of approaches and implementation. London: Eppi-Centre, Social Science Research Unit, Institute Of Education, University Of London.

Kwamie A, Van Dijk H, Agyepong IA (2014). Advancing the application of systems thinking in health: realist evaluation of the leadership development programme for district manager decision-making in Ghana. Health Res Policy Syst. 12:29. doi:10.1186/1478-4505-12-29.

Kyaddondo D, Whyte SR (2003). Working in a decentralized system: a threat to health workers' respect and survival in Uganda. Int J Health Plann Manage. 18(4):329–342. doi:10.1002/hpm.730.

Lasswell H (1936). Politics: who gets what, when, how. New York, London: Whittlesey House, McGraw-Hill Book Co.

Maes K, Kalofonos I (2013). Becoming and remaining community health workers: perspectives from Ethiopia and Mozambique. Soc Sci Med. 87:52–59. doi:10.1016/j.socscimed.2013.03.026.

Maes K, et al. (2015). Using community health workers: discipline and hierarchy in Ethiopia's Women's Development Army. Ann Anthropol Pract. 39(1):42–57. doi:10.1111/napa.12064.

Martineau T, et al. (2015). Coherence between health policy and human resource strategy: lessons from maternal health in Vietnam, India and China. Health Policy Plan. 30(1):111–120.

Martinez J, Martineau T (1998). Rethinking human resources: an agenda for the millennium. Health Policy Plan. 13(4):345–358. doi:10.1093/heapol/13.4.345.

Maru RM (1985). Policy formulation as political processes: a case study of health manpower – 1949–75. In: Ganapathy RS, et al., editors. Public policy and policy analysis in India. New Delhi: Sage Publications.

McIntyre D, Klugman B (2003). The human face of decentralisation and integration of health services: experience from South Africa. Reprod Health Matters. 11(21):108–119.

Merriam-Webster. Politics. Springfield, MA: Merriam-Webster (https://www.merriam-webster.com/dictionary/politics).

Mitchell A, Bossert T (2013). Politics and governance in human resources for health. In: Soucat A, Scheffler R, Ghebreyesus TA, editors. The labor market for health workers in Africa: a new look at the crisis. Washington, DC: World Bank.

Nigenda G, Solorzano A (1997). Doctors and corporatist politics: the case of the Mexican medical profession. J Health Polit Policy Law. 22(1):73–99.

Oxford Dictionaries. Power. Oxford: Oxford University Press (https://en.oxforddictionaries.com/definition/power).

Pick W, et al. (2012). Health activism in Cape Town: a case study of the Health Workers Society. S Afr Med J. 102(6):403–405.

Pierantoni CR, Garcia AC (2011). Human resources for health and decentralization policy in the Brazilian health system. Human Resour Health. 9:12. doi:10.1186/1478-4491-9-12.

Purohit B, Martineau T, Sheikh K (2016). Opening the black box of transfer systems in public sector health services in a western state in India. BMC Health Serv Res. 16(1):419. doi:10.1186/s12913-016-1675-0.

Rigoli F, Dussault G (2003). The interface between health sector reform and human resources in health. Human Resour Health. 1(1):9.

Rispel LC, de Jager P, Fonn S (2016). Exploring corruption in the South African health sector. Health Policy Plan. 31(2):239–249. doi:10.1093/heapol/czv047.

Ruddock A (2016). Special medicine: producing doctors at the All India Institute of Medical Sciences (AIIMS). PhD dissertation. London: King's College London.

Saks M (2016). A review of theories of professions, organizations and society: the case for neo-weberianism, neo-institutionalism and eclecticism. JPO. 3(2):170–187. doi:10.1093/jpo/jow005.

Schaaf M, Freedman LP (2015). Unmasking the open secret of posting and transfer practices in the health sector. Health Policy Plan. 30(1):121–130. doi:10.1093/heapol/czt091.

Scott V, Mathews V, Gilson L (2012). Constraints to implementing an equity-promoting staff allocation policy: understanding mid-level managers' and nurses' perspectives affecting implementation in South Africa. Health Policy Plan. 27(2):138–146. doi:10.1093/heapol/czr020.

Sheikh K, Saligram PS, Hort K (2013). What explains regulatory failure? Analysing the architecture of health care regulation in two Indian states. Health Policy Plan. 30(1):39–55. doi:10.1093/heapol/czt095.

Sheikh K, George A, Gilson L (2014). People-centred science: strengthening the practice of health policy and systems research. Health Res Policy Syst. 12(19):19. doi:10.1186/1478-4505-12-19.

Sheikh K, et al. (2017). Governing the mixed health workforce: learning from Asian experiences. BMJ Glob Health. 2(2):e000267. doi:10.1136/bmjgh-2016-000267.

Shen GC, et al. (2017). Incentives to change: effects of performance-based financing on health workers in Zambia. Hum Resour Health. 15(1):20. doi:10.1186/s12960-017-0179-2.

Shiffman J, Smith S (2007). Generation of political priority for global health initiatives: a framework and case study of maternal mortality. Lancet. 370(9595):1370–1379. doi:10.1016/S0140-6736(07)61579-7.

Torrington D, Hall L, Taylor S (2002). Human resource management. Harlow, UK: Pearson Education.

Vian T (2008). Review of corruption in the health sector: theory, methods and interventions. Health Policy Plan. 23(2):83–94. doi:10.1093/heapol/czm048.

Vujicic M, Ohiri K, Sparkes S (2009). Working in health: financing and managing the public sector health workforce. Washington, DC: World Bank.

Vujicic M, et al. (2012). An analysis of GAVI, the Global Fund and World Bank support for human resources for health in developing countries. Health Policy Plan. 27(8):649–657. doi:10.1093/heapol/czs012.

Walker L, Gilson L (2004). "We are bitter but we are satisfied": nurses as street-level bureaucrats in South Africa. Soc Sci Med. 59(6):1251–1261. doi:10.1016/j.socscimed.2003.12.020.

Walt G, Gilson L (1994). Reforming the health sector in developing countries: the central role of policy analysis. Health Policy Plan. 9(4):353–370.

Walt G, et al. (2008). "Doing" health policy analysis: methodological and conceptual reflections and challenges. Health Policy Plan. 23(5):308–317. doi:10.1093/heapol/czn024.

World Health Organization (2007). Task shifting: rational redistribution of tasks among health workforce teams – global recommendations and guidelines. Geneva: World Health Organization.

World Health Organization (2010a). Increasing access to health workers in remote and rural areas through improved retention: global policy recommendations. Geneva: World Health Organization.

World Health Organization (2010b). WHA63.16. WHO global code of practice on the international recruitment of health personnel. In: Sixty-third World Health Assembly, Geneva. Geneva: World Health Organization.

Witter S, et al. (2016). Evolution of policies on human resources for health: opportunities and constraints in four post-conflict and post-crisis settings. Confl Health. 10:31. doi:10.1186/s13031-016-0099-0.

Epilogue:

Reflections on health policy and systems research contributions to human resources for health

Asha George

Health policy and systems research (HPSR) advances understanding of the varied ways in which societies organise themselves to achieve better health (WHO, 2017). In addition to focussing on policy and systems issues like human resources for health (HRH) as a content area, HPSR also encourages a philosophy of science that is embedded, multidisciplinary and multi-stakeholder in nature to ensure policy relevance and influence (Sheikh, et al., 2014). In this epilogue, we reflect on how the Reader illustrates HPSR contributions to strengthening HRH by expanding the breadth and depth of research enquiry and policy engagement. We reflect on the geographic spread of the research highlighted, the issues covered and the methodological contributions made.

HRH issues are simultaneously local and increasingly global in nature. They are critical to health systems world over, within the borders of low-, middle- and high-income countries alike. In addition, HRH is also deeply affected by globalisation and how it skews the distribution of health workers within and across the national borders of diverse health systems. Thus there are no geographic limits to HRH research. Yet the political economy of research funding and capacity is highly weighed against low- and middle-income countries.

The importance of building research capacity in low- and middle-income countries was emphasized in the 1974 World Health Assembly and re-affirmed since (UNESCO 2010, WHO 2013). Nonetheless, UNESCO's 2010 Science Report indicates that 62% of researchers and 75% of scientific research publications were from high-income country institutions (UNESCO 2010). With regards to HPSR, it is only since 2014 that low-and middle-income country based first authors began to produce more low-and middle-income country research than high-income country based colleagues. However, this was largely driven by those based in upper middle-income countries with low- and lower middle-income countries lagging behind (WHO, 2017).

Given this background, for pragmatic and strategic reasons, we mainly reference high-income country HRH research as important background material and proactively highlight low- and middle-income country HRH research articles for the Reader. More than half of the Reader articles are from sub-Saharan Africa and a significant number are from Asia. Yet despite our call for contributions in all languages, few quality HPSR articles on HRH were found from Central Europe and Asia, the Middle East or from Latin America and the Caribbean. Furthermore only four articles (Martineau, et al., 2015; McPake, et al., 2014; Onyango-Ouma, et al., 2001; Smith, et al., 2013) undertook comparative research across geographic regions. Substantial investments are required to strengthen HPSR on HRH in neglected geographic regions, as well as in the collaborative HPSR networks that can sustain HRH research across geographic regions.

The Reader illustrates innovative research on doctors (Arah, 2007; McPake, et al., 2014; Nigenda and Solorzano, 1997; Purohit, et al., 2016; Vujicic, et al., 2011) and nurses (El-Jardali, et al., 2014; Jewkes, et al., 1998; Smith, et al., 2013; Tavrow, et al., 2002), but also highlights research on a broader range of health workers. Several studies focus on non-physician clinicians, whether exclusively (Chandler, et al., 2009), or alongside other health workers (Choi, et al., 2016; Leonard and Masatu, 2010). Numerous articles also give voice to health care managers leading to greater understanding of their co-production of knowledge in South Africa (Lehmann and Gilson, 2015), the historical evolution of their decision space in Ghana (Kwamie, et al., 2015), their resilience under devolution in Kenya (Nyikuri, et al., 2015) and the contextual factors that support their capacity building in India (Prashanth, et al., 2014).

With a keen eye on community level providers, the Reader highlights the community embeddedness of midwives in Mali (Hurley, et al., 2014) and of rural health workers in Papua New Guinea (Razee, et al., 2012), alongside other organisational factors that impact on community cadre performance in Ghana (Frimpong, et al. 2011), Guatemala (Hernández, et al., 2015) and Papua New Guinea (Jayasuriya,et al., 2014). The framing of global policies on caregivers is critically examined (Bedford, 2011), as is their lived experience amid sustained poverty and hunger in Ethiopia (Maes, et al., 2011). Informal providers are often discounted, but included in the Reader through efforts to enumerate the total workforce in India (Rao, et al., 2012) and in Bangladesh (Ahmed, et al., 2011).

Despite such a range of health providers covered by the research articles highlighted in the Reader, it is impossible to comprehensively include the full myriad of people involved in human resources for health. However, the Reader does call to attention the importance of research that examines where the boundaries are drawn, by whom and with what implications for the health workers involved, as well as research efforts that try to count health workers in a more inclusive manner.

With regards to institutional affiliation, almost half of the selected articles in the Reader are exclusively dedicated to better understanding and supporting public sector health workers. While no research article exclusively focussed on private sector health workers, several included and compared private health workers to public sector workers in their research. Research articles also recognised the porous boundaries between public and private through for example dual practice (McPake, et al., 2014, Vujicic, et al., 2011). While research supporting public sector health workers as the backbone of health systems is of vital importance, further comparative or stand-alone research with the private sector is also warranted.

As is common across HRH research, the kinds of health workers analysed in these articles were not always reported consistently or in a way that facilitated comparative analysis. Improved reporting about health worker type and gender, health system level, institutional affiliation (public/private) and geographic location is vital to contextualize research and enable more appropriate generalisation for decision-making. Routine databases that track the availability and distribution of health workers need investment to improve their quality, so that they can be more agile in capturing and tracking the nuanced and dynamic nature of an increasingly mobile and globalised health workforce.

For instance, a key social relation, often neglected in HRH due partially to the lack of sex-disaggregate data, is gender. The Reader highlights how gender bias filters into the framing of global policy on caregivers (Bedford, 2011) and the lived experience and family roles negotiated by caregivers in Ethiopia (Maes, et al., 2011) and community cadres in Papua New Guinea (Razee, et al., 2012). Gender discrimination also underpins workplace violence in Rwanda (Newman, et al., 2011), income levels in the Democratic Republic of the Congo (Maini, et al., 2017) and opportunities for upgrading in Uganda (Namakula and Witter, 2014). Efforts to

recognize and address gender bias in the Reader include transformative training initiatives, such as Health Workers for Change (Onyango-Ouma, et al., 2001). The Reader also noted certain gaps in research. For example, while research in high-income countries is addressing gender and leadership in the health sector (Kuhlmann, et al., 2017), no comparable research was found in low- and middle-income country contexts.

Apart from broadening the geographic scope and health worker diversity considered in HRH research, HPSR supports greater depth in understanding and addressing the key social relations that underpin HRH by recalibrating the different contributions that research can make. In contrast to the hierarchy of evidence that serves as a foundation for epidemiological sciences, HPSR argues for methodological fit dictated by the research question asked and its intended inference (Gilson, 2012). In the Reader, we distinguish between research that is descriptive, exploratory, explanatory, emancipatory, influence directed and predictive. These inferences can overlap and accommodate diverse study designs and methods. They are valuable in raising the bar for how research can contribute to greater understanding and decision-making in HRH as detailed below.

Descriptive research serves as a foundation for all research endeavours and provides the basis for contextualising research findings. The overwhelming nature of HRH research reviewed for the Reader was descriptive in nature. We sought to highlight efforts that used novel approaches or different data sources to better count the distribution of health workers, whether in India (Rao, et al., 2012) and Bangladesh (Ahmed, et al., 2011) or across sub-Saharan Africa (Arah, 2007). We also selected descriptive research that more systematically measures under-represented aspects of health workers lives such as workplace violence in Rwanda (Newman, et al., 2011) and how health worker livelihoods depend on different sources of income in the Democratic Republic of the Congo (Maini, et al.i, 2017). Finally, descriptive research is also valuable in communicating health worker perspectives, which are often missing and over-looked from high level policy discussions. The Reader showcases how descriptive research helps to convey health worker insights on key performance mediators such as supervision in Zimbawe (Tavrow, et al., 2002) and organisational culture in Brazil (Rocha, et al., 2014), as well as their preferences for workplace location in Viet Nam (Vujicic, et al., 2011).

Building on descriptive research, HPSR also serves to understand underlying mechanisms driving health worker behaviour and human resources for health policy-making and implementation by asking how and why, using theories to guide and test understanding through explorative and explanatory research. Given its importance in HPSR, more than half of the articles highlighted in the Reader showcase research that is exploratory and/or explanatory in nature. This includes **exploratory** research that reveals health worker world views whether related to livelihoods of volunteer caregivers in Ethiopia (Maes, et al., 2011) or the community embeddedness of community cadres in Papua New Guinea (Razee, et al., 2012) or in Mali (Hurley, et al., 2014). Exploratory research is critical in uncovering the complexity underpinning health worker motivation, eliciting nuances in health workers perceptions of altruism (Smith, et al., 2013) and organisational justice (Aberese-Ako, et al., 2014). It can also reveal the reasoning behind health worker decision making related to dual practice (McPake, et al., 2014) and migration (Humphries, et al. 2015). Finally, exploratory research is vital in developing new framing and conceptualisation of key social factors underpinning health worker behaviour, such as trust (Gilson, et al., 2005) and its abuse through health worker violence (Jewkes, et al., 1998); the normalisation of corrupt practices and other detrimental coping mechanisms (Hahonou, 2015), as well as how transformative leadership and employee empowerment can be engines for change (Choi, et al., 2016).
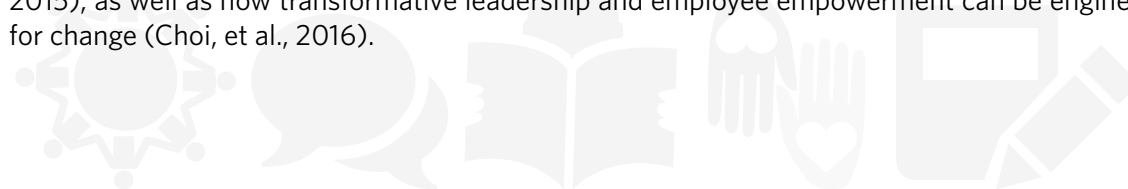
A key contribution of HPSR is how it conceptualizes important aspects of social relations that may otherwise be hard to recognize, measure and address. **Explanatory** research can further test and advance theories about the job preferences for rural deployment across various types of health workers in Peru (Huicho, et al., 2015) and the decision-space that supports district managers in Ghana (Kwamie, et al., 2015). Such research is critical in understanding why reforms work or why they fail. For instance, explanatory research unpacks why health workers reject innovations in health information systems (Gladwin, et al., 2002), the contextual determinants of capacity building efforts for district managers in India (Prashanth, et al., 2014) and supervision in Malawi and United Republic of Tanzania (Bradley, et al., 2013). It explains how health workers negotiate transfer systems in India (Purohit, et al., 2016) or pay for performance initiatives in Pakistan (Witter, et al., 2011).

While the instrumental needs of HRH decision making focusses at the micro-level on the determinants of health worker behaviour, and expands to meso-level analysis of the organisational factors that affect health worker motivation, HPSR also enables us to critically understand at a macro-level how HRH policies are negotiated and brokered among the various stakeholders involved. The Reader highlights explanatory research about the policy processes that shape doctors as a profession in Mexico (Nigenda and Solorzano, 1997), nurses in Lebanon (El-Jardali, et al., 2014) and caregivers at a global level (Bedford, 2011). Policy analysis can also explain what drives coherence between various aspects of HRH and maternal and child health policy (Martineau, et al., 2015) and the political economy driving HRH policy in humanitarian contexts such as in Sierra Leone (Bertone, et al., 2014).

While doing research to understand how and why change occurs, HPSR can also guide change collaboratively through **emancipatory** approaches. Participatory action research (Loewenson, et al., 2014) is an under-utilised research strategy in HPSR, but one that is highly valuable as it aims to empower participants in analysing, reflecting and acting upon their context (i.e. co-producing), thereby potentially transforming it. It inherently also shifts the power relations that conventionally structure research. The Reader includes research articles that reflect on these power dynamics and the meaning of co-producing research in learning sites with district managers in South Africa (Lehmann and Gilson, 2015), as well as how it better enables understanding of resilience among managers in Kenya (Nyikuri, et al., 2015) and supervision in Zimbabwe (Tavrow, et al., 2002). Innovative examples of how to use participatory research methods with health workers include the use of life histories in Uganda (Namakula and Witter, 2014) and concept mapping in Guatemala (Hernández, et al., 2015). Finally, research articles also highlight how collaborative approaches with health workers are key to supporting performance, whether through better role definition in Egypt (Ruck and Darwish, 1991), or improved problem solving teamwork (Onyango-Ouma, et al., 2001) that supports quality improvement over time (Bradley, et al., 2002).

Even if not directly collaborating with health workers and managers in the process of setting the research questions, undertaking the research or analysis, HPSR values engagement with policy-makers. The Reader showcases how policy dialogue processes were critical mechanisms to validate research findings and inform policy responses whether related to workforce planning in Australia (Crettenden, et al., 2014) or Benin (Jansen, et al., 2014); understanding HRH policy-making in Lebanon (El-Jardali, et al., 2014) and Sierra Leone (Bertone, et al., 2014); or in responding to sensitive issues such as workplace violence and gender discrimination in Rwanda (Newman, et al., 2011).

A key question for policy-makers is whether an intervention or reforms works or has intended or unintended effects, which makes up the bulk of evaluations that aim to test the adequacy, plausibility and probability of **influence**. The Reader highlights innovative approaches to measuring effects of the work environment on the responsiveness of health workers in Papau New Guinea (Jayasuriya, et al., 2014), the effects of professionalism in United Republic of Tanzania (Leonard

and Masatu, 2010) and supervision in Ghana (Frimpong, et al. 2011). Examples of evaluating the impact of reforms such as Integrated Childhood Management of Illness in Benin (Rowe, et al., 2009) and Performance Based Financing in Zambia (Shen, et al., 2017) are also included. Finally, macro-level impacts, such as the influence of global funding flows on health worker distribution is also evaluated by contrasting experience in Malawi and Zambia (Brugha, et al., 2010).

HPSR is also about informing stakeholders about the consequences of certain decisions, and is therefore **predictive** through scenario building, which can be participatory or modelled by computers. Rather than highlighting the multiple examples of workforce modelling that exist in HRH research, the Reader purposefully selected examples of workforce modelling that engaged policy stakeholders in the process, whether in Australia (Crettenden, et al., 2014) or in Guinea (Jansen, et al., 2014). An important methodology for policy-makers is cost-effectiveness studies which can also be predictive in nature. While not featured in the Reader, cost-effectiveness studies for ensuring retention in South Africa (Lagarde, et al., 2012) or in Malawi (Mandeville, et al., 2017) or for supporting community based cadres in Ethiopia, Kenya and Indonesia (McPake, et al., 2015) are an emerging field of evidence of vital importance.

Other key HRH methodologies that are featured in the Reader include experiments involving discrete choice (Vujicic, et al., 2011) or dictator games (Smith, et al., 2013); time use studies (Frimpong, et al. 2011, Tavrow, et al., 2002); Likert scales and other types of scale development for measuring latent concepts such as motivation and job satisfaction (Chandler, et al. 2008; Choi, et al., 2016; Gilson, et al., 2005; Prashanth, et al. 2014); and vignettes to measure health worker performance (Leonard and Masatu, 2010). In addition, the Reader supplements HRH research through a range of social science methodologies. These include numerous examples of ethnography (Aberese-Ako, et al., 2014; Chandler, et al., 2009; Gladwin, et al., 2002; Hahonou, 2015; Jewkes, et al., 1998; Maes, et al., 2011), case study research (El-Jardali, et al., 2014, Martineau, et al., 2015) and historical analysis (Kwamie, et al., 2015; Nigenda and Solorzano, 1997). Innovations include social network analysis (Hurley, et al., 2014), realist evaluation (Prashanth, et al., 2014) and using social media (Humphries, et al., 2015).

Despite showcasing such strong contributions of how HPSR strengthens HRH, the Reader also signals numerous areas for improving the quality of HRH research. Despite the emergence of quality checklists for various study designs, we found research methods to be inconsistently reported. Research articles at times failed to report an explicit research question or aim. Despite notable exceptions (El-Jardali, et al., 2014), researchers should be more reflexive about their own positionality and how it shapes the research process, participants and findings.

In conclusion, health workers' identities and motivation, daily routines and negotiations, and training and working environments are at the centre of successes and failures of health interventions and broader health system functioning. The past decade has seen a proliferation of research and, as demonstrated in the Reader, of methodological approaches on HRH, draw from a range of disciplines, including public health, sociology, psychology, organizational and management sciences. While HRH research increasingly leans to multidisciplinary approaches alongside recent advances in health systems research, these have not been documented in a cohesive fashion. The idea for this Reader emerged from the need for guidance on and examples of excellent and innovative HRH research, embracing health workers as creative and dynamic agents best placed alongside with patients, community members, managers and policy-makers to address contemporary health system complexities. In doing so, the Reader promotes greater understanding and appreciation of the varied HPSR approaches that can be applied to HRH and provides resources that can be used for teaching and capacity development on HRH for researchers and practitioners alike.

Works cited

Aberese-Ako M, et al. (2014). "Your health our concern, our health whose concern?": perceptions of injustice in organizational relationships and processes and frontline health worker motivation in Ghana. Health Policy Plan. 29(Suppl. 2):ii15–ii28.

Ahmed SM, et al. (2011). The health workforce crisis in Bangladesh: shortage, inappropriate skill- mix and inequitable distribution. Hum Resour Health. 9(1):3.

Arah OA (2007). The metrics and correlates of physician migration from Africa. BMC Publ Health. 7:83.

Bedford K (2011). Care and the 53rd Commission on the Status of Women: a transformative policy space? Reprod Health Matters. 19(38):197–207.

Bertone MP, et al. (2014). A window of opportunity for reform in post-conflict settings? The case of human resources for health policies in Sierra Leone, 2002–2012. Confl Health. 8(1):11.

Bradley S, et al. (2013). District health managers' perceptions of supervision in Malawi and Tanzania. Hum Resour Health. 11:43.

Bradley JE, et al. (2002). Participatory evaluation of reproductive health care quality in developing countries. Soc Sci Med. 55(2):269–282.

Brugha R, et al. (2010). Health workforce responses to global health initiatives funding: a comparison of Malawi and Zambia. Hum Resour Health. 8(1):19.

Chandler CIR, et al. (2009). Motivation, money and respect: a mixed-method study of Tanzanian non-physician clinicians. Soc Sci Med. 68(11):2078–2088.

Choi SL, et al. (2016). Transformational leadership, empowerment, and job satisfaction: the mediating role of employee empowerment. Hum Resour Health. 14(1):73.

Crettenden IF, et al. (2014). How evidence-based workforce planning in Australia is informing policy development in the retention and distribution of the health workforce. Hum Resour Health. 12(1):7.

El-Jardali F, et al. (2014). The making of nursing practice law in Lebanon: a policy analysis case study. Health Res Policy Syst. 12:52.

Frimpong JA, et al. (2011). Does supervision improve health worker productivity? Evidence from the Upper East Region of Ghana. Trop Med Int Health. 16(10):1225–1233.

Gilson L, Palmer N, Schneider H (2005). Trust and health worker performance: exploring a conceptual framework using South African evidence. Soc Sci Med. 61(7):1418–1429.

Gladwin J, et al. (2002). Rejection of an innovation: health information management training materials in east Africa. Health Policy Plan. 17(4):354–361.

Hahonou EK (2015). Juggling with the norms: informal payment and everyday governance of healthcare facilities in Niger. In: de Herdt T, Olivier de Sardan J-P, editors. Real governance and practical norms in sub-Saharan Africa: the game of the rules. London and New York: Routledge.

Hernández AR, et al. (2015). Integrating views on support for mid-level health worker performance: a concept mapping study with regional health system actors in rural Guatemala. Int J Equity Health. 14(1):91.

Huicho L, et al. (2015). Factors behind job preferences of Peruvian medical, nursing and midwifery students: a qualitative study focused on rural deployment. Hum Resour Health. 13(1):90.

Humphries N, et al. (2015). "Emigration is a matter of self-preservation. The working conditions … are killing us slowly": qualitative insights into health professional emigration from Ireland. Hum Resour Health. 13(1):35.

Hurley EA, et al (2014). Exploring the connectedness of rural auxiliary midwives to social networks in Koutiala, Mali. Midwifery. 30(1):123–129.

Jansen C, et al. (2014). Realizing universal health coverage for maternal health services in the Republic of Guinea: the use of workforce projections to design health labor market interventions. Risk Manag Healthc Policy. 7:219–232.

Jayasuriya R, Jayasinghe UW, Wang Q (2014). Health worker performance in rural health organizations in low- and middle-income countries: do organizational factors predict non-task performance? Soc Sci Med. 113:1–4.

Jewkes R, Abrahams N, Mvo Z (1998). Why do nurses abuse patients? Reflections from South African obstetric services. Soc Sci Med. 47(11):1781–1795.

Kuhlmann E, et al. (2017). Closing the gender leadership gap: a multi-centre cross-country comparison of women in management and leadership in academic health centres in the European Union. Hum Resour Health. 15(2).

Kwamie A, et al. (2015). The path dependence of district manager decision-space in Ghana. Health Policy Plan. 31(3):356–366.

Lagarde M, Blaauw D, Cairns J. (2012). Cost-effectiveness analysis of human resources policy interventions to address the shortage of nurses in rural South Africa. Soc Sci Med. Sep;75(5):801-6.

Lehmann U, Gilson L (2015). Action learning for health system governance: the reward and challenge of co-production. Health Policy Plan. 30(8):957–963.

Leonard KL, Masatu MC (2010). Professionalism and the know–do gap: exploring intrinsic motivation among health workers in Tanzania. Health Econ. 19(12):1461–1477.

Loewenson, R, Asa C Laurell, D'Ambruoso Lucia., and Z Shroff. 2014. "Participatory Action Research in Health Systems: A Methods Reader." Harare: TARSC, AHPSR, WHO, IDRC Canada, EQUINET.

Maes KC, et al. (2011). Volunteer home-based HIV/AIDS care and food crisis in Addis Ababa, Ethiopia: sustainability in the face of chronic food insecurity. Health Policy Plan. 26(1):43–52.

Maini R, Hotchkiss DR, Borghi J (2017). A cross-sectional study of the income sources of primary care health workers in the Democratic Republic of Congo. Hum Resour Health. 15(1):17.

Mandeville KL, et al. (2017). Specialty training for the retention of Malawian doctors: A cost-effectiveness analysis. Soc Sci Med. Oct 16;194:87-95.

Martineau T, et al. (2015). Coherence between health policy and human resource strategy: lessons from maternal health in Vietnam, India and China. Health Policy Plan. 30(1):111–120.

McPake B, Russo G, Tseng FM (2014). How do dual practitioners divide their time? The cases of three African capital cities. Soc Sci Med. 122:113–121.

McPake B, et al. (2015). Cost-effectiveness of community-based practitioner programmes in Ethiopia, Indonesia and Kenya. Bull World Health Organ. Sep 1;93(9):631-639A.

Namakula J, Witter S (2014). Living through conflict and post-conflict: experiences of health workers in northern Uganda and lessons for people-centred health systems. Health Policy Plan. 29(Suppl. 2):ii6–ii14.

Newman CJ, et al. (2011). Workplace violence and gender discrimination in Rwanda's health workforce: increasing safety and gender equality. Hum Resour Health. 9(19):1–13.

Nigenda G, Solorzano A (1997). Doctors and corporatist politics: the case of the Mexican medical profession. J Health Polit Policy Law. 22(1):73–99.

Nyikuri M, et al. (2015). Crises and resilience at the frontline: public health facility managers under devolution in a sub-county on the Kenyan coast. PLoS ONE. 10(12):e0144768.

Onyango-Ouma W, et al. (2001). An evaluation of Health Workers for Change in seven settings: a useful management and health system development tool. Health Policy Plan. 16(Suppl. 1):24–32.

Prashanth NS, et al. (2014). Advancing the application of systems thinking in health: a realist evaluation of a capacity building programme for district managers in Tumkur, India. Health Res Policy Syst. 12(1):42.

Purohit B, Martineau T, Sheikh K (2016). Opening the black box of transfer systems in public sector health services in a Western state in India. BMC Health Serv Res. 16(1):419.

Rao KD, Bhatnagar A, Berman P (2012). So many, yet few: human resources for health in India. Hum Resour Health. 10(1):19.

Razee H, et al. (2012). Listening to the rural health workers in Papua New Guinea: the social factors that influence their motivation to work. Soc Sci Med. 75(5):828–835.

Rocha FLR, et al. (2014). The organizational culture of a Brazilian public hospital. Rev Esc Enferm USP. 48(2):308–314.

Rowe AK, et al. (2009). A multifaceted intervention to improve health worker adherence to integrated management of childhood illness guidelines in Benin. Am J Publ Health. 99(5):837–846.

Ruck NF, Darwish OA (1991). Motivating health workers through nutrition training: an example from Egypt. Health Policy Plan. 6(2):130–140.

Sheikh K, George AS, and Gilson L. (2014). People-Centred Science: Strengthening the Practice of Health Policy and Systems Research. Health Res Policy Syst 12(1):19.

Shen GC, et al. (2017). Incentives to change: effects of performance-based financing on health workers in Zambia. Hum Resour Health. 15(1):20.

Smith R, et al. (2013). Appealing to altruism: an alternative strategy to address the health workforce crisis in developing countries? J Publ Health. 35(1):164–170.

Tavrow P, et al. (2002). Measuring the quality of supervisor–provider interactions in health care facilities in Zimbabwe. Int J Qual Health Care. 14(Suppl. 1):57–66.

Vujicic M, et al. (2011). Physician shortages in rural Vietnam: using a labor market approach to inform policy. Soc Sci Med. 73(7):2034–2070.

Witter S, et al. (2011). Paying health workers for performance in Battagram district, Pakistan. Hum Resour Health. 9:23.

UNESCO (2010). UNESCO Science Report 2010. Paris: UNESCO.

World Health Organization (2013). World health report 2013: Research for universal health coverage. Geneva: World Health Organisation.

World Health Organization (2017). World report on health policy and systems research. Geneva: World Health Organization.

Illustrative primary research articles by research inference

pp.	Inference	Full reference	Research Methods	Cadres
159	Descriptive	Ahmed SM, et al. (2011). The health workforce crisis in Bangladesh: shortage, inappropriate skill- mix and inequitable distribution. Hum Resour Health. 9(1):3	Quantitative: provider survey in a geographic area aided by community free-listing	Multiple public and private health workers including informal providers
167	Descriptive	Arah OA (2007). The metrics and correlates of physician migration from Africa. BMC Publ Health. 7:83	Quantitative: ranking and correlational analyses on African health professional emigration database	Physicians
365	Descriptive	Maini R, Hotchkiss DR, Borghi J (2017). A cross-sectional study of the income sources of primary care health workers in the Democratic Republic of Congo. Hum Resour Health. 15(1):17	Mixed: facility and provider survey, qualitative interviews	Public sector primary health care workers
395	Descriptive	Newman CJ, et al. (2011). Workplace violence and gender discrimination in Rwanda's health workforce: increasing safety and gender equality. Hum Resour Health. 9(19):1–13	Mixed: provider survey, facility audits, key informant interviews, in-depth interviews, focus group discussions, stakeholder engagement	Multiple public and private sector facility health workers
463	Descriptive	Rao KD, Bhatnagar A, Berman P (2012). So many, yet few: human resources for health in India. Hum Resour Health. 10(1):19	Quantitative: national census and sample survey data	Multiple public and private health workers including informal providers
475	Descriptive	Rocha FLR, et al. (2014). The organizational culture of a Brazilian public hospital. Rev Esc Enferm USP. 48(2):308–314	Quantitative: provider survey	Public sector hospital based nurses and auxilliary staff
515	Descriptive	Vujicic M, et al. (2011). Physician shortages in rural Vietnam: using a labor market approach to inform policy. Soc Sci Med. 73(7):2034–2070	Quantitative: discrete choice experiments based on a labour market survey	Physicians

pp.	Inference	Full reference	Research Methods	Cadres
513	Descriptive/ Emancipatory	Tavrow P, et al. (2002). Measuring the quality of supervisor-provider interactions in health care facilities in Zimbabwe. Int J Qual Health Care. 14(Suppl. 1):57–66	Mixed: qualitative evaluation criteria development, quantitative ratings and time use	Multiple public sector supervisors
145	Exploratory	Aberese-Ako M, et al. (2014). "Your health our concern, our health whose concern?": perceptions of injustice in organizational relationships and processes and frontline health worker motivation in Ghana. Health Policy Plan. 29(Suppl. 2):ii15–ii28	Qualitative: ethnography; participant observation, conversation and in depth interviews over 16 months in two public hospitals	Multiple public sector hospital based health workers
227	Exploratory	Chandler CIR, et al. (2009). Motivation, money and respect: a mixed-method study of Tanzanian non-physician clinicians. Soc Sci Med. 68(11):2078–2088	Mixed: ethnography in two district public hospitals over 6 months and Likert scale development with clinical officers in 13 public hospitals and assistant medical officers in other smaller public hospitals	Public sector non-physician clinicians
229	Exploratory	Choi SL, et al. (2016). Transformational leadership, empowerment, and job satisfaction: the mediating role of employee empowerment. Hum Resour Health. 14(1):73	Quantitative: Provider Likert survey and regression analysis	Public and private sector nurses
275	Exploratory	Gilson L, Palmer N, Schneider H (2005). Trust and health worker performance: exploring a conceptual framework using South African evidence. Soc Sci Med. 61(7):1418–1429	Mixed: focus group discussions with younger and older women; provider open-ended interviews and self-administered questionnaires	Public and private PHC doctors and nurses
279	Exploratory	Hahonou EK (2015). Juggling with the norms: informal payment and everyday governance of healthcare facilities in Niger. In: de Herdt T, Olivier de Sardan J-P, editors. Real governance and practical norms in sub-Saharan Africa: the game of the rules. London and New York: Routledge	Qualitative: ethnography; five months participant observation	Public sector hospital emergency ward providers and users

pp.	Inference	Full reference	Research Methods	Cadres
323	Exploratory	Humphries N, et al. (2015). "Emigration is a matter of self-preservation. The working conditions ... are killing us slowly": qualitative insights into health professional emigration from Ireland. Hum Resour Health. 13(1):35	Mixed: online survey through social media	Emigrant physicians, nurses, midwives
337	Exploratory	Hurley EA, et al (2014). Exploring the connectedness of rural auxiliary midwives to social networks in Koutiala, Mali. Midwifery. 30(1):123–129	Mixed: semi-structured interviews and social network case studies with midwives and village women	Rural auxiliary midwives
363	Exploratory	Maes KC, et al. (2011). Volunteer home-based HIV/AIDS care and food crisis in Addis Ababa, Ethiopia: sustainability in the face of chronic food insecurity. Health Policy Plan. 26(1):43–52	Mixed: provider survey with ethnographic observation over 20 months, in-depth interviews, focus group discussions	Volunteer caregivers
383	Exploratory	McPake B, Russo G, Tseng FM (2014). How do dual practitioners divide their time? The cases of three African capital cities. Soc Sci Med. 122:113–121	Quantitative: two-stage estimation model with propensity score-matching based on provider surveys	Public and private sector physicians
473	Exploratory	Razee H, et al. (2012). Listening to the rural health workers in Papua New Guinea: the social factors that influence their motivation to work. Soc Sci Med. 75(5):828–835	Qualitative: in-depth interviews	Public and private sector health extension workers, community health workers, nurses
511	Exploratory	Smith R, et al. (2013). Appealing to altruism: an alternative strategy to address the health workforce crisis in developing countries? J Publ Health. 35(1):164–170	Quantitative: dictator games	Nursing students
355	Exploratory	Jewkes R, Abrahams N, Mvo Z (1998). Why do nurses abuse patients? Reflections from South African obstetric services. Soc Sci Med. 47(11):1781–1795	Qualitative: ethnographic non-participant observation, in-depth interviews, focus group discussions with women, nurses and midwives, along with historical analysis	Public sector nurses and midwives

pp.	Inference	Full reference	Research Methods	Cadres
175	Explanatory	Bedford K (2011). Care and the 53rd Commission on the Status of Women: a transformative policy space? Reprod Health Matters. 19(38):197–207	Qualitative: document review and in-depth interviews	Family members providing care
187	Explanatory	Bertone MP, et al. (2014). A window of opportunity for reform in post-conflict settings? The case of human resources for health policies in Sierra Leone, 2002–2012. Confl Health. 8(1):11	Qualitative: political economy, stakeholder mapping workshop, document review, key informant interviews	Multiple health workers
201	Explanatory	Bradley S, et al. (2013). District health managers' perceptions of supervision in Malawi and Tanzania. Hum Resour Health. 11:43	Qualitative: semi-structured interviews	Public sector district and council supervisors
257	Explanatory	El-Jardali F, et al. (2014). The making of nursing practice law in Lebanon: a policy analysis case study. Health Res Policy Syst. 12:52	Qualitative: case study research using key informant interviews and stakeholder panel discussion	Public and private sector nurses
277	Explanatory	Gladwin J, et al. (2002). Rejection of an innovation: health information management training materials in east Africa. Health Policy Plan. 17(4):354–361	Qualitative: ethnographic case study	Public sector primary health care information system designers and users
311	Explanatory	Huicho L, et al. (2015). Factors behind job preferences of Peruvian medical, nursing and midwifery students: a qualitative study focused on rural deployment. Hum Resour Health. 13(1):90	Qualitative: in-depth interviews and focus group discussions	Medical, nursing and midwifery public university students
357	Explanatory	Kwamie A, et al. (2015). The path dependence of district manager decision-space in Ghana. Health Policy Plan. 31(3):356–366	Qualitative: historical analysis based on literature review and key informant interviews	Public sector district managers
381	Explanatory	Martineau T, et al. (2015). Coherence between health policy and human resource strategy: lessons from maternal health in Vietnam, India and China. Health Policy Plan. 30(1):111–120	Qualitative: comparative case study analysis of policy coherence across countries and between policy spheres	Multiple health workers

pp.	Inference	Full reference	Research Methods	Cadres
409	Explanatory	Nigenda G, Solorzano A (1997). Doctors and corporatist politics: the case of the Mexican medical profession. J Health Polit Policy Law. 22(1):73–99	Qualitative: historical and political analysis using historical data, document review and interviews	Physicians
431	Explanatory	Prashanth NS, et al. (2014). Advancing the application of systems thinking in health: a realist evaluation of a capacity building programme for district managers in Tumkur, India. Health Res Policy Syst. 12(1):42	Mixed: realist evaluation using qualitative data (interviews and observation notes) and quantitative measures of commitment, self-efficacy and supervision style	Public sector primary health care facility managers
451	Explanatory	Purohit B, Martineau T, Sheikh K (2016). Opening the black box of transfer systems in public sector health services in a Western state in India. BMC Health Serv Res. 16(1):419	Qualitative: interview and document review, contrasting policy architecture with practice	Public sector physicians
517	Explanatory	Witter S, et al. (2011). Paying health workers for performance in Battagram district, Pakistan. Hum Resour Health. 9:23	Mixed: health management information system data, financial records and project documents; qualitative interviews and focus group discussions with providers and community members	Multiple public sector facility based health workers
199	Emancipatory	Bradley JE, et al. (2002). Participatory evaluation of reproductive health care quality in developing countries. Soc Sci Med. 55(2):269–282	Qualitative: description of long term participatory process	Multiple public sector facility based health workers
359	Emancipatory	Lehmann U, Gilson L (2015). Action learning for health system governance: the reward and challenge of co-production. Health Policy Plan. 30(8):957–963	Qualitative: action learning on routine district health operations through document review, in-depth interviews, observation, review of notes from field researchers, presentation and workshops notes, and meetings	Public sector district managers

pp.	Inference	Full reference	Research Methods	Cadres
297	Exploratory/ Emancipatory	Hernández AR, et al. (2015). Integrating views on support for mid-level health worker performance: a concept mapping study with regional health system actors in rural Guatemala. Int J Equity Health. 14(1):91	Mixed: concept mapping participatory group discussions and multivariate statistical analyses	Public sector regional and district managers, primary and secondary health care workers
385	Exploratory/ Emancipatory	Namakula J, Witter S (2014). Living through conflict and post-conflict: experiences of health workers in northern Uganda and lessons for people-centred health systems. Health Policy Plan. 29(Suppl. 2):ii6–ii14	Qualitative: life histories	Public and private sector health workers
493	Explanatory/ Emancipatory	Ruck NF, Darwish OA (1991). Motivating health workers through nutrition training: an example from Egypt. Health Policy Plan. 6(2):130–140	Case study	Multiple public sector facility based health workers
411	Explanatory/ Emancipatory	Nyikuri M, et al. (2015). Crises and resilience at the frontline: public health facility managers under devolution in a sub-county on the Kenyan coast. PLoS ONE. 10(12):e0144768	Qualitative: learning site collaborative research based on in-depth interviews and observation	Public sector primary health care managers
429	Explanatory, Emancipatory, Influence	Onyango-Ouma W, et al. (2001). An evaluation of Health Workers for Change in seven settings: a useful management and health system development tool. Health Policy Plan. 16(Suppl. 1):24–32	Mixed: pre & post test, in depth and group interviews, focus group discussions, time use, observation, records review	Public sector primary health care health workers
213	Influence	Brugha R, et al. (2010). Health workforce responses to global health initiatives funding: a comparison of Malawi and Zambia. Hum Resour Health. 8(1):19	Mixed: cross-country comparative analysis using health facility data and in-depth interviews	Public sector frontline workers and district managers
273	Influence	Frimpong JA, et al. (2011). Does supervision improve health worker productivity? Evidence from the Upper East Region of Ghana. Trop Med Int Health. 16(10):1225–1233	Quantitative: time-use and provider survey	Public sector community midwives, nurses and extension workers

pp.	Inference	Full reference	Research Methods	Cadres
353	Influence	Jayasuriya R, Jayasinghe UW, Wang Q (2014). Health worker performance in rural health organizations in low- and middle-income countries: do organizational factors predict non-task performance? Soc Sci Med. 113:1–4	Quantitative: provider survey self-administered during national training	Rural public and private health extension officers, nurses and community health workers
361	Influence	Leonard KL, Masatu MC (2010). Professionalism and the know–do gap: exploring intrinsic motivation among health workers in Tanzania. Health Econ. 19(12):1461–1477	Quantitative: protocol checklist completion through direct clinician observation and clinician testing using vignettes	Public and private sector medical officers, assistant medical officers, clinical officers, clinical assistants and nurses
483	Influence	Rowe AK, et al. (2009). A multifaceted intervention to improve health worker adherence to integrated management of childhood illness guidelines in Benin. Am J Publ Health. 99(5):837–846	Quantitative: observation and re-examination of consultations, structured interviews with health workers and caretakers, facility assessments	Public sector facility based health workers
495	Influence/ Explanatory	Shen GC, et al. 2017. Incentives to change: effects of performance-based financing on health workers in Zambia. Hum Resour Health. 15(1):20	Quantitative: randomized control design for pre-post changes	Multiple public sector facility based health workers
243	Predictive	Crettenden IF, et al .(2014). How evidence-based workforce planning in Australia is informing policy development in the retention and distribution of the health workforce. Hum Resour Health. 12(1):7	Mixed: policy/national data review; scenario modelling, stakeholder consultation	Public and private physicans, nurses, midwives
339	Predictive	Jansen C, et al. (2014). Realizing universal health coverage for maternal health services in the Republic of Guinea: the use of workforce projections to design health labor market interventions. Risk Manag Healthc Policy. 7:219–232.	Mixed: needs based and health sector demand and supply based modelling; policy dialogue	Physicians, nurses, midwives

'Your health our concern, our health whose concern?': perceptions of injustice in organizational relationships and processes and frontline health worker motivation in Ghana

Matilda Aberese-Ako,[1,2]* Han van Dijk,[2] Trudie Gerrits,[3] Daniel Kojo Arhinful[4] and Irene Akua Agyepong[5]

[1]Ghana Health Service, Navrongo Health Research Centre, P.O. Box 433, Bolgatanga, UER, Ghana, [2]Sociology and Anthropology of Development Group, P.O. Box 8130, 6700 EW, Hollandseweg 1, Wageningen, The Netherlands, [3]Graduate School of Social Sciences, Kloveniersburgwal 48 1012 CX Amsterdam, University of Amsterdam, The Netherlands, [4]Noguchi Memorial Institute for Medical Research, NMIMR, University of Ghana, P.O. Box LG 581 Legon and [5]School of Public Health, University of Ghana, P.O. Box LG 13 Legon

*Corresponding author. P.O. Box 433, Bolgatanga, Upper East Region, Ghana or Sociology and Anthropology of Development Group, Wageningen University, P.O. Box 8130, 6700 EW, Hollandseweg 1, Wageningen, The Netherlands. E-mail: matilda.aberese-ako@wur.nl or maberese@gmail.com

Taking a perspective of frontline health workers as internal clients within health systems, this study explored how perceived injustice in policy and organizational matters influence frontline health worker motivation and the consequent effect on workers' attitudes and performance in delivering maternal and neonatal health care in public hospitals. It consisted of an ethnographic study in two public hospitals in Southern Ghana. Participant observation, conversation and in-depth interviews were conducted over a 16-month period. Ethical approval and consent were obtained from relevant persons and authorities. Qualitative analysis software Nvivo 8 was used for coding and analysis of data. Main themes identified in the analysis form the basis for interpreting and reporting study findings. Findings showed that most workers perceived injustice in distributive, procedural and interactional dimensions at various levels in the health system. At the national policy level this included poor conditions of service. At the hospital level, it included perceived inequity in distribution of incentives, lack of protection and respect for workers. These influenced frontline worker motivation negatively and sometimes led to poor response to client needs. However, intrinsically motivated workers overcame these challenges and responded positively to clients' health care needs. It is important to recognize and conceptualize frontline workers in health systems as internal clients of the facilities and organizations within which they work. Their quality needs must be adequately met if they are to be highly motivated and supported to provide quality and responsive care to their clients. Meeting these quality needs of internal clients and creating a sense of fairness in governance arrangements between frontline workers, facilities and health system managers is crucial. Consequently, intervention measures such as creating more open door policies, involving frontline workers in decision making, recognizing their needs and challenges and working together to address them are critical.

Keywords   Attitude, frontline health workers, Ghana, justice, motivation, people-centred health systems

---

KEY MESSAGES

- Frontline health workers perceive that they do not receive 'people-centered care' from their employers, despite being asked to provide 'people-centered care' to the clients that come to health facilities. This considerably weakens the credibility of the message they are being given to treat their clients in a responsive manner.

- They perceive procedural, distributive and interactional injustice at policy and organizational levels, which have a strong influence on worker motivation and response to client health care needs.

- Health workers' quality needs must be adequately met if they are to be adequately motivated and supported to provide high quality and responsive care to clients they interact with on a daily basis.

- An important dimension to meeting these quality needs of frontline workers is real and perceived justice in governance arrangements that puts a human face to interactions between frontline workers and their facility and health system managers such as creating more open door policies, involving frontline workers in decision making, recognizing their needs and challenges and working together to address them is crucial.

Introduction

Policy makers and other agents responsible for reforming African health institutions and systems have often blamed health workers for a poorly responsive health system, suggesting that health workers interact and communicate poorly with clients (Agyepong *et al.* 2001; Ministry of Health 2001; Andersen 2004; Ministry of Health 2007). Interventions to improve quality and responsiveness in healthcare have centred on professionals and frontline workers without recourse to a total system reform (Agyepong *et al.* 2001). Yet, low health worker motivation and discontent continue to be cited as major causes of poor healthcare quality and outcomes in Sub Saharan Africa including Ghana (Agyepong *et al.* 2004; Luoma 2006; Chandler *et al.* 2009; Adzei and Atinga 2012; Agyepong *et al.* 2012; Alhassan *et al.* 2013; Faye *et al.* 2013). Worker motivation can be defined as the degree of willingness of the worker to maintain efforts towards achieving organizational goals (Kanfer 1999; Franco *et al.* 2002). Extrinsic motivation factors including contingent rewards such as salary, policy reforms and organizational factors and intrinsic motivation factors that embody the individual's desire to perform the task for its own sake, which is self generated and non-financial such as interpersonal factors have been cited as influencing worker motivation in Africa including Ghana (Agyepong *et al.* 2004; Andersen 2004; Chen *et al.* 2004; Rowe *et al.* 2005; Ansong-Tornui *et al.* 2007; Bosu *et al.* 2007; Witter *et al.* 2007; Willis-Shattuck *et al.* 2008; Mbindyo *et al.* 2009; Songstad *et al.* 2011; Prytherch *et al.* 2012; Mutale *et al.* 2013). Thus, worker motivation is an important indicator of the quality and responsiveness of an organization towards its frontline health workers.

Continuous quality improvement (CQI) is a management philosophy as well as approach. It is a philosophy in that it has underlying beliefs, ways of thinking, concepts and attitudes about quality improvement. From a CQI philosophical perspective, quality is the product of a chain in which each person is a customer (client) of the people in the process preceding theirs (McLaughlin and Kaluzny 1994; Agyepong *et al.* 2001, 2004). The external users of the services of a particular organization e.g. the mother who brings her child for an immunization or the woman who comes to deliver at a health facility, who in the health system are called clients or patients are the last in the chain. The quality and responsiveness of the service they receive will be influenced by the quality and responsiveness of the whole customer chain, which starts at the top of the organization and ends with them. In this conceptualization, the workers in an organization are seen as internal customers or clients and the clients at the end of the chain are the external customers or clients. For example, if the administration office has delayed a nurse's request for better conditions of service or supplies, she may become irritated and frustrated and the chances that she will have a negative attitude towards her work increases, which in turn will influence her response to her clients (external customers of the organization). The CQI philosophical concept of internal and external customers of an organization may be a more inclusive concept to use in thinking through how to make health systems people centred. The nurse in our illustrative example has not received 'people-centred care' from her organization, which may negatively affect her ability to deliver 'people-centred care' to the clients (external customers) who have come to her. People-centred care has been defined as:

> ''….care that is focused and organized around people, rather than diseases. Within a people-centred approach, disease prevention and management are seen as important, but are not sufficient to address the needs and expectations of people and communities. The central focus is on the person in the context of his or her family, community, and culture (WHO 2011).''

Drawing upon the CQI philosophy related to internal and external customers, if quality is the end result of a linked chain from internal through to external customers; then for an organization to function well and provide quality care to its clients, it has to take care of the quality needs of its workers or internal customers. This study sought to explore frontline health worker experiences and perceptions of justice in national and organizational policies, processes and procedures relevant to their work; and how these issues influence their motivation and responsiveness to clients in the provision of maternal and neonatal health care. The study answered the questions: How do frontline health workers perceive justice (fairness) in the support they receive from the organization they work for and how does that influence their motivation to respond to their clients' health care needs? To explore the various dimensions of

worker experiences organizational justice theory has been employed.

Organizational justice theory is one of the critical theories in studying worker motivation (Latham and Pinder 2005; Zapata-Phelan *et al*. 2009; Songstad *et al*. 2011). Justice and fairness are concepts with similar meanings and in this paper will be used interchangeably. Both concepts have to do with impartiality, reasonableness, justice and equity (Agyepong 2012). Organizational justice is used to pinpoint the individual's belief that the distribution of outcomes, or procedures for distributing outcomes such as pay and other opportunities are fair and appropriate when they satisfy certain criteria (Leventhal 1976; Bell *et al*. 2006). The theory is relevant to this study because perceptions of justice have been known to elicit different behavioural reactions including positive or negative attitudes in worker response to work demands and performance within organizations (Greenberg 1993; Konovsky 2000; Laschinger 2003; Colquitt *et al*. 2006; Zapata-Phelan *et al*. 2009). When workers perceive injustice they may become demotivated and repay the organization with negative attitudes, which affects organizational climate. Where they perceive fairness they are more inclined to be motivated and repay the organization with positive attitudes including trust and positive response to organizational and clients' needs (Cropanzano *et al*. 2002).

We theorized that a frontline health worker's judgement of fairness in policy and organizational processes elicits reactions that influence motivation and response towards work, which affects the worker's desire to perform tasks that contributes to the achievement of organizational goals. This makes organizational justice an appropriate concept for exploring processes that shape health worker motivation and response to clients' needs in a hospital context.

The idea of organizational justice is based on Leventhal's two-dimensional distinction of procedural and distributive justice (Leventhal 1976) and interactional justice (Konovsky 2000; Colquitt *et al*. 2001). Procedural justice is defined as an individual's belief that allocative procedures or decision-making processes, which satisfy certain criteria are fair and appropriate (Leventhal 1976; Cropanzano *et al*. 2002). Distributive justice is perceived as the individual's belief that it is fair and appropriate when outcomes or rewards such as salary, punishments or resources are distributed in accordance with certain criteria (Leventhal 1976; Colquitt *et al*. 2001; Stinglhamber *et al*. 2006; Cropanzano *et al*. 2002). Interactional justice has been defined as the quality of interaction between individuals (Cropanzano *et al*. 2002; Stinglhamber *et al*. 2006). Interactional justice contains two aspects, informational and interpersonal justice. Informational justice is defined as the extent to which individuals are provided with information or rationale for how decisions are made (Greenberg 1993; Laschinger 2003; Almost 2006). Interpersonal justice is defined as the extent to which individuals are treated with respect and dignity (Greenberg 1993; Laschinger 2003; Almost 2006).

All three dimensions of justice distributive, procedural and interactional justice will be used in this study to explore workers' perceptions of justice in policy and organizational processes within the hospital context, as they were evident in worker narratives. Although distributive justice focuses on the final outcome, procedural justice deals with the processes involved in arriving at the final outcome (Leventhal 1976). The line between the two can be very thin, and in our findings some of the issues presented had both procedural and distributive justice complexly interrelated, so the two dimensions of justice will be discussed concurrently.

Methods

Health worker motivation has been widely studied using a variety of qualitative (Dieleman *et al*. 2003; Dieleman *et al*. 2006; Bradley and McAuliffe 2009) and quantitative (Franco *et al*. 2004; Purohit and Bandyopadhyay 2014) methods. To reflect the complex nature of factors influencing health worker motivation in Africa including Ghana (Hongoro and Normand 2006), an ethnographic study was conducted in two public hospitals in Southern Ghana. Ethnographic studies provide 'thick description' (Geertz 1973) and rich details of social phenomena. Additionally, they provide voice to those such as frontline workers whose experiences receive little attention (Fahie 2014). This method requires long and active periods in the site of study to learn, experience and represent the lives of subjects in their natural setting (Van der Geest and Sarkodie 1998; Emerson *et al*. 2005). Consequently, M.A. referred to as 'the researcher' worked as a student researcher in the two hospitals over a 16-month period as part of her PhD thesis research. She employed ethnographic methods including participant observation, conversation and in-depth interviews to collect data among health workers in the hospitals. As an active participant in the process of health care provision, the researcher observed how motivation and demotivation is produced through worker interaction with their environment.

For purposes of anonymity, the hospitals are referred to as Facility A and Facility B and pseudonyms are used for all names used in this article. Facility A serves a metropolitan area with a population of about half a million. It has specialist units, services, as well as workers including obstetrician gynaecologists, anaesthetists and paediatricians. It provides comprehensive inpatient care with a bed complement of 294. It has a theatre that permits major surgical operations and the full range of emergency obstetric services in addition to routine delivery services. Facility B serves a peri-urban population of about 200 000 inhabitants. It has a bed capacity of 20 and provides only basic maternity services. It had no theatre for major surgical operations during the period of study, but efforts were being made to set up one. The facility refers complicated obstetric and gynaecological cases needing specialized services to better-equipped facilities outside the district. Its doctors are general practitioners.

Facility A was selected to help gain insight into the study questions in the context of a big specialist hospital. Facility B was chosen to help understand the same issues in a smaller non-specialist hospital. Data were collected in two phases. M.A. collected data in the maternity and new-born units of Facility A from January to September 2012 and in the maternity department of Facility B from October to December 2012. In the second phase, she collected data in Facility B in July and August 2013 and in Facility A in October and November 2013. Table 1 gives a breakdown of categories of workers and the

Table 1 Categories of workers in Facilities A and B who were included in the study and methods used in collecting data

Category of workers	Data collection methods	
	Conversation	Interviews
Facility A[a]		
Nurses and midwives	62	12
House officers	5	2
Senior doctors	11	4
Anaesthetists	5	3
Ward aids	2	2
Orderlies	6	6
Doctors who left Facility A	—	2
Laboratory officials	—	2
Departmental supervisors	9	1
Facility management workers	3	4
Facility B[b]		
Nurses and midwives	23	7
Nurse who left the facility	1	1
Doctor	1	1
Ward aids	4	—
Departmental supervisors	3	4
Facility management workers	2	4

[a]In Facility A observation was carried out in the antenatal and postnatal clinics, labour, lying in and the gynaecological wards and the maternity theatre. Additionally, the ethnographer participated in meetings, doctors' ward rounds, training and workshops for workers.
[b]In Facility B observations were done in the antenatal and postnatal clinics, the labour ward and the hospital pharmacy. Also, the ethnographer participated in district annual performance review and a party for five retirees.

methods used to obtain data. Data were collected on task agreement, relationships between professional groups and management, challenges and benefits in health care provision, trust relations and motivation. Attitudes and workers' response to clients' needs were observed by the researcher as well as crosschecked with health care providers.

Notes from observation of events, participation in workshops among others and conversations were jotted down in field note books. The notes were reconstructed and expanded at the end of each field visit in line with standard ethnographic studies (Emerson *et al.* 2005). Interviews were tape recorded and transcribed verbatim by a neutral researcher. The aim of employing a neutral researcher was to preserve interviewees' original expressions and to enhance validity of the study. Observation notes, conversations and transcribed interviews were typed and transferred to qualitative analysis software Nvivo (version 8), which was used to generate a coding list on common themes that arose from the data. Subsequently, the data were systematically analysed to identify patterns, differences and contradictions. Secondary data including institutional reports, policy guidelines and circulars were used to support and crosscheck the findings.

Main themes identified were related to distributive, procedural and interactional justices at local hospital management and the wider health sector decision-making levels. These three dimensions of justice form the basis for interpreting and reporting on study findings at the two levels. Additionally, intrinsic motivating factors were found and they are also discussed. While different categories of frontline workers were studied, the findings focuses on doctors, nurses and anaesthetists' experiences, because these three categories of frontline workers are tasked with the core responsibility of providing maternal and neonatal health care.

Findings

The researcher participated in a workshop that was organized by the management of Facility A for selected health workers (administrators, doctors, nurses, paramedics) at the facility. The objective of the workshop was to improve workers' knowledge on legal issues concerning the rights of workers and clients. Towards the close of the workshop workers were given the opportunity to ask questions. The excerpts below of a question a nurse–administrator asked a facilitator who is a doctor and also a frontline worker and the response shows in a nutshell perceived policy and organizational injustice issues encountered by nurses, doctors and anaesthetists in everyday health care provision in Facility A as indeed was also the case in Facility B, where subsequent fieldwork was conducted.

> *''Nurse: We have been talking about how to attend to clients for two days, what do you have for us, health workers?*
> *Facilitator: It is shameful that companies pay for their workers who we take care of. But in health institutions we who take care of them pay our own medical bills. 'Your health our concern, our health whose concern?' That is why they believe health workers steal things. In those institutions they reimburse health bills. Why do you think you should use all the internally generated funds (IGFs) for services and not to take care of yourselves? You think VALCO and Electricity Company of Ghana use all their money to buy steel and electricity! They use some to take care of their workers.''[1]*

The interaction suggests that health workers perceive that the values they are being asked to hold for their clients are not the values they feel are being held for them as people in the health system by their employers.

First, the nurse's question suggests perceived neglect of frontline workers, who are yearning for attention. Second, the facilitator presents layers of perceived injustice confronting health workers. He suggests injustice in policy regarding conditions of service of health workers compared with their colleagues in other establishments. He also brings out organizational matters including interactional injustice regarding a common negative perception that health workers are thieves who steal medical supplies from public hospitals to sell to private hospitals. Additionally, he brings out issues of distributive injustice on how monies generated by health workers within their facilities are used. He suggests that the electricity company that supplies most parts of the country electric power and VALCO company, which produces aluminium derived from bauxite of world-class quality to meet local demand and for export, are 'people centred', because they use their companies' revenue to purchase raw materials for production to meet their

external customers' electric power needs and equally use part of it to take care of their internal 'customers'' health needs. He juxtaposes the Ghana Health Service (GHS) logo: 'Your health our concern', which suggests that the health of the external customer is the responsibility of the health worker with 'Our health whose concern?': implying that the health worker's health needs are not the responsibility of anyone.

Thus, health workers who are the custodians of health care of the general public perceive that they do not receive 'people-centred' care. This interaction fits Ntim's assertion in his article on economic governance and social accountability in Ghana: 'The moment there is a perception of unfairness—that others are having more than their due, this de facto precipitates agitation' (Ntim 2013). This goes to support other findings in this study that suggest that majority of frontline health workers perceive distributive, procedural and interactional injustice to be operating at local hospital management and the wider health sector decision-making levels. By the wider health sector decision-making level, we are referring to the Ministry of Health as well as its national directorate; the GHS and the regional-level directorates, which have the responsibility for making decisions that become authoritative for the lower levels (districts, hospitals and below). In the rest of this section the findings will present narratives of frontline workers based on Figure 1 as follows: distributive, procedural and interactional injustice at hospital management and the wider health sector decision-making levels. Factors influencing intrinsic motivation of frontline workers and consequences on workers' response to clients' needs will also be discussed.

Perceived procedural and distributive injustice related to local hospital management

Frontline workers perceived distributive injustice by hospital management in the provision of incentives and response to equipment, tools and supplies to work with and their infra-structure needs, which are discussed below.

Workers in Facility A said in past times they were given incentives such as a monthly transport allowance and a Christmas package. However in recent times management had failed to provide these incentives, which they considered unfair.[2] They suggested that it had contributed to a reduction in worker motivation to respond to clients' needs. In the words of a frontline worker:

> *"I think the problems are coming from here. Last two years when they decided not to motivate us at Christmas, they thought we will talk, so the director quickly went on leave….People are not complaining because they are all smart and finding their way around by doing their own things."[3]*

Additionally, interviews and conversations with nurses, anaesthetists and doctors including some doctors who had left Facility A, suggested that they perceived that management did not treat doctors posted to the maternity department fairly. So they were not motivated to stay. One of the doctors who had left the

facility stated: 'I thought 'I will be given accommodation at Facility A', but they denied me. I thought after that 'they will give me some allowance for fuel'; no they denied me.'[4]

In response, a management worker said that the facility stopped providing incentives to workers because a directive from the director general's office in 2008 ordered all facilities to stop issuing incentives.[5] Some frontline workers indicated that they were aware of the directive. Nevertheless they argued that their output is high, which enables the hospital to generate a lot of revenue. So, it was only fair that they should be appreciated for their efforts by being given monetary incentives.[6]

On the issue of doctors leaving Facility A, the facility manager responded that the facility had recently introduced an incentive package specially for doctors in the maternity department to help maintain the few doctors that were in the department.[7]

In Facility B, midwives complained of lack of incentives including the provision of drinking water, infrequent allocation of Christmas bonuses and stoppage in providing night cups (coffee, tea and biscuits) for workers on night duty.[8] In response, two management workers explained that management in consultation with frontline workers agreed to sacrifice all incentives to workers and rather use the money to buy essential items, which were required for a peer review[9] exercise. They said that all frontline workers agreed to sacrifice and were happy about it.[10] Conversations with midwives on night duty, however, suggested that they were not aware of this arrangement.[11]

Some workers in Facility A bemoaned deteriorating conditions of the hospital's infrastructure resulting in some injuries to workers. For instance during a maternal audit meeting a senior nurse and a senior doctor narrated how a theatre door fell on a nurse. No compensation was provided to the nurse afterwards. They suggested that it was not fair that though their efforts brought in money management did not provide them with a conducive work environment.[12] A frontline worker summed the situation up:

> *"All that we are asking is every day we work, but where does the money go? Look at the air conditioners and the fans on the wards, they are not working! But when you go to their offices (management workers) you will see that everything works….Yet, those of us who do the real work and bring in the money, you come to our offices and we are crammed and nothing works."[13]*

In both hospitals, frontline workers perceived procedural injustice in their respective hospitals management response to their equipment and basic medical supplies needs. Some added that sometimes they were not involved in decisions to acquire supplies and equipment, for which they are the end users. Also whenever they were involved their views were not taken into consideration.[14] They felt that the hospitals delayed in providing them with basic supplies and sometimes they were given substandard products to work with. They perceived these acts as unfair to frontline workers who have to improvise on such occasions to provide health care to clients. They argued that this contributed to delays in providing services to clients. Some said using substandard products contributed to the provision of poor quality care to clients. They indicated that poor response by managers to provide their working essentials was demotivating.[15]

Factors influencing worker motivation   **Outcomes**

Perceived procedural and
distributive injustice related to:

Local Hospital management

- Incentives

- Equipment, tools and supplies to
  work with

**Wider Health Sector Decision
making (National and regional
level policy)**

- Workplace protection

- Staff numbers & distribution
  (Especially doctors)

- Worker remuneration

- Free delivery service

Perceived interactional Injustice

- Unbalanced punishments and
  rewards

- Communication gaps

Intrinsic motivation arising
from health workers who:

- Have a human rights
  perspective (see clients as
  human beings with rights)

- Belief in God and
  accountability to God for
  your actions

- See their work as contract
  that must be honoured,

- Sense of duty and obligation
  to use professional
  knowledge ethically

- Maintain quality standards

Poor response to client needs

Delay in providing health care

Poor interaction with clients

Demotivated Workers
manifesting as workers
who:

- Have no sense of
  belonging

- Feel disrespected

- Mistrust the system

- Dread work environment

- Irritated, angry and bitter

Frontline
worker
Motivation

Motivated workers manifesting
as workers who:

- Derive inner satisfaction from
  attending to clients

- See client recovery as a
  reward

- Believe receive blessings from
  God for good works

Positive response to client
needs

Prompt response to client needs

Healthy interaction with clients

Figure 1 Processes in health worker motivation.

Management workers on the other hand responded that the seemingly poor response to supplies and equipment needs was because facilities are required to follow procurement laws for bulk purchases. Unfortunately, the procurement process takes some time and that accounts for the delay.[16] For substandard medicines and other supplies, they admitted that this was a challenge to management as well. Facilities are by law not allowed to buy supplies and equipment from the open market if the Central or Regional Medical stores have some in stock. Yet, sometimes medicines issued to facilities from the Central medical stores are expired or fake. To support this assertion, two management members cited an occasion that Facility B returned quantities of oxytocin,[17] which the medical stores supplied to the hospital, because they were discovered to be fake.[18]

The majority of workers indicated that management's inability to provide incentives, the needed medical supplies and failure to maintain safety standards was demotivating and a sign of management's lack of appreciation of their work. Thus they did not trust that management was working in workers' interests.[19] This supports Adzei and Atinga's (2012) study, which suggests that resources to work with and the quality of hospital infrastructure are significant determining factors of health worker motivation and retention in district hospitals in Ghana. Other studies equally suggest that health workers' inability to pursue their vocation due to lack of means and supplies is a demotivator (Mathauer and Imhoff 2006). Also related to this finding but in a contrary direction procedural justice has been found to lead to increased job satisfaction, organizational commitment and organizational citizenship behaviour (Konovsky 2000). Thus, workers' perception of injustice was observed to have contributed to a lack of commitment and anti-citizenship behaviour that was counterproductive to the achievement of organizational goals. We observed that in part at least, as a consequence of these perceptions that the organization was not interested in their welfare as people, there was low worker motivation that had led to attitudes that created tensions and contributed to poor organizational climate and poor worker collaboration in health care provision. Ultimately, it affected worker response to clients' needs. Some workers had adopted strategies including doing locum[20] in private facilities, charging clients illegal fees or reporting to work late or leaving work early.[21] Sometimes such attitudes led to delays in responding to clients' needs, due to poor collaboration among different categories of professionals providing services such as Caesarean sections (CS). An illustration is a junior doctor who had to wait for nurses, orderlies and an anaesthetist on afternoon shift to arrive to work with him to perform a CS on a client who was admitted the previous day and needed an emergency CS. In response to a question on factors demotivating him he expressed his frustration as follows:

> "Look at that woman lying there (a pregnant woman set with infusion is lying on a bed in the walkway), she has been in labour since Sunday (this was a Monday afternoon), but now we cannot perform CS on her, because it is 1:30 pm and the morning shift people say they have to close."[22]

Ideally the morning shift should have worked with the doctor till the afternoon shift took over at 2.00 pm. This kind of situation has been observed elsewhere (Mansour *et al.* 2005; Heponiemi *et al.* 2010). Still related to these observations, but in the contrary direction, other studies have found that where workers had trust in management, it reflected in a positive relationship between workers and their clients (Bruce 1990; Koenig *et al.* 1997; Westaway *et al.* 2003; Atinga *et al.* 2011).

Perceived distributive injustice related to wider health sector issues at national level

Folger (1993) suggests that when employees perceive that their organization cares about them as human beings, they are more likely to trust the organization, exhibit greater loyalty and commitment to work and the contrary is true. Many of the frontline workers in this study perceived injustice at a wider health sector level that is the central Ministry of Health, GHS and its regional health service directorates. They suggested that the sector was not responsive to their health care needs, work-related injuries and providing them with a conducive work environment. Frontline workers' perceptions of injustice at sector level sometimes intersected with their perceptions of injustice at hospital management level.

Frontline workers suggested that the Ministry of Health, GHS and their facility managers did not care about their welfare. Consequently, they did not trust that GHS and their facilities would take care of them if they risked their lives in the line of duty. Frontline workers' lack of trust was sometimes exhibited in worker–client interaction. The observation below is an illustration of one of such incidents in a maternity ward. A mentally challenged client was in labour, but she was not co-operating with a senior nurse, who wanted to conduct a vaginal examination. A junior nurse discouraged the senior nurse from continuing her efforts by saying:

> "If she will not agree…. leave her….If you force to examine her and she resists, you could injure yourself…. Ghana Health Service will not do anything for you. You will even have to take care of yourself, buy your own drugs, treat yourself and no one will compensate you."[23]

Interviews with management workers suggested that there was a work policy guideline for adverse events to ensure that workers who got injured were catered for.[24] However, workers who were injured or exposed to HIV/AIDs and Hepatitis B in the process of providing health care said they had to bear the cost of treatment. A doctor in Facility A who experienced needle pricks on three occasions while performing surgery on HIV/AIDS clients said he had to pay for the cost of treatment.[25] A nurse in Facility B also narrated her experience as follows:

> "If a worker is sick even paracetamol (a painkiller usually administered as first aid) you have to buy…Last year I was doing delivery and had to do episiotomy. While I was suturing, I suffered a needle prick. Unfortunately, the client was hepatitis B positive….I had to do some tests… I also had to go for hepatitis B vaccination and the disease control officer charged me 15 Ghana Cedis (US$7) for each of the three shots."[26]

The researcher interviewed a legal expert to understand whether workers had a right to demand treatment for injuries at work

and better conditions of service. He said that the Ghana labour act stipulates that the health of the employee is the concern of the employer. So workers had the right to demand better conditions of service. He added that it was more rewarding to the organization to provide such basic services to their frontline workers, because it served as a booster to worker performance.[27]

Frontline workers in Facility A perceived distributive injustice from the regional health directorate and hospital management in the allocation of frontline workers especially doctors to the maternity department of Facility A. Facility A conducts over 200 deliveries in a week. At the time of the field work, it had three specialist obstetrician gynaecologists and three general doctors. Additionally, an average of three house officers (newly qualified doctors on internship) were posted to Facility A's maternity department periodically to do 3- to 6- month internship under the supervision of specialists. Doctors complained of unfair distribution of doctors and work between them and their colleagues in the teaching hospitals. They suggested that in comparison, the teaching hospitals attended to only a slightly higher number of maternity cases than they did, yet had about seventy doctors in their maternity departments compared with the six in Facility A's maternity department.[28]

Some suggested that the regional health directorate was unresponsive to their need for doctors, despite efforts put in by the maternity department to bring their predicament to its notice. Conversation with some doctors in the maternity department and an interview with a doctor who left the facility suggested that an assessment of the quantum of work by the regional health directorate recommended that the maternity department be staffed with 25 doctors. But the regional health directorate did not provide the recommended number of doctors. They perceived this development as unfair, because the 6 doctors available had to take on the work of 25 doctors.[29]

The consequences of unfair distribution of doctors included work overload, doctors feeling overused, complaints of ill health, tiredness and waning motivation. Some devised coping strategies including switching their phones off when off duty and refusing to visit some of the wards in the maternity department during ward rounds. Some placed quotas for the number of clients they would attend to in a day.[30] The findings supports Manongi *et al*. (2006) and Mbindyo *et al*.'s (2009) studies, which suggest that health workers give quotas when they are overwhelmed with work. Others performed only emergency CS and skipped elective CS, while some left, giving the maternity a relatively high doctor turnover. An interview with Dr Job* who was described as a good doctor, but left Facility A depicts the process from feelings of injustice to demotivation to attrition.

"I got tired…It gets to a point you begin to feel that those managing the system don't really care about those who are busily doing the work. So whether you go to work and there is no water or whether you go to work and the laundry is not functioning, whether you go to work and the unit that sterilizes the equipment is not functioning, whether you have enough medical officers or house officers to support you do the work or not, nobody seemed to be finding permanent solutions to these problems. So once in a while we run into different forms of crisis… and then you find out that you are getting more and more irritated with everybody who

work with you. You snap at nurses, you snap at patients. You get up in the morning, particularly on the days that you are going on calls, you are not happy to be going to work."[31]

A senior nurse manager explained that the limited number of doctors in the maternity department of Facility A was a national problem. She explained that there are quotas imposed on the number of workers that the GHS can employ at a given time. Second, the teaching hospitals, which are the training institutions that feed public hospitals with doctors, retain most of the doctors they train.[32] The skewed distribution of doctors in low resource countries including Ghana has been noted elsewhere (Dovlo 1998; Agyepong *et al*. 2001; Chen *et al*. 2004; Snow *et al*. 2012; Faye *et al*. 2013; Mutale *et al*. 2013). Unfortunately, in many countries the establishment of posts, recruitment, terms and conditions of service are beyond the authority of public hospitals and regional managers. They are directly controlled by central government agencies (Larbi 1998, 2005; Appiah-Denkyira *et al*. 2011). Second per the GHS and Teaching Hospitals' Act 525 (Government of Ghana 1996), the regional health directorate and the GHS have no authority over doctors in the teaching hospitals, which are a major source of recruitment of doctors and other frontline workers. These gaps are translated into skewed distribution of doctors in public health facilities as was the case in Facility A.

Frontline workers in the maternity department of both facilities perceived distributive injustice in national policy related to worker remuneration. They suggested that since they were attending to higher client numbers than their colleagues in other departments, they should be given incentives to make up for the low remuneration from government.[33] A senior doctor in the maternity department of Facility A presented this view:

"Dr Kofi: The Ghana Health Service system is such that the physician specialist and the gynaecologist receive the same salary. But the physician specialist will come in the morning, do the prescriptions and by afternoon he is done… But our work is different; you can be called at any time….sometimes they call me at 2:30 am.
Researcher: So do you think your midwives have a case when they complain that they are not being treated fairly?
Dr. Kofi: Yes, their complaints are right. Because they work a lot, but are not given much…the problem is a national one. For instance workers of the same rank are given the same salary across the country. So a nurse of the same rank whether the fellow is in the labour ward, the out patients department or wherever receives the same salary."*[34]

A member of management in Facility A agreed that the quantum of work in the maternity department was comparatively higher than in the other departments, so the workers in the maternity department should be compensated for the extra work.[35] However, a senior nurse manager in Facility A and two management workers in Facility B held the view that all departments are important, so they should be treated equally. The priority should be on using the IGFs to run the hospital and any surpluses could be used to provide incentives to motivate all workers.[36]

Another national policy issue cited by workers as unjust both from a distributive and procedural injustice perspective was the implementation of the fee free delivery policy, which involved universal exemptions from payment of user fees for delivery services (Ansong-Tornui *et al.* 2007). Frontline workers in Facility A suggested that the policy had led to an increased client load in the maternity department, without a corresponding increase in staff numbers, basic equipment, tools and supplies, worker remuneration and expansion of infrastructure. This was unfair. To use the words of one of the senior doctors:

''I am disgruntled and angry but we have to work. They refused to give us our conversion difference (salary adjustment)….Look at the clients; some are sitting on benches. Facility A, two thirds of the land has not been used, we have a large plot of land and what is being done with it! Look at the small thing they are putting up as the maternity block and look at how long it has taken.''[37]

Workers perceived that the national policy on the fee free delivery service had been implemented without taking into consideration the ability of facilities and workers to manage excess numbers or how to compensate workers for the extra work. The increase in numbers had put a strain on workers and facilities, which was demotivating. Similar finding have been reported (Ansong-Tornui *et al.* 2007). Other studies have documented frontline workers' perceptions of unfair remuneration with agitations for better remuneration in Ghana (Agyepong *et al.* 2012). Songstad *et al.* (2011) also noted the influence of policy and political developments on worker remuneration and perceptions of injustice in Tanzania.

Perceived interactional injustice related to hospital management

In Facility B, many frontline workers perceived interactional injustice from hospital management in meting out punishments and rewards and in communicating with workers. Frontline workers suggested that the head of the hospital did not commend them for good work done, but was quick to reproach (insult) workers who made mistakes. They found her approach to interacting with them unprofessional and demotivating.[38] An interview with two management workers confirmed frontline workers' perceptions about the head. The management workers added that if a worker made a mistake, the head of the facility insulted the worker and also insulted his or her entire family. Also if the worker in question ever made another mistake in future, the head always referred to her previous mistakes.[39] A senior nurse said she had indicated in a staff survey questionnaire in 2013 that they were not commended for their good work, but were always reproached by the hospital management for shortcomings.[40]

The management workers who were interviewed as well as the frontline workers admitted that the head of the hospital had the right to discipline workers. However, they said they would have preferred an approach to discipline with the head appropriately investigating reported offences first, then dealing with the offences in a professional way, instead of making discipline seem like a personal attack on workers. They argued that dealing with offences in a professional manner could help bring long-term solutions and prevent recurrence of similar

offences.[41] In an interview with the researcher, the head of Facility B said that she follows the GHS code of ethics[42] to discipline offending workers. This entails: she first gives a verbal warning to an offender, followed by a written warning and the third time she hands the offender over with the compiled evidence to the district health directorate or the regional health directorate for action. On the issue of workers complaining that she reproaches them for their offences, she explained that once a worker commits an offence, she reprimands the worker in her office in the presence of the worker's department head who serves as a witness. However, if the fellow repeats a similar offence she refers the worker to the previous offence, because the worker would have probably promised to be of good behaviour, but might have forgotten and committed a similar offence.[43]

Some workers suggested that existing channels for communicating concerns to management were not helpful. A former management worker said they had durbars,[44] which were not useful channels for communicating their concerns to management. He said frontline workers complained that in previous durbars when they raised their concerns, the head of the facility responded in an unfriendly manner. Consequently, very few workers attend durbars.[45] The head of Facility B said in an interview that she did not see her responses at durbars as a confrontation; this was probably the perception of some workers. She stated that she and her core management team members make efforts to address workers' concerns at durbars.[46]

Thus ironically workers felt that the professional work ethics that they were being espoused to hold for their clients, were not being reciprocated to them by the hospital management. Perceived interactional injustice contributed to feelings of bitterness, sorrow and anger, which affected some workers' self confidence, interest and desire to perform their duties.[47] Consequently, some workers did not take initiatives to facilitate health service provision to clients and sometimes counterproductive behaviours were observed. On one occasion women who had completed their antenatal visit could not leave the facility, because they had to take their drugs from the antenatal pharmacy. However there was no dispensary attendant, so the women sat waiting for another hour. The junior nurse who provided them with the antenatal service got worried and asked her superior if they could do anything about the women's plight since there was no dispensary attendant at the dispensary to attend to them. The superior responded: 'I don't care what happens. If I talk then they will report me to doctor (head of Facility B). So I won't bother myself.'[48] Subsequently, the women who overheard her comment left the facility without waiting any longer to receive their routine antenatal drugs.

Workers' perception of being treated with disrespect and in an insensitive manner contributed to poor organizational climate and lack of job satisfaction and the desire to leave the facility. Similar findings have been noted elsewhere (Laschinger 2003, 2004; Almost *et al.* 2010). Also, Mathauer and Imhoff (2006) found that appreciation of their work and recognition among others were important ingredients to worker motivation and a perceived sense of justice. Fonn and Xaba (2001) infer that when health system managers treat workers fairly respecting their rights, empowering them and creating a

conducive work environment, workers become motivated and exhibit positive attitudes towards work.

Intrinsic motivation factors

Most frontline workers perceived injustice at hospital management and policy levels, which they suggested affected their motivation. However, interestingly some of these workers demonstrated a high sense of motivation and responded positively to clients' needs in spite of this. In-depth interviews and conversations with some workers who were observed to exhibit a high sense of motivation suggested that the factors motivating them were intrinsic. Intrinsically motivating factors were similar in both facilities. Sources of workers' intrinsic motivation included perceiving clients as human beings with rights and the desire to maintain standards and accountability to God for one's actions. Others were a perception of their work as a contract that must be honoured, a strong sense of duty and the obligation to use their professional knowledge ethically. Some intrinsically motivated workers suggested that the greatest incentives to them included successful client recovery, which gave them an inner sense of satisfaction and others believed they received blessings from God for responding positively to clients' needs. Below are illustrative excerpts from two workers. The first is a doctor in Facility A, whose motives were clients' rights, a high sense of duty and a desire to maintain standards. The second is a nurse in Facility B whose motives included professional ethics and deriving inner satisfaction from successful outcomes.

> ''I don't want to mismanage anyone. I don't want to give half-half to anyone. I don't want to see someone and it is like you are experimenting, no. If I see you, I want to give you the very best I can and standard treatment that you deserve. Not because you are in Ghana, so you don't have this, no.... I don't want to cut corners.''[49]
>
> You see, I believe that when you are doing a job you have to do it well. When I came here (Facility B) the first time, I realized that there was no oxygen and I said I won't work without oxygen. The then matron… had to get it before I became comfortable to work here. You know, when you are working, the inner satisfaction is very important. How can you deliver a mother and the baby needs resuscitation and you cannot do so and you watch the baby die.[50]

These two workers and several others like them who were intrinsically motivated exhibited positive attitudes including sacrificing to stay back to attend to clients past their scheduled times. In emergencies, some used their personal resources including going to other hospitals to beg for supplies for their hospital. Some improvized in the absence of critical supplies to save lives.[51] The influence of intrinsic motivation on worker performance is consistent with Lin's (2007) finding that workers' attitudes and intentions to perform tasks are strongly associated with their intrinsic motivation. Studies in Benin suggests that vocation, professional conscience, job satisfaction and the desire to help clients are strong motivating factors for health workers (Mathauer and Imhoff 2006). Studies carried out in India found that intrinsic factors had a higher influence on doctors' motivation in the provision of health care than extrinsic factors (Purohit and Bandyopadhyay 2014).

Summary of findings

Our findings support studies that suggest that workers' motivation is influenced by extrinsic and intrinsic factors. We found that perceptions of distributive, procedural and interactional injustice at organizational and policy levels had a strong influence on workers' motivation and response to clients' health care needs. Frontline workers had the feeling of being let down by the health system as they perceived that they did not receive 'people-centred care' from their employers, despite being asked to provide 'people-centred care' to the clients that come to their hospitals. They perceived that the values they are being asked to hold for their external customers are not being held for them by the health system within which they work. This considerably weakens the credibility of the message they are being given to treat their clients in a responsive manner. Furthermore, perceived injustice in policy and organizational processes made them distrust their leadership. Some became apathetic and less motivated to respond to external clients' needs.

Despite perceived injustice in policy and organizational processes, some workers demonstrated a high sense of motivation and responded positively to clients' health care needs. We found that intrinsic motivation factors including perceiving clients as human beings with rights, the desire to maintain standards and accountability to God for one's actions among others, played a key role in workers who demonstrated a high sense of motivation. Intrinsically motivated workers suggested that they derived inner satisfaction from performing tasks and others believed that they received blessings from God for responding to clients' needs. Nevertheless, even intrinsically motivated workers such as Dr Job* burned out with time. This shows that worker motivation is a dynamic process.

Conclusion

Our methodology of a participatory approach through participant observation, conversations and in-depth interviews in studying frontline worker motivation in a biomedical environment provides insights on organizational justice in the hospital environment that could not have been otherwise obtained.

Using distributive, procedural and interactional justice dimensions of organizational justice theory, this study has demonstrated the multiple layers of injustice perceived by health workers in the hospital setting. It brings to light the influence of worker perception of injustice on worker motivation in the provision of health care. Where workers perceived injustice, workers were more likely to be demotivated and it affected their response to client health care needs. However, issues of injustice could not explain why some workers were motivated to respond to clients' needs. Factors that were identified to motivate workers were intrinsic. Thus, this study contributes to knowledge on the complexity of factors that influence frontline worker motivation within the hospital setting.

To promote worker motivation a 'people-centred care' approach that considers frontline workers within health system as 'people' to whom the system should be responsive is essential.

Health care should draw upon CQI philosophy and should be organized around health workers as internal customers and clients as external customers. Frontline workers' interest should be factored into any intervention that aims at improving quality health care.

Within our study setting a 'people-centred' approach that includes frontline health workers in the concept should include the following:

At facility level, supportive leadership and supervision should be instituted to foster good working relationships between frontline workers and managers. There is a need to train managers in transparency, communication, respect in inter-action and the need to see team work as a priority as proposed in the CQI philosophy.

At facility level a radical change in management culture is needed. Management should put in structures that will ensure effective communication, transparency and accountability. Also, managers and supervisors should learn to see workers as members of a team who should be treated with dignity and respect even in matters of discipline. Facilities should improve motivation through provision of basic incentives to frontline workers.

At national and regional levels efforts should be made to synchronize the needs of the various facilities to be able to distribute frontline workers based on need of facilities. Transparent processes for allocating workers that engage frontline workers and are seen as fair in the context of overall national resource constraints should be adopted.

We believe that without the creation of a conducive atmosphere where frontline workers will feel their concerns are that of their departmental organization managers, policy makers and other agents responsible for health care in a way that is fair, it will be difficult to have frontline workers motivated to see the health of their clients as their concern.

Ethical approval

Ethical approval was obtained from the University of Wageningen and the GHS ethical review boards. The Greater Accra regional health directorate approved the study. The regional health directorate wrote letters to the two district health directorates that have oversight responsibility over the district hospitals where the study was conducted. The district health directorates equally approved the study and forwarded copies of the letters to the study hospitals, whose heads then granted clearance for the study in their facilities. The researcher was then introduced to the heads of the maternity departments and the individual wards in the department as a student researcher. They were informed of the objectives of the study and they gave her their permission to work in the wards. She was also given permission to observe activities and to partici-pate in meetings, training programmes and other activities in the departments. The researcher was introduced to the frontline workers including nurses, doctors, anaesthetists, ward aids and orderlies in the wards. This helped her to gain trust and to interact freely with workers. Written consent was obtained from interview participants, while verbal consent was obtained for conversations with study participants. To protect the identity of the facilities and participants pseudonyms have been used.

Endnotes

[1] Facility A: observation notes, May 24, 2012.
[2] Facility A: conversation with a doctor, May 7, 2012; Conversation with a midwife, July 27, 2012; Interview with a nurse, September 20, 2012; Observation notes, May 24, 2012.
[3] Facility A: conversation with an anaesthetist, July 5, 2012.
[4] Interview with Dr *Bill, former worker of Facility A, September 9, 2013.
[5] Facility A: interview with an accountant, August 17, 2012.
[6] Facility A: conversation with a senior midwife, June 8, 12.
[7] Facility A: interview with Hospital manager, December 4, 2013.
[8] Facility B: Conversation with a nurse, August 22, 2012; Conversation with a nurse, July 29, 2013; Conversation with two night nurses, August 11, 2013.
[9] An annual performance review of public hospitals in the Greater Accra Region. This was instituted by the regional health directorate to improve health care quality.
[10] Facility B: interview with two management members, August 6, 2013; conversation with two nurses, August 11, 2013.
[11] Facility B: conversation with two night nurses, August 11, 2013.
[12] Facility A: observation notes, maternal audit meeting, March 16, 2013.
[13] Facility A: conversation with an anaesthetist, July 5, 2012.
[14] Facility A: conversation with an anaesthetist, October 3, 2013; Facility B: conversation with a nurse, September 26, 2012.
[15] Facility A: conversations with two anaesthetists, October 3, 2013, September 26, 2013; Facility B: interview with senior nurse, July 30, 2013.
[16] Facility A: interview with a management member, July 31, 2012.
[17] Ocytocin is a drug commonly used in induction and argumentation of labouring clients (Freeman and Nageotte 2007).
[18] Facility B: interview with two management members, August 6, 2013.
[19] Facility A: conversation with an anaesthetist, July 5, 2012.
[20] Locum is working in private facilities in addition to being permanent workers in public hospitals.
[21] Facility B: conversation with a nurse, July 18, 2013; Interview with Dr Job, August 3, 2013.
[22] Facility A: conversation with a junior doctor, July 23, 2012.
[23] Facility A: observation notes, September 14, 2012.
[24] Facility A: interviews with a management member, July 31, 2012; Facility B: interview with two management members, September 20, 2013.
[25] Facility A: interview with a junior doctor, September 14, 2012.
[26] Facility B: interview with senior nurse, July 30, 2013.

[27] Interview with legal expert, September 8, 2013.

[28] Facility A: observation notes, November 23, 2012.

[29] Facility A: conversation with two gynaecologists, a junior doctor and a house officer, April 30, 2012; interview with Dr Job*, August 3, 2013.

[30] Facility A: interview with a junior doctor, October 31, 2012.

[31] Interview with Dr Job*, August 3,2013.

[32] Facility A: conversation with senior nurse, November 26, 2013.

[33] Facility A: conversation with two nurses, April 20, 2012.

[34] Facility A: conversation with a senior doctor, July 5, 2012.

[35] Facility A: interview with physician specialist, July 31, 2012.

[36] Facility A: interview with a nurse, September 20, 2012; Facility B: interview with two management members, August 6, 2013.

[37] Facility A: conversation with a senior doctor, October 3, 2013.

[38] Facility B: interview with a doctor, July 29, 2013; interview with two nurses July 30, 2013; conversation with a nurse, July 29, 2013.

[39] Facility B: interviews with two management members, August 6, 2013.

[40] Facility B: interview with a nurse, July 30, 2013.

[41] Facility B: interview with two management members, August 6, 2013; interview with a doctor, July 29, 2013; Conversation with a nurse, July 29, 2013.

[42] The GHS code of conduct and disciplinary procedures stipulates how matters of workers discipline should be handled by health service managers. GHS 2003. Code of Conduct and disciplinary Procedures, Accra, Ghana.

[43] Facility B: interview with hospital manager, March 5, 2014.

[44] Open air meetings that brings together management and frontline workers to interact freely to discuss organizational issues.

[45] Facility B: interview with former management member, August 7, 2012.

[46] Facility B: interview with hospital manager, March 5, 2014.

[47] Facility B: interview with a medical doctor, July 29, 2013; Interview with two nurses, July 30, 2013; conversation with a nurse, July 29, 2013.

[48] Facility B: observation notes, July 18, 2013.

[49] Facility A: interview with a junior doctor, September 14, 2012.

[50] Facility B: conversation with a nurse, September 5, 2012.

[51] Facility A: observation notes, July 3, 2012, September 17, 2012; Facility B: observation notes, November 1, 2012.

References

Adzei FA, Atinga RA. 2012. Motivation and retention of health workers in Ghana's district hospitals: addressing the critical issues. *Journal of Health Organization and Management* **26**: 467–85.

Agyepong I. 2012. Development, equity, gender, health, poverty and militarization: is there a link in the countries of West Africa? *10th Anniversay Lustrum Conference of the Prince Claus Chair in Equity and Development*. The Hague: The Netherlands.

Agyepong I, Anafi P, Ansah E, Ashon D, Na-Dometey C. 2004. Health Worker (internal customer) satisfaction and motivation in the public sector in Ghana. *International Journal of Health Planning and Management* **19**: 319–36.

Agyepong I, Sollecito W, Adjei S, Veney J. 2001. Continues quality improvement in public health in Ghana: CQI as a model for primary health care management and delivery. *Quality Management in Health Care* **9**: 1–10.

Agyepong IA, Kodua A, Adjei S, Adam T. 2012. When 'solutions of yesterday become problems of today': crisis-ridden decision making in a complex adaptive system (CAS)—the Additional Duty Hours Allowance in Ghana. *Health Policy and Planning* **27**: 20–31.

Alhassan RK, Spieker N, van Ostenberg P *et al.* 2013. Association between health worker motivation and healthcare quality efforts in Ghana. *Human Resources for Health* **11**: 1–11.

Almost J. 2006. Conflict within nursing work environments: concept analysis. *Journal of Advanced Nursing* **53**: 444–53.

Almost J, Doran DM, Hall LM, Laschinger HKS. 2010. Antecedents and consequences of intra-group conflict among nurses. *Journal of Nursing Management* **18**: 981–92.

Andersen HM. 2004. Villagers: differential treatment in a Ghanaian hospital. *Social Science and Medicine* **59**: 2003–12.

Ansong-Tornui J, Armar-Klemesu M, Arhinful D, Penfold S, Hussein J. 2007. Hospital based maternity care in Ghana—findings of a confidential enquiry into maternal deaths. *Ghana Medical Journal* **41**: 125–32.

Appiah-Denkyira E, Herbst CH, Lemiere C. 2011. Interventions to increase stock and improve distribution and performance of HRH. In: Appiah-Denkyira E, Herbst CH, Soucat A, Lemiere C, Saleh K (eds). *Towards Interventions in Human Resources for Health in Ghana*. Washington, DC: The World Bank, Ministry of Health.

Atinga R, Abekah-Nkrumah G, Domfeh K. 2011. Managing healthcare quality in Ghana: a necessity of patient satisfaction. *International Journal of Health Care Quality Assurance* **24**: 548–63.

Bell BS, Wiechmann D, Ryan AM. 2006. Consequences of organizational justice expectations in a selection system. *Journal of Applied Psychology* **91**: 455–66.

Bosu W, Bell J, Armar-Klemesu M, Ansong-Tornui J. 2007. Effect of delivery care user fee exemption policy on institutional maternal deaths in the central and volta regions of Ghana. *Ghana Medical Journal* **41**: 118–24.

Bradley S, Mcauliffe E. 2009. Mid-level providers in emergency obstetric and newborn health care: factors affecting their performance and retention within the Malawian health system. *Human Resources for Health* **7**: 1–8.

Bruce J. 1990. Fundamental elements of the quality of care: a simple framework. *Studies in Family Planning* **21**: 61–91.

Chandler CIR, Chonya S, Frank M, Hugh R, Whitty CJM. 2009. Motivation, money and respect: a mixed-method study of Tanzanian non-physician clinicians. *Social Science and Medicine* **68**: 2078–88.

Chen L, Evans T, Anand S *et al.* 2004. Human resources for health: overcoming the crisis. *Lancet* **364**: 1984–90.

Colquitt JA, Conlon DE, Wesson MJ, Porter COLH, Ng KY. 2001. Justice at the millennium: a meta-analytic review of 25 years of organizational justice research. *Journal of Applied Psychology* **86**: 425–45.

Colquitt JA, Scott BA, Judge TA, Shaw JC. 2006. Justice and person-ality: using integrative theories to derive moderators of justice effects. *Organizational Behavior and Human Decision Processes* **100**: 110–27.

Cropanzano R, Prehar CA, Chen PY. 2002. Using social exchange theory to distinguish procedural from interactional justice. *Group and Organization Management* **27**: 324–51.

Dieleman M, Cuong P, Anh L, Martineau T. 2003. Identifying factors for job motivation of rural health workers in North Viet Nam. *Human Resources for Health* **1**: 10.

Dieleman M, Toonen J, Touré H, Martineau T. 2006. The match between motivation and performance management of health sector workers in Mali. *Human Resources for Health* **4**: 1–7.

Dovlo D. 1998. Health sector reform and deployment, training and motivation of human resources towards equity in health care: issues and concerns in Ghana. *Human Resources for Health Development Journal*. http://www.who.int/hrh/en/HRDJ_2_1_03.pdf, accessed 17 September 2013.

Emerson RM, Fretz RI, Shaw LL. 2005. *Writing Ethnographic Fieldnote*. Chicago: The University of Chicago Press.

Fahie D. 2014. Doing sensitive research sensitively: ethical and methodological issues in researching workplace bullying. *International Journal of Qualitative Methods* **13**: 19–36.

Faye A, Fournier P, Diop I, Philibert A, Morestin F, Dumont A. 2013. Developing a tool to measure satisfaction among health professionals in sub-Saharan Africa. *Human Resources for Health* **11**: 1–23.

Folger R. 1993. Justice, motivation, and performance beyond role requirements. *Employee Responsibilities and Rights Journal* **6**: 239–48.

Fonn S, Xaba M. 2001. Health workers for change: developing the initiative. *Health Policy and Planning* **16**: 13–8.

Franco LM, Bennett S, Kanfer R. 2002. Health sector reform and public sector health worker motivation: a conceptual framework. *Social Science and Medicine* **54**: 1255–66.

Franco LM, Bennett S, Kanfer R, Stubblebine P. 2004. Determinants and consequences of health worker motivation in hospitals in Jordan and Georgia. *Social Science and Medicine* **58**: 343–55.

Freeman RK, Nageotte M. 2007. A protocol for use of oxytocin. *American Journal of Obstetrics and Gynecology* **197**: 445–6.

Geertz C. 1973. *The Interpretation of Cultures*. New York: Perseus.

Ghana Health Service. 2003. *Code of Conduct and disciplinary Procedures*. Ghana: Accra.

Ghana (Republic of Ghana) Government of Ghana 1996. Ghana health service and teaching hospitals act 525. Accra, Ghana: Government Printer Assembly Press.

Greenberg J. 1993. Justice and organizational citizenship: a commentary on the state of the science. *Employee Responsibilities and Rights Journal* **6**: 249–56.

Heponiemi T, Kuusio H, Sinervo T, Elovainio M. 2010. Job attitudes and well-being among public vs. private physicians: organizational justice and job control as mediators. *European Journal of Public Health* **21**: 520–5.

Hongoro C, Normand C. 2006. Health workers: building and motivating the workforce. In: Jamison D, Breman J, Measham A, Alleyne G, Claeson M, Evans D, Jha P, Mills A, Musgrove P (eds). *Disease Control Priorities in Developing Countries*. 2nd edn. Washington, DC: World Bank.

Kanfer R. 1999. Measuring health worker motivation in developing countries. *Major Applied Research* **5**: 1–20.

Koenig M, Hossain M, Whittaker M. 1997. The influence of quality of care upon contraceptive use in rural Bangladesh. *Studies in Family Planning* **28**: 278–89.

Konovsky MA. 2000. Understanding procedural justice and its impact on business organizations. *Journal of Management* **26**: 489–511.

Larbi GA. 1998. Institutional constraints and capacity issues in decentralizing management in public services: the case of health in Ghana. *Journal of International Development* **10**: 377–86.

Larbi GA. 2005. 'Freedom to manage', task networks and institutional environment of decentralized service organizations in developing countries. *International Review of Administrative Sciences* **71**: 447–62.

Laschinger HKS. 2003. R-E-S-P-E-C-T Just a little bit: antecedents and consequences of nurses' perceptions of respect in hospital settings. *National Nursing Administration Research Conference*. Social Sciences Humanities Research Council of Canada: Chapel Hill, NC.

Laschinger HKS. 2004. Hospital nurses' perceptions of respect and organizational justice. *Journal of Nursing Administration* **34**: 354–64.

Latham GP, Pinder CC. 2005. Work motivation theory and research at the dawn of the twenty-first century. *Annual Review of Psychology* **56**: 485–516.

Leventhal GS. 1976. *What should be done with equity theory? New approaches to the study of fairness in social relationships*. *In:* Gergen K, Greenberg M, Willis RH (eds). *Social Exchange: advances in theory and research*. New York: Plenum.

Lin H-F. 2007. Effects of extrinsic and intrinsic motivation on employee knowledge sharing intentions. *Journal of Information Science* **33**: 135–49.

Luoma M. 2006. Increasing the motivation of health care workers. *Technical Brief*[Online]. Available: http://www.capacityplus.org/files/resources/projectTechBrief_7.pdf, accessed 4 August 2011.

Manongi RN, Marchant TC, Bygbjerg IC. 2006. Improving motivation among primary health care workers in Tanzania: a health worker perspective. *Human Resources for Health* **4**: 6.

Mansour JB, Vriesendorp S, Ellis A. 2005. *Managers Who Lead: A Handbook for Improving Health Services*. USA: Quebecor World.

Mathauer I, Imhoff I. 2006. Health worker motivation in Africa: the role of non-financial incentives and human resource management tools. *Human Resources for Health* **4**: 1–17.

Mbindyo P, Gilson L, Blaauw D, English M. 2009. Contextual influences on health worker motivation in district hospitals in Kenya. *Implementation Science* **4**: 1–10.

Mclaughlin C, Kaluzny A. 1994. *Continuous Quality Improvement in Health Care: Theory, Implementation and Application*. 2nd edn. Gaithersburg, MD: Aspen Publishers.

Ministry of Health. 2001. *The health of the nation: reflections on the first five year health sector programme of work 1997–2001*. Accra, Ghana: Ministry of Health.

Ministry of Health. 2007. *Health Sector 5 Year Programme of Work 2002–2006: Independent Review of POW-2006*. Accra, Ghana: Ministry of Health.

Mutale W, Ayles H, Bond V, Mwanamwenge MT, Balabanova D. 2013. Measuring health workers' motivation in rural health facilities: baseline results from three study districts in Zambia. *Human Resources for Health* **11**: 1–16.

Ntim S. 2013. Economic governance and social accountability. In: Andoh IF (ed). *The Catholic Standard*. Accra: Standard Newspapers and Magazines Ltd.

Prytherch H, Leshabari MT, Wiskow C *et al.* 2012. The challenges of developing an instrument to assess health provider motivation at primary care level in rural Burkina Faso, Ghana and Tanzania. *Global Health Action* **5**: 1–18.

Purohit B, Bandyopadhyay T. 2014. Beyond job security and money: driving factors of motivation for government doctors in India. *Human Resources for Health* **12**: 1–13.

Rowe AK, de Savigny D, Lanata CF, Victora CG. 2005. How can we achieve and maintain high-quality performance of health workers in low-resource settings? *Lancet* **366**: 1026–35.

Snow R, Herbst CH, Haddad D *et al.* 2012. The distribution of health workers. In: Appiah-Denkyira E, Herbst CH, Soucat A, Lemiere C, Saleh K (eds). *Towards Interventions in Human Resources for Health in Ghana*. Washington, DC: The World Bank, Ministry of Health.

Songstad NG, Rekdal OB, Massay DA, Blystad A. 2011. Perceived unfairness in working conditions: The case of public health services in Tanzania. *BMC Health Services Research* **11**: 1–15.

Stinglhamber F, De Cremer D, Mercken L. 2006. Perceived support as a mediator of the relationship between justice and trust : a multiple foci approach. *Group and Organization Management* **31**: 442–68.

van Der Geest S, Sarkodie S. 1998. The Fake Patient: A Research Experiment In a Ghanaian hospital. *Social Sciecne and Medicine* **47**: 1373–81.

Westaway M, Rheeder P, Vanzyl D, Seager J. 2003. Interpersonal and organizational dimensions of patient satisfaction: the moderating effects of health status. *International Journal of Quality Health* **15**: 337–44.

WHO. 2011. *World Health Organization Health Systems Strengthening Glossary*. [Online]. WHO. http://www.who.int/healthsystems/Glossary_January2011.pdf, accessed 17 October 2013.

Willis-Shattuck M, Bidwell P, Thomas S, Wyness L, Blaauw D, Ditlopo P. 2008. Motivation and retention of health workers in developing countries: a systematic review. *BMC Health Services Research* **8**: 247.

Witter S, Kusi A, Aikins M. 2007. Working practices and incomes of health workers: evidence from an evaluation of a delivery fee exemption scheme in Ghana. *Human Resources for Health* **5**: 2.

Zapata-Phelan CP, Colquitt JA, Scott BA, Livingston B. 2009. Procedural justice, interactional justice, and task performance: the mediating role of intrinsic motivation. *Organizational Behavior and Human Decision Processes* **108**: 93–105.

RESEARCH   **Open Access**

The health workforce crisis in Bangladesh: shortage, inappropriate skill-mix and inequitable distribution

Syed Masud Ahmed[1*], Md Awlad Hossain[1], Ahmed Mushtaque RajaChowdhury[2], Abbas Uddin Bhuiya[3]

Abstract

Background: Bangladesh is identified as one of the countries with severe health worker shortages. However, there is a lack of comprehensive data on human resources for health (HRH) in the formal and informal sectors in Bangladesh. This data is essential for developing an HRH policy and plan to meet the changing health needs of the population. This paper attempts to fill in this knowledge gap by using data from a nationally representative sample survey conducted in 2007.

Methods: The study population in this survey comprised all types of currently active health care providers (HCPs) in the formal and informal sectors. The survey used 60 unions/wards from both rural and urban areas (with a comparable average population of approximately 25 000) which were proportionally allocated based on a 'Probability Proportion to Size' sampling technique for the six divisions and distribution areas. A simple free listing was done to make an inventory of the practicing HCPs in each of the sampled areas and cross-checking with community was done for confirmation and to avoid duplication. This exercise yielded the required list of different HCPs by union/ward.

Results: HCP density was measured per 10 000 population. There were approximately five physicians and two nurses per 10 000, the ratio of nurse to physician being only 0.4. Substantial variation among different divisions was found, with gross imbalance in distribution favouring the urban areas. There were around 12 unqualified village doctors and 11 salespeople at drug retail outlets per 10 000, the latter being uniformly spread across the country. Also, there were twice as many community health workers (CHWs) from the non-governmental sector than the government sector and an overwhelming number of traditional birth attendants. The village doctors (predominantly males) and the CHWs (predominantly females) were mainly concentrated in the rural areas, while the paraprofessionals were concentrated in the urban areas. Other data revealed the number of faith/traditional healers, homeopaths (qualified and non-qualified) and basic care providers.

Conclusions: Bangladesh is suffering from a severe HRH crisis–in terms of a shortage of qualified providers, an inappropriate skills-mix and inequity in distribution–which requires immediate attention from policy makers.

Background

Human resource for health (HRH) is the critical limiting factor determining the health of the population besides socioeconomic, behavioural and environmental factors [1,2]. Globally, there is a close correlation between the concentration of qualified health workers (doctors, nurses, dentists and midwives together) and key health outcomes such as immunization coverage, primary health care outreach, and infant, under-5 and maternal survival. This is because "in health systems, workers function as gatekeepers and navigators for the effective, or wasteful application of all other resources such as drugs, vaccines and supplies" [3]. The shortage of qualified health workers, especially in low-income countries, has drawn attention in recent times, as it seriously threatens the attainment of the millennium development goals (MDGs) [4,5].

* Correspondence: ahmed.sm@brac.net
[1]Research and Evaluation Division, BRAC, 75 Mohakhali, Dhaka-1212, Bangladesh
Full list of author information is available at the end of the article

The countries of WHO's South-East Asia Region also face several common health workforce related problems and issues concerning shortage, skill-mix, migration, work environment, knowledge-base and other areas amply articulated in the 'Dhaka Declaration' [6]. Bangladesh is no exception in this regard and it is one of the countries with 'severe shortages' of health workers [3]. Given the shortage of supply of qualified health care providers in Bangladesh, patients, especially the poor and the disadvantaged, mostly seek health care from the nonqualified providers in the informal sector [7,8]. On the demand side, due to lack of health awareness, the overall health service consumption (from any source) in Bangladesh is low compared to other developing countries, as is level of need [9,10]. Evidence shows that overall levels of per capita consumption of essential service package (ESP) would have to increase by 40% in order to achieve the higher average level of other developing countries [11].

To develop an effective, efficient and equitable health system for meeting the goal of improved and equitable population health, human resources for health (HRH) should be appropriate in relation to number, skill-mix, and distribution with optimum competency and motivation. There is a lack of comprehensive, nationally representative data on HRH in the formal and informal sectors in Bangladesh. This is essential for developing an HRH policy and plan and its implementation to meet the changing health needs of the population. A population-based, nationally representative survey covering all types of health care providers in the formal and informal sectors was done in 2007 by Bangladesh Health Watch (BHW) to fill in this knowledge gap [12]. BHW is a civil society initiative "to regularly and systematically measure and monitor the country's progress and performance in health". This paper presents data from this survey and discusses its implications for HRH problems in Bangladesh.

Materials and methods
Study population and sampling
The study population in this survey comprised of all types of health care providers (HCPs)–allopathic and non-allopathic, trained and untrained, and in public or private sector–who were currently active in providing healthcare services to the community in the study areas. The survey used 60 primary sampling units (PSUs, a cluster of around 200 households) drawn randomly from the nationally representative 1000 PSUs that are used by the Bangladesh Bureau of Statistics (BBS) for its Sample Vital Registration System, yielding estimates up to the level of district [13]. The number of sample PSUs (n = 60) was conveniently determined given constraints in time and resources. From the total number of PSUs in each of the division, the required number of sample PSUs was taken randomly,

following a PPS (Probability Proportion to Size) sampling technique. Table 1 shows this proportional allocation of the sample PSUs by division. Thus, the sampling provided representative estimates of the density of health care providers for the country as a whole, for the urban and the rural areas separately, and for each of the six administrative divisions (note that the study was done prior to the 2010 creation of a seventh Bangladeshi division). Since a PSU may not be large enough to have sufficient HCPs in terms of number as well as diversity, we used the Union and the Ward (lowest administrative units having comparable population size of around 25 000) containing the selected PSU as the sampling unit for the rural and the urban areas respectively. Data collection was done during July-September 2007.

Inventory of health care providers
All the villages, markets and health facilities/centres under each PSU (Union/Ward) were visited by the field enumerators (social science graduates) who were recruited and trained by the research team. They started by identifying the initial batch of key informants through informal discussion (asking questions such as "Who in your locality can give valid information about the number and types of the HCPs?") with community members in the markets and villages. Further key informants were then identified from this information using a 'snowball' technique. The key informants were then asked to list all the practicing HCPs they knew in the locality (free listing), and an inventory of practicing HCPs was made for each of the geographical areas visited. The key-informants sometimes provided information about the HCPs' names in different ways (e.g., nick name, family name, title, etc.). These were cross-checked with other key informants and village people for proper identification, and to avoid duplication and omission, especially in the case of the informal sector providers. Also, they visited the residences of the HCPs for on-the-spot confirmation whenever confusion arose. It was relatively easy to get the list of working HCPs from the administrative authorities in different public and private sector healthcare facilities. The enumerators also frequently checked authenticity of information with the HCPs whenever feasible. During this process, they explained the purpose of the inventory and sought their cooperation for improving the validity of the data. Finally, this exercise yielded a list of different HCPs by Union/Ward (PSU).

Categorization of the informal health care providers
The informal health care providers (not registered with any government regulatory body) were categorized into the following groups:

1) Semi-qualified allopathic providers: include providers who have received training of varying duration

Table 1 Number of sample Primary Service Units (PSUs) by division and rural/urban areas according to PPS (Probability Proportion to Size)

Division	Total PSUs enumerated by Bangladesh Bureau of Statistics for Sample Registration Survey		Number of sample PSUs taken		
	All	Urban	All	Rural	Urban
Barisal	79	11	4.7 ≈ 5	4	1
Chittagong	172	41	10.3 ≈ 10	8	2
Dhaka	307	105	18.4 ≈ 18	12	6
Khulna	125	25	7.5 ≈ 8	6	2
Rajshahi	263	39	15.8 ≈ 16	14	2
Sylhet	55	7	3.3 ≈ 3	2	1
Rural	774	—	46.5 ≈ 46	—	—
Urban	225	—	13.5 ≈ 14	—	—
Total	1000		60	46	14

Note: Urban area included the statistical metropolitan area (SMA), municipality area and other urban areas (e.g. 'thana sadar' area which has the quality of municipality).

from a formal institution in the public or private sector such as the non-profit NGOs.

a. Para-professionals: comprised of the medical assistants who completed a three-year medical assistant training programme from a public institution, mid-wives (family welfare visitor (FWV)) with 18 months training in midwifery and clinical contraception management from public/ private institutions, and lab-technicians/ physiotherapists

b. Community health workers (CHWs) from both public and non-governmental organisation (NGO) sectors. The CHWs in the NGO sector outnumber those in the public sector by a ratio of 2:1 [12]. CHWs have variable lengths of basic preventive and curative health care training, from various health care providing NGOs mainly, but also from the public sector.

2) Unqualified allopathic providers: included in this category are village doctors and drug store people/drug vendors.

a. The village doctors (also known as rural medical practitioner, RMP) mostly received short training (from a few weeks to a few months) on some common illnesses/conditions, from semi-formal private institutions which are unregistered and unregulated and do not follow a standard curriculum. A negligible proportion of them received twelve months training from a short-lived government sponsored programme (the 'Palli Chikitsok' (PC) training programme, which followed the China's model of barefoot doctors) in the '80s.

b. Drug store salespeople: most of have had no training in dispensing, not to speak of training in diagnosis and treatment.

3) Traditional healers: 'Kabiraj', whose practice is based on diet, herbs, and exercise. They are mostly self-trained, but some may have training from government or private colleges of Ayurvedic medicine. Some of them combine ayurvedic, unani (traditional muslim medicine originating from Greece) and allopathic medicine to provide 'totka' treatment. This category also includes non-secular faith healers.
4) Traditional birth attendants: includes both trained and non-trained providers who deliver home-based services only.
5) Homeopaths: mostly self-educated, but some possess a recognized qualification from government or private homeopathic colleges.

The survey
The study passed the ethical review board of the James P. Grant School of Public Health, BRAC University for ethical approval. Informed consent was taken before interviewing. All enumerators hired for the survey underwent a five-day training which consisted of didactic lectures followed by practice sessions outside the study areas. The day-to-day field activities of the teams were overseen by a field researcher based in the Upazila (sub-district) field office. The whole survey activity was supervised and managed by the authors who made frequent field visits and provided assistance and guidance when needed. SPSS PC+ ver.12 was used for data analysis.

Results
Table 2 presents the density (per 10 000 population) of doctors, nurses and dentists by region (division), geographical location (rural/urban) and sex (male/female). There were around five physicians and two nurses per

Table 2 Distribution of doctors, nurses and dentists per 10 000 people in various Bangladeshi divisions

	Doctors	Nurses	Dentists	All	Nurse per Doctor ratio
Division					
Barisal	1.7	0.9	0.3	3.08	0.5
Chittagong	4.8	3.6	0.3	8.8	0.7
Dhaka	10.8	2.8	0.5	14.2	0.2
Khulna	1.3	1.9	0.05	3.3	1.4
Rajshahi	2.1	1.1	0.0	3.2	0.5
Sylhet	2.2	0.4	0.0	3.2	0.1
Location					
Rural	1.1	0.8	0.08	2.1	0.7
Urban	18.2	5.8	0.8	24.9	0.3
Sex					
Male	4.5	0.2	0.2	5.0	0.05
Female	0.8	1.8	0.03	2.7	2.1
All	5.4	2.1	0.3	7.7	0.4

10 000 population, the ratio of nurse to physician being 0.4 only (i.e. 2.5 times more doctor than nurses). The ratio was equal in Khulna (1.4), but very low in Sylhet (0.1) and low in Dhaka (0.2). Substantial variation in the density of physicians and nurses among different divisions was found, Dhaka having the highest density of physicians followed by Chittagong, while in the case of nurses, this trend was reversed. Gross imbalance in density favouring urban areas was also observed, especially for the physicians. Similarly, there was also gross imbalance in sex ratio, favouring males in the case of physicians (four males to one female), and females in the case of nurses (nine females to one male). Together, there were 7.7 formally qualified registered health care professionals per 10 000 population.

The density of the other categories of allopathic health care providers (semi-qualified/unqualified) is presented in Table 3. There were around 12 village doctors and 11 sales people at drug retail outlets (providing diagnosis and treatment) per 10 000 population. Thus, there were about 2.5 times more village doctors and 2 times more drug store salespeople than were physicians who provide treatment/curative services to the population. There was not much variation in the density of the drug store salespeople between urban and rural areas (13 and 11 per 10 000 population) indicating their uniform spread across the country. However, their density was lowest in Barisal and Sylhet divisions compared to others. Also, there were twice as many CHWs from the NGO sector per 10 000 population (6) than from the government sector (3) and an overwhelming number of traditional birth attendants (TBAs) and/or trained traditional birth attendants (TTBAs). The TBAs/TTBAs were involved in providing delivery-related services at home only. The

village doctors and the CHWs were mainly concentrated in the rural areas while the paraprofessionals were concentrated in the urban areas. Dhaka had the lowest number of village doctors and Sylhet the lowest number of CHWs than other divisions. The village doctors and the drugstore salespeople were predominantly male compared to the CHWs who were predominantly female.

Finally, Table 4 presents the density of non-allopathic health care providers such as traditional healers and homeopaths. There were large numbers of faith healers as well as Kabiraj and other traditional healers (31 and 33 per 10 000 population respectively), who were providing health care services as revealed from this inventory. This was supplemented by 3 qualified and 2.5 unqualified homeopaths per 10 000 population in the country. The traditional practitioners were mostly male, concentrated in the rural areas of Chittagong, Rajshahi and Khulna divisions. On the other hand, the homeopaths were concentrated in the urban areas, mainly in the Khulna and Rajshahi divisions. Interestingly, about one provider (per 10,000 population) was engaged in delivering health related services such as circumcision, cleaning ears and extracting painful tooth at a nominal cost, mainly to the poorer section of the population.

Discussion

Bangladesh is declared by WHO as one of the 58 crisis countries facing an acute HRH crisis [3]. However, this is given little importance in national health activities [and there exists a dearth of information on these aspects at national level [14]. The Health Care Provider Survey 2007 [12] attempted to fill in this critical knowledge gap and help guide in formulating appropriate policies to improve the health system's ability to reach the people with an acceptable quality of services [15], and rational skill-mix in foreseeable future.

The survey is unique in that it had included all types of healthcare providers in the formal and informal sectors and thus presents a comprehensive picture of the healthcare scenario prevailing in the country. It used a nationally representative sample frame, and a PPS sampling strategy to take care of the size of the divisions and the rural/urban divides. However, due to constraint in time and resources, the number of sample clusters had to be limited to 60, a multiple of the six administrative divisions in the country.

Shortage

Findings revealed that the density (per 10 000 population) of physicians and nurses has increased over the last decade (from 1.9 physicians and 1.1 nurses in 1998 to 5.4 physicians and 2.1 nurses in 2007) [9] though it remains much lower than the estimated average for low income countries in 1998 [16]. The density of dentists

Table 3 Distribution of semi-qualified and unqualified allopathic providers per 10 000 populations, various Bangladeshi divisions

	Semi-qualified allopathic providers*				Unqualified allopathic providers		
	Paraprofes-sionals	Community Health Workers					
		Govt.	Non-Govt.(including traditional birth attendants)	All	Village doctors** (rural medical practitioners/'Palli Chikitsok' village doctors)	Dug store salespeople, drug vendors	All
Division							
Barisal	0.7	4.5	37.9	42.4	15.5	6.5	22.1
Chittagong	1.6	4.6	50.9	55.5	17.1	8.7	25.8
Dhaka	0.8	2.6	26.6	29.2	9.8	11.9	21.8
Khulna	0.6	3.0	46.3	49.9	11.3	12.3	23.6
Rajshahi	1.3	3.0	48.3	51.4	13.5	13.4	26.9
Sylhet	0.6	3.8	41.4	45.3	12.7	6.3	19.0
Location							
Rural	0.8	3.6	49.5	14.1	13.8	10.8	24.6
Urban	1.6	2.0	10.1	12.1	8.8	13.2	22.1
Sex							
Male	0.3	1.2	0.2	1.4	12.0	11.0	23.0
Female	0.7	2.0	39.4	41.4	0.4	0.4	0.9
All	1.0	3.2	39.7	42.9	12.5	11.4	23.9

*received varying length of training from formal institutions, GO or NGO.

**the Palli Chikitsok village doctors are included in this group because they are few in number, were trained on or before 1982 without any further re-training, and no different from the rural medical practitioners in practice.

has also increased, but remains at a very low level (from 0.01 in 1998 to 0.3 in 2007). However, the density of formally qualified health care professionals (HCPs) (doctors, nurses and dentists) (7.7) is lower than other south Asian countries (e.g. 21.9 in Sri Lanka, 14.6 in India, and 12.5 in Pakistan) and falls far short of the estimate projected by WHO (23.0) which would be needed for achieving the MDG targets [3]. During this time, the density (per 10 000) of traditional birth attendants declined (from 55 in 1981 to 33 in 2007), presumably due to the stoppage of TBA training by the Government of Bangladesh in 1998 [17].

On the other hand, the increase in the number of unqualified allopathic providers during the past decade

Table 4 Distribution of traditional healers, homeopaths and others per 10,000 populations, various Bangladeshi divisions

	Traditional healers			Homeopaths			Others*
	Kabiraj, Totka	Faith healers	All	Qualified	Unqualified	All	
Division							
Barisal	12.8	17.7	30.5	1.0	2.3	3.3	1.7
Chittagong	49.3	40.6	89.9	3.0	1.6	4.7	2.2
Dhaka	29.6	20.3	49.8	3.6	1.2	4.7	2.6
Khulna	38.2	28.0	66.2	3.9	4.7	8.6	0.9
Rajshahi	35.7	45.8	81.6	3.6	3.9	7.5	1.1
Sylhet	14.9	38.1	53.1	3.8	2.2	6.1	0.0
Location							
Rural	42.1	40.5	82.6	2.5	2.9	5.5	1.05
Urban	4.4	4.2	8.6	6.1	0.9	7.0	4.02
Sex							
Male	23.4	22.2	45.6	3.2	2.3	5.5	1.4
Female	9.3	9.3	18.6	0.3	0.1	0.4	0.3
All	32.7	31.5	64.2	3.4	2.5	5.9	1.7

*Circumcision practitioners, ear cleaners, tooth extractors, etc.

has been phenomenal compared to the qualified or semi-qualified allopathic providers. For example, the number of unqualified allopathic providers (village doctors and drug store salespeople) (24 per 10 000) has increased to about twice that estimated by the research agency, 'Org-Marg Quest' at the higher range (14.5 per 10 000) [18]. Similarly, the density of traditional healers (64 per 10 000) in this study has been found to be more than 2.5 times than the density estimated by Ali at the higher range (24 per 10 000) [19].

Inappropriate skill-mix

The current nurse-doctor ratio of 0.4 (i.e. 2.5 times more doctors than nurses) is far short of the international standard of around three nurses per doctor. Interestingly, the equal nurse-doctor ratio in Khulna and very low nurse-doctor ratio in Sylhet is also associated with better health indicators in Khulna and worse health indicators in Sylhet. The importance of the nursing population for healthier communities (compared to individual outcomes in case of doctors) cannot be overemphasized [20]. There is also a gross imbalance in the doctor-technologist ratio as well, the ideal being five technologists for one doctor. An estimate of shortage based on the doctor-population ratio currently prevalent in low-income countries revealed a shortage of over 60 000 doctors, 280 000 nurses and 483 000 health technologists in Bangladesh [12].

Inequitable distribution

It is interesting to note that the overwhelming urban bias of the distribution of the formally qualified HCPs, noted a decade ago, has remained a persistent phenomenon [16]. Also, these providers are inequitably concentrated in the Dhaka and Chittagong regions. The CHWs from the non-government sector and the village doctors are mainly concentrated in the rural areas. Interestingly, the salespeople at drug retail outlets (shops) are evenly distributed between the rural and urban areas, showing their unhindered expansion across the country. According to an estimate, there are about 80 000 unlicensed drugstores in the country [21]. This mushrooming of unregulated drug shops is facilitated by easy availability of essential drugs at low price following the National Drug Policy of 1982 [22] and also the availability of prescription drugs over-the-counter.

Addressing shortage and skill-mix problems: what can be done?

The large-scale shortage of qualified healthcare providers, coupled with an inappropriate skill-mix (more doctors than nurses and technologists) needs urgent attention to cater to the healthcare needs of the population. While in the short-term it is nearly impossible to produce the huge numbers of estimated healthcare providers by the public and private sectors combined [12], the disease profile in the country does not always warrant provision of services by qualified health professionals. According to the Bangladesh Bureau of Statistics [23], the most common illnesses (both sexes) in order of frequency are: fever (55%), pain (10%), diarrhoea (6%) and dysentery (4%). The above pattern of disease burden, at least in the primary care level, can be handled by the paraprofessionals (medical assistants, family welfare visitors (FWVs)), including CHWs, with the establishment of a functional referral system to a higher level of facilities [24,25].

The CHWs have been increasing in size since the nineties, with the expansion of the government and NGO health network in the country. They have been found to be cost-effective [26,27] and useful in the management of childhood pneumonia [28], acute respiratory infections of children [29], screening childhood hearing impairment [30], and DOTS treatment of tuberculosis [31] in rural Bangladesh. Training may also be provided to improve the competency of the vast army of unqualified providers (especially village doctors) in rational and harmless healthcare provision [32]. Any concern that upgrading their diagnostic and curative skills may lead to abuse and malpractice may be contained by managerial and regulatory interventions by the public sector [33].

Conclusions

Bangladesh is suffering from a severe HRH crisis in terms of a shortage of qualified providers (when measured against the WHO estimate for achieving MDG targets), inappropriate skills-mix and inequity in distribution. This desperate situation demands immediate attention from policy makers. Reducing the 'income-erosion' effect of illness through a pro-poor health system is urgently needed in Bangladesh, a country besieged with large out-of-pocket payments for healthcare.

Author details
[1]Research and Evaluation Division, BRAC, 75 Mohakhali, Dhaka-1212, Bangladesh. [2]James P Grant School of Public Health, BRAC University, 66 Mohakhali, Dhaka-1212, Bangladesh. [3]ICDDRB, Mohakhali, Dhaka-1212, Bangladesh.

Authors' contributions
SMA, AMR, and AB conceptualized and designed the study; MAH helped in sampling and fielding the study. SMA and MAH analysed and interpreted

the data; AMR and AB also helped in its interpretation. SMA drafted the manuscript and MAH, AMR and AB put critical inputs in improving the draft. SMA revised and prepared the final draft. All authors read the final draft and approved it for submission.

Competing interests
We declare that we have no competing interests in conducting the research and writing the manuscript.

References
1. Anand S, Barnighausen T: **Health workers and vaccination coverage in developing countries: an econometric analysis.** *Lancet* 2007, **369**:1277-1285.
2. JLI (Joint Learning Initiative): **Human Resources for Health: Overcoming the crisis.** Boston: Harvard University Press; 2004.
3. World Health Organization (WHO): **The World Health Report 2006 - Working together for health.** Geneva: World Health Organization; 2006.
4. Task Force on Health Systems Research: **Informed choices for attaining the Millennium Development Goals: towards an international cooperative agenda for health-system research.** *Lancet* 2004, **364**:997-1003.
5. GHW (Global Health Watch): **Global Health Watch 2005-2006: An alternative world health report.** London and New York: Zed Books; 2005.
6. Dhaka Declaration: **Dhaka Declaration on Strengthening Health workforce in the Countries of South-East Asia Region.** [http://www.searo.who.int/LinkFiles/Health_Ministers_Meeting_2006_HMM24_5_Dhaka_Decleration_Final.pdf].
7. Ahmed SM: **Exploring health-seeking behaviour of disadvantaged populations in rural Bangladesh.** *PhD Thesis* Karolinska Institutet University, Deptt. Of Public Health Sciences; 2005 [http://diss.kib.ki.se/2005/91-7140-435-X/].
8. Cockcroft A, Anderson N, Milne D, Hossain MZ, Karim E: **What did the public think of the health services reform in Bangladesh? Three national community-based surveys 1999-2003.** *Health Res Policy Systems* 2007, **5**:1 [http://www.health-policy-systems.com/content/5/1/1].
9. World Bank: **Private sector assessment for Health, Nutrition and Population (HNP) in Bangladesh. Report No. 27005-BD.** Washington DC: World Bank; 2003 [http://siteresources.worldbank.org/INTBANGLADESH/Data%20and%20Reference/20206318/Bangladesh_PSA_for_HNP-Full%20report.pdf].
10. Mercer AJ, Hossain S, Khatun J, Kabir H, Saha N, Uddin J, Hassan Y: **Screening for service needs in Primary Health Care clinics: an evaluation in Bangladesh.** *J Health Popul Developing Countries* 2005 [http://www.jhpdc.unc.edu].
11. Ensor T, Dave-Sen P, Ali L, Hossain A, Begum SA, Moral H: **Do essential service packages benefit the poor? Preliminary evidence from Bangladesh.** *Health Policy Plan* 2002, **17**:247-256.
12. Bangladesh Health Watch: **Health Workforce in Bangladesh: Who constitutes the healthcare system? The state of health in Bangladesh 2007.** Dhaka: James P Grant School of Public Health, BRAC University; 2008.
13. BBS (Bangladesh Bureau of Statistics): **Report of Sample Registration System 2002.** Dhaka: BBS; 2004.
14. Independent Review Team: **Bangladesh Health, Nutrition and Population Sector Programme (HNPSP) Mid-term Review Volume II: Technical Reports relating to Service Delivery, Systems and Governance.** *Dhaka* 2008 [http://www.mickfoster.com/docs/Technical%20Reports%20final.pdf].
15. Gwatkin DR, Bhuiya A, Victora CG: **Making health systems more equitable.** *Lancet* 2004, **364**:1273-1280.
16. Hossain B, Begum K: **Survey of the existing health workforce of Ministry of Health, Bangladesh.** *Hum Resour Dev J* 1998, **2**:109-116.
17. World Health Organization (WHO): **Skilled birth attendance: review of evidences in Bangladesh.** Dhaka: World Health Organization; 2004 [http://www.whoban.org/pdf/Skill%20Birth%20Book.pdf].
18. ORG-Marg Quest Ltd: **Survey on village doctors practicing in Brahmanpara.** *Report for British council and NICARE. Dhaka* 2000.
19. Ali QL: **Calculation of total unit cost for diarrhoeal management at district hospital and thana health complex, Dhaka.** Dhaka: Health Economics Unit, Ministry of Health and Family Welfare, Government of Bangladesh; 2001.
20. Bigbee JL: **The relationships between nurse and physician-to-population ratios and state health rankings.** *Public Health Nurs* 2008, **25(3)**:244-252.
21. Anonymous: **Fake drugs flood Bangladesh.** *Pharmacochronicles* 2004 [http://www.pharmabiz.com/NewsDetails.aspx?aid=24463&sid=21].
22. Islam N: **Bangladesh national drug policy: an example for the third world?** *Trop Doct* 1999, **29**:78-80.
23. BBS (Bangladesh Bureau of Statistics): **Statistical Pocket Book 2007.** Dhaka: BBS, Planning Division, Ministry of Planning, GoB; 2008.
24. Kruk ME, Prescott MR, de Pinho H, Galea S: **Are doctors and nurses associated with coverage of essential health services in developing countries? A cross-sectional study.** *Human Resources for Health* 2009, **7**:27.
25. Standing H, Chowdhury AMR: **Producing effective knowledge agents in a pluralistic environment: What future for community health workers?** *Soc Sci Med* 2008, **66(10)**:2096-2107.
26. Islam MA, Wakai S, Ishikawa N, Chowdhury AM, Vaughn JP: **Cost-effectiveness of community health workers in tuberculosis control in Bangladesh.** *Bull World Health Organ* 2002, **80**:445-450.
27. Khan MM, Saha KK, Ahmed S: **Adopting integrated management of childhood illness module at local level in Bangladesh: implications for recurrent costs.** *J Health Popul Nutr* 2002, **20**:42-50.
28. Winch PJ, Gilroy C, Starbuck ES, Young MW, Walker LD, Black RE: **Intervention models for the management of children with signs of pneumonia or malaria by community health workers.** *Health Policy Plan* 2005, **20**:199-212.
29. Hadi A: **Management of acute respiratory infections by community health volunteers: experience of Bangladesh Rural Advancement Committee (BRAC).** *Bull World Health Organ* 2003, **81**:183-9.
30. Berg AL, Papri H, Ferdous S, Khan NZ, Durkin MS: **Screening methods for childhood hearing impairment in rural Bangladesh.** *Int J Pediatric Otorhinolaryngology* 2005, **70**:107-14.
31. Chowdhury AMR, Chowdhury S, Islam MN, Islam A, Vaughan JP: **Control of tuberculosis by community health workers in Bangladesh.** *Lancet* 1997, **350**:169-72.
32. Ahmed SM, Hossain MA, Chowdhury MR: **Informal sector providers in Bangladesh: how equipped are they to provide rational health care?** *Health Policy Plan* 2009, **24**:467-478.
33. Kamat VR, Nichter M: **Pharmacies, self-medication and pharmaceutical marketing in Bombay, India.** *Soc Sci Med* 1998, **47**:779-794.

Research article

The metrics and correlates of physician migration from Africa
Onyebuchi A Arah*

Address: Department of Social Medicine, Academic Medical Center, University of Amsterdam, PO Box 22700, Amsterdam 1100 DE, The Netherlands

Email: Onyebuchi A Arah* - o.a.arah@amc.uva.nl
* Corresponding author

Abstract

Background: Physician migration from poor to rich countries is considered an important contributor to the growing health workforce crisis in the developing world. This is particularly true for Africa. The perceived magnitude of such migration for each source country might, however, depend on the choice of metrics used in the analysis. This study examined the influence of choice of migration metrics on the rankings of African countries that suffered the most physician migration, and investigated the correlates of physician migration.

Methods: Ranking and correlational analyses were conducted on African physician migration data adjusted for bilateral net flows, and supplemented with developmental, economic and health system data. The setting was the 53 African birth countries of African-born physicians working in nine wealthier destination countries. Three metrics of physician migration were used: total number of physician émigrés; emigration fraction defined as the proportion of the potential physician pool working in destination countries; and physician migration density defined as the number of physician émigrés per 1000 population of the African source country.

Results: Rankings based on any of the migration metrics differed substantially from those based on the other two metrics. Although the emigration fraction and physician migration density metrics gave proportionality to the migration crisis, only the latter was consistently associated with source countries' workforce capacity, health, health spending, economic and development characteristics. As such, higher physician migration density was seen among African countries with relatively higher health workforce capacity ($0.401 \leq r \leq 0.694$, $p \leq 0.011$), health status, health spending, and development.

Conclusion: The perceived magnitude of physician migration is sensitive to the choice of metrics. Complementing the emigration fraction, the physician migration density is a metric which gives a different but proportionate picture of which African countries stand to lose relatively more of its physicians with unchecked migration. The nature of health policies geared at health-worker migration can be expected to depend on the choice of migration metrics.

Background
The World Health Organization estimates that some 57 countries, many in Africa, face crippling health workforce shortages and that the global deficits of physicians, nurses and midwives easily exceed 2.4 million [1]. An often cited major contributor to the workforce shortages in Africa is

migration of physicians and nurses to rich western countries, especially to the Anglophone health systems of United States (US), Canada, Australia and the United Kingdom (UK) [1-6], but also to other member states of the Organization for Economic Cooperation and Development (OECD) [7,8]. This is particularly worrisome given the insufficient supply of health-workers in these African countries or the so-called *source countries*: they have only 3% of the world's health-workers although they represent 11% of the global population and endure 24% of the global burden of disease [1,9,10]. The migration is seen as so unjust (given its from-poor-to-rich flow) and threatening to already weak systems that there are even calls for migration reversal and immediate cessation of active recruitment from such deprived health systems [11,12].

To quantify the magnitude of migration many publications have usually relied on two metrics: absolute numbers of émigrés and the proportion of the source country's health workforce that has migrated – the emigration rate or fraction. For instance, Ghana and South Africa are said to have lost 1,639 and 7,363 physicians (that is, medical doctors) respectively to at least eight more developed *destination countries* including the UK and the US, but are estimated to have emigration fractions of 56% and 21% respectively [13]. Based on the number of physician émigrés, Ghana's loss is less than that of South Africa, but given her emigration fraction, Ghana has lost more physicians. These two metrics are not the only possible migration metrics, and the differences in the magnitude of physician migration given by the different metrics point to the likelihood that different metrics paint different perspectives of the migration problem. The choice of metrics is particularly important for understanding health-worker migration patterns and correlates at the macro-level.

Given the paucity of research into this issue, I studied the effect of choice of migration metrics on quantifying the extent and correlates of physician migration from Africa to the major destinations in North America, Europe, Australia and South Africa. The study was particularly concerned with how African countries ranked when different migration metrics were used and how such metrics correlated with the source countries' profiles.

Methods

A new database – the first of its kind – on cumulative bilateral net migration of health professionals from 53 African countries to nine wealthier destinations mostly in North America and Europe was used to extract data on physician migration [13]. The full list of the source countries is given in Additional File 1 online. Eight of the nine destination countries, which also hosted more than 94% of all African-born university trained residents in the

Organisation for Economic Cooperation and Development (OECD) countries [7], were: the United Kingdom (UK), the United States (USA), France, Canada, Australia, Belgium, Portugal, and Spain [13]. South Africa was included as the ninth destination country given that it is the most important non-OECD country to which other African physicians migrate [13]. The database defines an African physician as one born in Africa and currently employed as a medical doctor, thus effectively excluding émigrés who no longer practice medicine [13]. Other relevant data on the health workforce were obtained from the World Health Organization (WHO) [1,14,15] and the Joint Learning Initiative (JLI) [4] sources, often based on *circa* year 2000 data (range of data availability: 1993–2004). I also used WHO [16], JLI [4] and World Bank [17] databases to extract data on health status and health system spending. Economic and social development data were triangulated and taken from JLI [4], World Bank [17] and United Nations (UN) [18] sources. The details of extracted variables, their definitions, sources and year of data are given in Additional File 2.

To quantify the extent of physician migration from Africa to the nine destinations, I used three metrics: total number of physician émigrés, emigration fraction, and physician migration density. The number of physician émigrés refers to the total number of currently employed doctors who were born in Africa and have lived long enough in the destination country to be part of that country's census [13]. The emigration fraction is a well-known migration metric which is the ratio of the number of physician émigrés to the sum of the number of physicians remaining at home in Africa and the number of émigrés [2,3,13]. The physician migration density is a recently proposed metric based on the number of physician émigrés per 1000 population of each African country [19-21].

Both the emigration fraction and physician migration density give some proportionality. The former related to the physician pool of a source country (thus allowing us to say something about the proportionate effect of migration on the size of the workforce) while the migration density metric was weighted by the source country's population [20]. This study hypothesized that each migration metric would give a different picture of which source countries suffer relatively more physician emigration because each metric represented a different notion.

To relate each migration metric to the source countries' characteristics, I checked for migration patterns using traditionally available and commonly used data on health workforce capacity, health status, health system spending and economic and social development profiles of the source countries. Health workforce variables included remaining or current physician, nurse, and medical school

densities. Health status was measured as infant mortality and under-five mortality rates, and healthy life expectancy at birth. Total health spending and the share of that spending (in the form of official development aid for health) from external resources were both used to capture health system spending. Finally, I operationalized economic and social development as gross national income per capita, poverty (proportion living on less international $1-per-day), female literacy (percentage of females aged 15 years or older who are literate), and the Human Development Index (a composite variable reflecting a country's human development attainment in terms of health, knowledge and standard of living) [20]. Additional File 2 online details all these variables.

Based on each of the three metrics I constructed rankings of African countries with respect to their physician migration to the UK, USA, France and Canada – the top four destinations – and for all nine destinations combined. I also estimated Pearson's correlations between these migration metrics and national characteristics of the African countries. Scatter plots were also used to examine the correlations between the metrics and source countries' characteristics. All variables were log-transformed, and analyses were conducted in SPSS version 12.0.2 (SPSS Inc, Chicago, IL, 2003) and Microsoft® Office Excel 2003 SP2 (Microsoft®, Redmond, WA, 2003).

Results

Table 1 shows the rankings of the top five African countries with the most physician migration to the UK, USA, France, and Canada, and to all nine destinations combined. No country retained the same rank with all three different migration metrics. In most situations, an entirely different set of countries replaced the top five or the bottom five source countries when the migration metric was changed. For instance, while South Africa lost the most physicians (3,509) in absolute terms to the UK, Malawi lost the highest proportion of its physicians (38.4%) to the UK, and Seychelles had the highest physician migration density (0.36 doctors per 1000 Seychelles population) with regards to the UK. Algeria had the most émigrés (13,639) combined in all nine destinations but was neither in the top five nor the top ten of countries with the highest emigration fractions although it ranked number five in terms of physician migration density. Furthermore, Mozambique, which had the highest emigration fraction with respect to all nine destinations, only ranked 21st out of 53 on the physician migration density. Additional File 3 gives the top ten and bottom ten African countries per migration metric.

Table 2 shows that the absolute number of émigrés had few associations with source countries' characteristics. It only correlated positively with physician density, healthy life expectancy and female literacy but negatively with poverty and share of total spending from external resources. Emigration fraction showed no discernible cross-national patterns except for its expected correlation with current physician density (considering that the denominator of the emigration fraction and the numerator of the physician density both contained the number of physicians remaining in each African country). The physician migration density, however, showed consistent and significant associations with source countries' characteristics: higher physician emigration appeared to occur among African countries with relatively higher health workforce capacity ($0.401 \leq r \leq 0.694$, $p \leq 0.011$), better health status, higher health system spending ($r = 0.583$, $p < 0.001$) but lower official development assistance for health ($r = -0.385$, $p = 0.005$), and better economic and social development. Figures 1, 2, 3, 4 show selected scatter plots of these significant correlations.

Discussion

Rankings of physician migration based on the number of physician émigrés from African, emigration fraction and physician density produce different results. Only the physician migration density and, to a lesser extent, the number of physician émigrés show a systematic pattern of associations with health workforce, health status, health spending and social-economic profiles of African countries. This study highlights an important but often neglected problem in studies and reports which quantify the magnitude and patterns of health workforce migration: metrics tell tales and quite often different ones, depending on the perspectives adopted.

Although this study is limited by its focus on one continental – African – experience, as far as the author knows, it is novel in looking at the impact of choice of migration metrics on the perception of which source countries may suffer relatively more physician emigration. Like other health workforce studies, this study is also limited by its use of metrics which quantify stock, rather than actual flow over time [22,23]. Unfortunately, few studies can reliably have the luxury of data on time-dependent flow of health-workers. That said, this study is among the first to use the new database which accounts for bilateral net flows among source and other countries. The quality of these data is not necessarily comparable or completely reliable across countries although it has been improving over the last few years [1,4,13,17,20]. Differential bias in the results could occur if the quality of the health workforce and migration data is shown to be systematically associated with the observed levels of the countries' profiles. Partly based on how well these data have worked in global health analyses and the intuitive nature of the results, I have little reason to suspect any substantial or

A HEALTH POLICY AND SYSTEMS RESEARCH READER ON HUMAN RESOURCES FOR HEALTH   **169**

Table 1: Top five African birth countries of foreign physicians registered in different destination countries, ranked by number of physician émigrés, emigration fraction, and physician migration density (in descending order)

Destination countries	Source Countries		
	Total number of physician émigrés[a]	Emigration fraction[b]	Physician migration density[c]
UK			
	South Africa	Malawi	Seychelles
	Kenya	Kenya	Mauritius
	Nigeria	Zambia	Kenya
	Egypt	Tanzania	South Africa
	Uganda	Uganda	Libya
USA			
	Egypt	Liberia	Egypt
	Nigeria	Gambia	South Africa
	South Africa	Ghana	Ghana
	Kenya	Ethiopia	Liberia
	Ghana	Eritrea	Cape Verde
France			
	Algeria	Senegal	Algeria
	Morocco	Algeria	Tunisia
	Tunisia	Central African Republic	Mauritius
	Madagascar	Togo	Morocco
	Senegal	Madagascar	Senegal
Canada			
	South Africa	Tanzania	Seychelles
	Egypt	Eritrea	Mauritius
	Tanzania	Mauritius	South Africa
	Kenya	Seychelles	Namibia
	Uganda	Somalia	Libya
All nine destination countries#			
	Algeria	Mozambique	Mauritius
	South Africa	Guinea-Bissau	São Tomé & Principe
	Egypt	Angola	Seychelles
	Morocco	Liberia	Cape Verde
	Nigeria	Equatorial Guinea	Algeria

#United Kingdom, United States, France, Canada, Australia, Belgium, Portugal, Spain, and South Africa

[a]Total number of physician émigrés: the total number of currently employed doctors who were born in Africa and have lived long enough in the destination country to be part of that country's census.

[b]Emigration fraction: the ratio of the number of physician émigrés to the sum of the number of physicians remaining at home in Africa and the number of émigrés.

[c]Physician migration density: the number of physician émigrés per 1000 population of each African country.

differential bias in the findings which could arise from the varying data quality.

Other limitations are given in Clemens and Pettersson [13], although their data which were used here tried to overcome some of the standard problems of existing health workforce data such as focusing only on physicians trained in own birth country. As discussed elsewhere, using birth country to classify physicians may reflect the extent of "Africa-ness" of the physicians although this need not be suitable for every health workforce research [13]. Considering my experience with a recent analysis of

a different global database of more than one hundred and forty countries which lost physicians to the US, Canada, Australia and UK [2] and in which the physician migration metric was originally proposed [20], classifying the physician émigré according to country of medical training yields similar migration correlates as the current study. As one of the reviewers of the current study thoughtfully pointed out, using only African-born physicians in the denominator of the emigration fraction might overstate the magnitude of migration or yield misleading results because foreign-born physicians who remained active in Africa would not be counted. Including foreign-born phy-

Table 2: Correlates of physician migration from African countries

Variable	Total number of African physician émigrés	*p* value	Emigration fraction	*p* value	Physician migration density	*p* value
Health-workforce						
Current physician density	0.353	0.010	-0.352	0.010	0.694	<0.001
Current nurse density	0.222	0.111	-0.173	0.216	0.601	<0.001
Medical school density	-0.086	0.609	-0.106	0.527	0.401	0.011
Health status						
Infant mortality rate	-0.213	0.125	0.152	0.279	-0.654	<0.001
Under-five mortality rate	-0.247	0.074	0.136	0.333	-0.676	<0.001
Healthy life expectancy at birth	0.285	0.039	-0.127	0.366	0.632	<0.001
Health system spending						
Total health spending	0.189	0.180	-0.072	0.612	0.583	<0.001
Share of health spending from external resources	-0.461	0.001	0.289	0.038	-0.385	0.005
Economic and social development						
Gross national income per capita	0.140	0.352	-0.144	0.338	0.534	<0.001
Poverty	-0.477	0.006	0.244	0.178	-0.472	0.006
Female literacy	0.298	0.047	0.280	0.062	0.576	<0.001
Human development index	0.180	0.207	0.063	0.663	0.703	<0.001

sicians in the denominator of the emigration fraction, however, also implies that they should be included in the numerator whenever they emigrate. Otherwise, the emigration fraction might paint the wrong picture since the foreign-born physicians would – inappropriately and – statistically 'not be allowed to be at risk' of emigration.

Given its scope and ecological design, this paper does not and cannot address the correlates of why individual physicians emigrate. For such analysis, researchers would need coupled hierarchical data, nesting individual physician émigrés within both destination and source countries, to avoid cross-level inferential fallacies [20]. Furthermore, this study does not pretend to answer the question of who an African physician émigré should be [13]. Is it a doctor born in Africa? Or is it a doctor who just holds an African citizenship or a physician trained in Africa? This study made use of a database which classified the African physician as someone born in Africa, currently employed as a medical doctor, and had been residing in the destination country long enough to be included in the country's recent census [13]. This definitional choice does not detract from the central thrust of this study which is to show how the extent and patterns of migration might be dependent on the type of metric used.

Unlike other studies which have also addressed the African migration crisis [1-3,13,24], this paper emphasizes that, although the emigration fraction is useful for indicating the extent of workforce losses through migration, it is

not designed to account for the importance of the population size or to pattern migration according to national contextual profiles of the source countries [20]. By relating to the size of the physician pool, the emigration fraction intuitively outperforms the total number of émigrés metric. Nonetheless, the emigration fraction differs from the physician migration density which adjusts for source population size in its ability to depict the macro-patterns of migration. At first glance, the correlates of migration might seem counterintuitive [20], but a closer look reveals that somewhat richer African countries like Seychelles (1.51), Mauritius (1.06) and Tunisia (1.34) also have higher physician densities per 1000 population than the average African country (0.27). Also, higher physician capacity and wealth are usually seen in countries with higher health spending, less poverty and better overall development [1,4,19,20,23]. It is, therefore, not surprising that physician migration density is also positively associated with development-related profiles. Previous studies have tended to allude qualitatively to the poorer profiles of countries with higher emigration fractions. This study goes further and assesses the actual correlations and finds that the emigration fraction was not patterned according to common national profiles. Like Mejia's landmark study in 1978 [25], this paper shows that migration has a positive gradient with source countries' capacity [20,21]. This study suggests that the emigration fraction may be more appropriate for depicting physician stock depletion while the migration density is more appropriate for understanding country-level patterns in emigration

A HEALTH POLICY AND SYSTEMS RESEARCH READER ON HUMAN RESOURCES FOR HEALTH   **171**
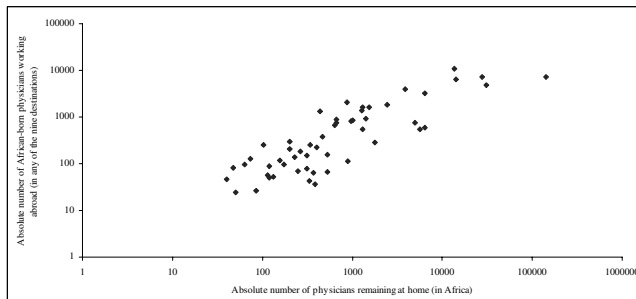
Figure 1
Correlation between number of physicians working abroad and number of physicians remaining at home.

[20]. Recent analysis reveals that the methods used in this study work well on nurse migration data and yield similar findings [26].

So, what do these findings mean for policy and future research? Policies [8,11,27] being suggested for solving the migration threats to the health workforce in Africa and other poor areas might be barking up the wrong tree [28]. If wealthier North American and European countries draw relatively more physicians from less poor countries with which they may have better visa prospects, recognition of educational qualifications, and foreign relations [20,29], in the long-term, it is possible that migration reversal and retention policies might benefit the 'rich' but not necessarily the very poor source countries which have absolutely and relatively insufficient physicians to begin with [20]. This does not imply that every physician who returned to a physician-poor setting would not improve the supply of that country. Treating more patients could make a big dif-

Figure 3
Correlation between physician migration density and total health spending per capita (log-transformed).

ference to the suffering patients and their families but the impact would be hard to gauge at the population level in countries with very low physician densities but high disease burden [20]. Unfortunately, this scenario is not far-fetched in many African countries. Policymakers need to be careful about seeing migration reversal as a long-term strategic solution to health workforce shortages.

Conclusion

Policymakers and researchers must begin to look into the conceptual, methodological and interpretational issues surrounding migration metrics while considering the causes, consequences, and solutions of health-worker migration. Given the challenges faced by Africa and the centrality of the health workforce in achieving the Millennium Development Goals or any health goals [21], all issues surrounding her workforce demand critical analysis and enduring commitment.

Figure 2
Correlation between physician migration density and current physician density (log-transformed).

Figure 4
Correlation between physician migration density and human development index (log-transformed).

Competing interests

The author(s) declare that they have no competing interests.

Authors' contributions

OAA is the sole author of this paper.

Additional material

Additional File 1

All 53 African countries included in the study. (File in Microsoft® Word format; a list of all 53 African countries included in the study)
Click here for file
[http://www.biomedcentral.com/content/supplementary/1471-2458-7-83-S1.doc]

Additional File 2

Definitions, data sources, and descriptive statistics of variables used in the study. (File in Microsoft® Word format; extensive definitions, data sources and descriptive summary statistics of all variables included in the study)
Click here for file
[http://www.biomedcentral.com/content/supplementary/1471-2458-7-83-S2.doc]

Additional File 3

Top 10 and bottom 10 African countries which suffer the most and least physician migration respectively, ranked by 3 different migration metrics – total number of physician émigrés, emigration fraction, and physician migration density. (File in Microsoft® Word format; list of top 10 and bottom 10 African countries that suffer the most and least physician emigration respectively, ranked by 3 different migration metrics)
Click here for file
[http://www.biomedcentral.com/content/supplementary/1471-2458-7-83-S3.doc]

Acknowledgements

References

1. World Health Organization: *The World Health Report 2006. Working Together for Health* Geneva: WHO; 2006.
2. Mullan F: **The metrics of the physician brain drain.** *N Engl J Med* 2005, **353:**1810-1818.
3. Hagopian A, Thompson MJ, Fordyce M, Johnson KE, Hart LG: **The migration of physicians from Sub-Saharan Africa to the United States of America: measures of the African brain drain.** *Hum Resour Health* 2004, **2:**17.
4. Joint Learning Initiative: *Human Resources for Health: Overcoming the Crisis* Cambridge, MA: The President and Fellows of Harvard College; 2004.
5. Johnson J: **Stopping Africa's medical brain drain.** *BMJ* 2005, **331:**2-3.
6. Makasa E: **Africa's medical brain drain: why I want to stay in Africa.** *BMJ* 2005, **331:**780-781.
7. Dumont J-C, Lemaître G: *Counting Immigrants and Expatriates in OECD Countries: A New Perspective* Paris: Organisation for Economic Cooperation and Development; 2005.
8. Pond B, McPake B: **The health migration crisis: the role of four Organisation for Economic Cooperation and Development countries.** *Lancet* 2006, **367:**1448-1455.
9. Lopez A, Mathers CD, Ezzati M, Jamison DT, Murray CJL: *Global Burden of Disease and Risk Factors* New York: Oxford University Press; 2006.
10. World Health Organization: *Taking Stock: Health Worker Shortages and the Response to AIDS* Geneva: WHO; 2006.
11. Pang T, Lansang MA, Haines A: **Brain drain and health professionals.** *BMJ* 2002, **324:**499-500.
12. Bundred PE, Levitt C: **Medical migration: who are the real losers?** *Lancet* 2000, **356:**245-246.
13. Clemens MA, Pettersson G: *A New Database of Health Professional Emigration from Africa* Washington, D.C.: Center for Global Development; 2006.
14. **World Directory of Medical Schools** [http://www.who.int/hrh/wdms/en/]
15. **Global Atlas of the Health Workforce** [http://www.who.int/globalatlas/default.asp]
16. World Health Organization: *World Health Report 2001. Mental Health: New Understanding, New Hope* Geneva: World Health Organization; 2001.
17. World Bank: *World Development Indicators 2005 CD-ROM* Washington DC: The World Bank; 2005.
18. **Human Development Report Data** [http://hdr.undp.org/statistics/data/]
19. Arah OA: *Physician Migration to the United States, Canada, United Kingdom, and Australia* 2006 [http://www.academyhealth.org/2006/612/arahoa.pdf]. Seattle: AcademyHealth Annual Research Meeting
20. Arah OA, Ogbu UC, Okeke CE: **Too poor to leave, too rich to stay? Developmental and global health correlates of physician migration to the United States, Canada, Australia and the United Kingdom.** *Am J Public Health* 2007 in press.
21. Arah OA: **Physician migration and the Millennium Development Goals for maternal health: the untold story.** *Med J Aus* 2007 in press.
22. Ogbu UC, Arah OA: **The metrics of the physician brain drain.** *N Engl J Med* 2006, **354:**528-530.
23. Hyder AA: **Third world brain drain: performance of health professionals and systems needs to be assessed.** *BMJ* 2003, **327:**929-930.
24. Liese B, Dussault G: *The State of the Health Workforce in Sub-Saharan Africa: Evidence of the Crisis and Analysis of Contributing Factors* Washington, DC: World Bank; 2004.
25. Mejia A: **Migration of physicians and nurses: a world wide picture.** *Int J Epidemiol* 1978, **7:**207-215.
26. Arah OA, Okeke CE, Ogbu UC: *Metrics and Correlates of African Health-worker Migration to the United States, United Kingdom, and Seven Other Wealthy Destinations* Orlando: AcademyHealth Annual Research Meeting; 2007.
27. Nullis-Kapp C: **Efforts under way to stem "brain drain" of doctors and nurses.** *Bull World Health Organ* 2005, **83:**84-85.
28. Arah OA: **The health-worker migration crisis.** *Lancet* 2006, **368:**28.
29. Kapur D, McHale J: *Give Us Your Best and Brightest. The Global Hunt for Talent and Its Impact on the Developing World* Washington, DC: Center for Global Development; 2005.

Pre-publication history

The pre-publication history for this paper can be accessed here:

http://www.biomedcentral.com/1471-2458/7/83/prepub

www.rhm-elsevier.com

HEALTH
matters

www.rhmjournal.org.uk

Care and the 53rd Commission on the Status of Women: a transformative policy space?

Kate Bedford

Senior Lecturer and Research Councils UK Research Fellow, Kent Law School, University of Kent, Canterbury, UK. E-mail: k.bedford@kent.ac.uk

Abstract: *In March 2009, UN member states met at the 53rd Commission on the Status of Women (CSW) to discuss the priority theme of "the equal sharing of responsibilities between women and men, including caregiving in the context of HIV/AIDS". This meeting focused the international community's attention on care issues and generated Agreed Conclusions that aimed to lay out a roadmap for care policy. I examine how the frame of "care" – a contested concept that has long divided feminist researchers and activists – operated in this site. Research involved a review of documentation related to the meeting and interviews with 18 participants. Using this research I argue that the frame of care united a range of groups, including conservative faith-based actors who have mobilized within the UN to roll back sexual and reproductive rights. This policy alliance led to important advances in the Agreed Conclusions, including strong arguments about the global significance of care, especially in relation to HIV; the need for a strong state role; and the value of caregivers' participation in policy debates. However, the care frame also constrained debate at the CSW, particularly about disability rights and variations in family formation. Those seeking to reassert sexual and reproductive rights are grappling with such limitations in a range of ways, and attention to their efforts and concerns can help us better understand the potentials and dangers for feminist intervention within global policy spaces. ©2010 UNRISD. All rights reserved.*

Keywords: care policy, advocacy and political process, sexual and reproductive rights, HIV/AIDS, disability, family formation, United Nations

THE CSW is the UN's principal norm-setting and policy-making body on issues of gender equality and the advancement of women. Its most important activity is its annual March meeting in New York, where delegates of Member States gather "to evaluate progress on gender equality, identify challenges, set global standards and formulate concrete policies to promote gender equality and advancement of women worldwide."* More specifically, after the 1995 Beijing Conference the CSW adopted new working methods designed to move the international community forward on the Platform for Action, including via adoption of negotiated Agreed Conclusions on thematic areas of focus. Themes are set

several years in advance, after consultation with other UN entities and NGOs. Although not binding in the way that treaties are, and lacking the threat of sanctions, the Agreed Conclusions forged at the CSW play a key role in forging international norms around the chosen themes (p.16).[1]

---

*The Commission consists of 45 member state representatives. A Bureau with representatives from five regional groups organizes the annual meetings. Support and servicing for the CSW is provided by the Division for the Advancement of Women, part of the Department of Economic and Social Affairs (see <www.un.org/womenwatch/daw/csw/index.html#about>).

197

The CSW also provides a site for civil society engagement and ideas exchange. NGO representatives gather to hold parallel events – over 200 such meetings were held at the 53rd session in 2009. Additionally, independent experts and NGOs discuss the theme outside the annual meeting process itself, through mechanisms such as an online discussion forum, for which 1,243 participants registered, and an Expert Group Meeting prior to the March meeting that resulted in an independent report circulated to the Secretary General.

Framing the theme of care policy

"I was concerned that the issue of care become an issue of policy. The popular discourse on care is that it is some voluntary experience... that this is an organic role for women to play... What was central to me was to frame it differently, as an issue of policy." (Interviewee 10, original emphasis)

Attention to framing – to how policy problems are defined, how the solutions are constructed, and who has a voice in that process (p.10)[2] – is an important part of feminist policy analysis, revealing the opportunities for and limits on gender policy within particular institutional contexts. A recent collection of work on this issue defines a political frame as "an organizing principle that transforms fragmentary or incidental information into a structured and meaningful policy problem, in which a solution is implicitly or explicitly included" (Verloo, p.11).[2] Frames do not precede political practice, in this view; rather they are a form of political practice (Poguntke, p.14).[2]

The political nature of framing is very clear in relation to the 2009 CSW. The priority theme for the 53rd session was chosen in 2006 when the Commission adopted its multi-year programme of work. As is clear in the briefing notes of the Division for the Advancement of Women,[3] and as several interviewees confirmed, the 53rd session merged three themes (equal sharing of responsibility, care, and HIV/AIDS). Binding them together into a coherent frame that could produce action-oriented conclusions was a core challenge, since each sub-component had its own trajectory within UN debate, and its own dominant policy narratives and authoritative texts. For example, while the language of the

equal sharing of responsibilities came from the Beijing Platform for Action, it was understood there to include political participation and equal sharing of leadership roles; it was not predominantly about care. The International Labour Organization (ILO) approached the theme via its initiatives on work and family, and protecting domestic workers (p.7).[4] In turn, gender and development conversations about care have focused on issues such as gender budgeting, measuring unpaid work, and the consequences of neoliberal policies for the care sector. The 53rd session thus had to do considerable conceptual and movement-building work, gesturing to the aims of a diverse group of constituencies that had not previously been mobilized as an effective coalition in past meetings.

Particularly crucial here was the successful construction of a linear policy narrative running across past international agreements, wherein a new, combined emphasis on care, equal sharing, and HIV/AIDS was legitimated. The narrative identified a progression from the 1994 ICPD agreements in Cairo and the 1995 Beijing agreement to the 53rd session, via numerous other international conferences, on the grounds that they reflected a global consensus on the importance of partnership between men and women, which included the equal sharing of care. This (re)entrenched a very narrow vision of the Cairo and Beijing agreements, as being about promoting harmony within couples rather than rights to sexual autonomy and bodily integrity.* For example, it was regularly asserted that previous conventions and treaties, especially CEDAW, "provide a legal framework and a comprehensive set of measures for the promotion of equal sharing of responsibilities between women and men" (p.1).[5,6]

This narrative, identifying a nascent UN "policy and legal framework... on the need to ensure more equal sharing of responsibilities between women and men" (p.1)[7] and applying it to caregiving, proved extremely successful. It was repeated, in a virtually cut-and-paste fashion, on the CSW website,[6] in the background document put out in advance of the CSW,[7] in the Secretary General's

---

*See Petchesky[9] and Corrêa and Jolly[10] on the diverse readings of Beijing and Cairo, regarding on one hand endorsement of sharing couplehood between men and women, and on the other the advancement of an agenda focused on women's sexual autonomy.

Report to the session (p.3),[8] and in the preamble to the Agreed Conclusions (p.1).[5]

The 53rd CSW is thus a prime example of how various collectivities were mobilized through construction of a frame about what previously agreed language* on gender equality meant. In other words, the theme used in this meeting was defined as having a history of consensus such that a wide range of constituencies were held together throughout the negotiations. To give just a few examples, groups who submitted statements in support of the theme included a women's NGO that advocated "channeling national wealth from arms trade and military spending to care, health, education and welfare" (International Alliance of Women); a missionary organization fighting AIDS in Africa (Associazione Comunità Papa Giovanni XXIII); the Minister of Youth in Barbados, who highlighted the importance of participatory work-shops for men in achieving gender equality; and the Cuban delegation, who attributed the problem of care in part to a drain of medical personnel from the Global South.[6] The frame of care thus proved an exceptionally expansive one.

In particular, by emphasizing care *within the parameters of equal sharing of responsibility between men and women*, the frame of the session appealed both to those interested in radically changing gender relations and to more conservative parties interested in defending what they understand to be the natural family. To understand how this somewhat peculiar unity was achieved, it is helpful to recall Buss and Herman's[12] analysis of the rise of Christian Right activism in the UN since 1995, involving an alliance of mostly US Catholic, Mormon, and Protestant conservative organizations to bring a "faith perspective" to UN work, encouraged under the Presidency of George W Bush.[‡] This constituency invokes a global crisis in the natural family, requiring international action through the UN orbit.

Although the Obama administration did not align itself with the US Christian Right in the 2009 CSW the continued presence of conservative Christian actors was very clear. Statements

on the theme were submitted to the Secretary General by, for example, the Holy See, the international NGO Mothers' Union, and the Anglican Consultative Council, all of whom found that the theme resonated well with their faith-based care-giving activities.[6] The threats facing the family, and the need to enact a global policy agenda to protect and support it, are core themes of these statements: the family is being stretched "to the breaking point" and "devastated" by ever-growing burdens of care.**

The language of care, when linked with the language of equal sharing of responsibility between men and women, could thus successfully mobilize a wide range of constituencies. It allowed a diverse group of actors to get behind a new global gender priority, including actors who might otherwise be hostile to UN gender efforts. This expansive frame helped facilitate many of the achievements noted below, while also constraining debates on rights in specific ways.

Key achievements

The key objective of many of those involved in the 53rd session was to raise the profile of care issues and to put them on the international policy agenda. This objective was achieved with remarkably little contestation. As several participants noted, there was widespread support among Member States for key paragraphs within the Agreed Conclusions regarding measuring care, integrating care into budgeting processes, and so on.

Progress was especially significant in relation to HIV. Given the donor emphasis on treatment (heavily skewed towards antiretrovirals), it has been hard for HIV/AIDS organizations working on care issues to get their programmes funded by major donors or scaled up as part of the global AIDS strategy. The CSW represented a key step forward in this regard. Issues of care and HIV/AIDS were made central to the meeting, and several country and regional statements mentioned the inadequate resourcing of care compared to prevention and treatment. UNIFEM and UNAIDS

---

*For more on agreed language and gender policy at the UN, see Riles.[11]

‡Representatives of the Christian Right from Latin America have increased recently, but the movement as represented at the CSW is still overwhelmingly US-based.

**For more on the slippage between feminist concern about a crisis in care engendered by neoliberalism, and religiously-inflected concern about a crisis in the family, see Bedford.[13]

also collaborated in producing a paper for the Expert Group Meeting,[14] setting the stage for the head of UNAIDS to make a rousing appeal at the CSW for a new alliance of gender activists and HIV/AIDS activists on care issues (Sidibé).[5] Several interviewees noted this intervention as an important achievement.

Moreover, in part because HIV/AIDS was a core component of the care conversation at the CSW, the meeting also forged a consensus that the equal sharing of responsibility between men and women within the private family is *not* enough to resolve the care problem. As the UNRISD Director noted in his statement:

"The HIV/AIDS pandemic has been a tragic wake-up call to those who assume that families and communities – and more concretely women and girls – will continue to provide an unlimited supply of unpaid care to meet rising needs and to compensate for the shortfalls in policy." (Mkandawire)[6]

This lesson was extended outwards from HIV/AIDS. Several of the Expert Group Meeting papers argued that redistribution of care responsibilities to men was an insufficient solution, and they criticized neoliberal policies that had overburdened the family.[14–16] In turn the Secretary General's report, which provided recommendations for consideration by the CSW and which was in many ways the most important document prepared in advance of the meeting,* advocated a comprehensive approach from the start involving improvements in labour market policies, health, education and infrastructure (p.2–3).[8] It also noted explicitly that the equal sharing of responsibilities between men and women was insufficient (p.17–18).

Most importantly, the Agreed Conclusions laid out an extensive social policy roadmap on care that locates responsibility firmly with States. For example, they recommended that States should, among other measures:

- design, implement and promote family-friendly policies and services, including affordable, accessible and quality care services for children and other dependants
- measure unremunerated work and incorporate the value and cost of unpaid work in policies across all relevant sectors
- develop and improve social protection and/or insurance schemes, including pension and savings schemes, and recognize leave periods for caregiving in the calculation of benefits
- strengthen efforts to protect domestic workers
- increase the availability, access to, and use of critical infrastructure to reduce the burden of care on households
- scale up efforts towards the goal of universal access to comprehensive HIV/AIDS prevention programmes, treatment, care and support by 2010.[5]

This roadmap attempted to protect, and extend, care services during the global recession, something that a number of actors agreed was significant.[†]

----

*Most member states will read the Secretary General's reports,[8,17] and the Bureau prepares the first draft of the Agreed Conclusions based on the recommendations in those reports.

[†]E.g. the Secretary General's report emphasized the importance of the state's role in infrastructure and social protection in a crisis context (p.18),[8] as did DAW's report from the Expert Group Meeting.[18]

200

Importantly, faith-based organizations mobilizing to protect the family were fully signed up to this agenda.[6] The Holy See urged governments to better protect immigrant caregivers and to give professional training to home-based carers, and Caritas (a key international Catholic charity) foregrounded the importance of States resourcing home-based care. Similar recommendations were made by the Anglican Communion. After detailing its experiences with a Worldwide Parenting Programme that aims to improve parenting skills and increase equal sharing of responsibilities within families, the Mothers' Union advocated government support for flexible working practices, parental and carer's leave, and improved childcare provision. These recommendations are similar to those promoted by organizations with very different approaches to gender equality, such as the International Planned Parenthood Federation, the ILO, and Sonke Gender Justice, a South African NGO that used its statement to the CSW to criticize unfair trade and debt policy.[6]

That such diverse actors are advocating for the enhanced role of States in care policy is noteworthy, indicative (among other things) of shifting alignments between free market neoliberals, religiously motivated neoconservatives, and gender equality advocates. As Gita Sen[19] has noted, in the 1990s much debate at UN conferences reflected a disconnect between issues of gender justice (defined primarily as about sexual and reproductive rights), and economic justice (on fairer regimes of trade, debt, development financing, etc). The US, under Clinton, advanced a strong neoliberal agenda on world trade and debt repayment while nominally supporting women's reproductive and sexual rights (p.1).[19] Meanwhile some conservative faith-based actors aligned themselves with countries in the global South on economic issues, while opposing sexual and reproductive rights (p.9).[19] Writing in 2005, Sen argued that George W Bush had inaugurated a neoconservative era that opposed both gender and economic justice, creating new dynamics in global negotiations (p.11).[19] The 2009 CSW, in contrast, can be read as a moment where economic justice concerns were placed centre stage in a gender justice forum. The understanding of care forged there, involving a fundamental challenge to free market models of the economy, had the support of many religious conservatives as well as many gender equality advocates who see economic concerns as central to their work.

Finally, the CSW had a positive impact on civil society organizations working around caregiving, and it increased the voices of caregivers in UN policy debates. Several UN entities involved grassroots caregivers in their preparations for the sessions, and some caregiver organizations attended the Expert Group Meeting and the CSW. One group of participants formed a new advocacy group, the Caregivers Action Alliance, with other international NGOs working on home-based care from a community perspective. Moreover, successful lobbying work was undertaken by carers to influence the Agreed Conclusions, leading to the insertion of language on making caregivers' voices central to policy debates.[5] As a result, the Agreed Conclusions were regarded by many interviewees as an important new resource in their activism.

Key constraints

These advances notwithstanding, there were two issues that received less attention: disability, and variations in kinship and intimate arrangements. These issues reveal current gaps in UN care debates, which in turn allow consideration of the constraints within which feminist policymakers are operating when they try to use care policy to take forward gender equality. This process of reflexivity about policy is crucial since, as Carol Bacchi and others note, we need critical reflection on hegemonic feminist approaches to ascertain how they may create borders or silence voices (p.9).[2] The process is already a well-established part of the CSW's work, given that it will return to the care theme in 2–3 years to review implementation of policy recommendations and identify remaining challenges.

Disability and care: "The trend is upwards"

"Disability issues are starting to have their moment within the UN system. The Convention is great, it's an extraordinary thing... The trend is upwards." (Interviewee 14)

There were many reasons to expect that a UN-based conversation about care policy in 2009 would have disability firmly on the agenda, namely because in 2008 the Convention on the Rights of Persons with Disabilities came into effect. The Convention includes binding agreements by states and other entities (e.g. the

201

European Union) on care provision, and on the importance of including the voices of persons with disabilities in debates about care. It includes several relevant commitments on care, development, and poverty, including Article 26 (which guarantees all persons with disabilities access to voluntary rehabilitation in their community), Article 27 (on access to work), and Article 28 (on an adequate standard of living, including via coverage of disability-related expenses and the access of persons with disabilities, especially women and older people, to social protection and poverty reduction programmes).[20]

However, there were only sporadic references to disability concerns in the 2009 CSW, and they stayed within the paradigm of framing disabled people as a care burden, alongside children, the sick and the elderly, e.g. p.38 and para.9.5. The Agreed Conclusions mention persons with disabilities briefly, pledging to "strengthen, expand, improve and promote the accessibility of quality comprehensive public health care and services, including community-based health services specifically related to the prevention and treatment of HIV/AIDS, including for people with disabilities..." (p.7),[5] but the theme is not mainstreamed throughout the text. There are no references to centring the voices or needs of persons with disabilities in debates about care. Disability was also sidelined within the preparatory processes leading up to the CSW, such as the Expert Group Meeting and the NGO parallel events:

Q: "Was there discussion of disability and care [in the NGO events]?"
A: "Hardly at all. I mean no more than just occasionally recognizing, you know, 'Oh, and disability and older people' as if, kind of, throw it in there, but not ever saying 'OK, can we just talk about this issue for a moment'?" (Interviewee 11)

To clarify the significance of this sidelining, it may be helpful to sketch how some of the core assumptions behind the CSW's work on care would have been unsettled by work on disability. For a start, the deployment of care as a normatively "good" concept that can bind diverse actors together in pursuit of a universally valued goal has been challenged by some disability researchers and activists, who regard care as part of the problem against which they are mobilizing. As Teppo Kröger notes in a recent review of the tensions between care research and disability research:

"Care as a concept has symbolized a century-long confinement of disabled people to institutions and of lives controlled and colonized by others, by professional social workers and by care providers as well as by other family members" (p.403).[21]

As a result, resisting the terms "care" and "carer" has become a political act for some disability rights activists.[22] Terms such as help, assistance, and support, have been preferred by many, since these lack the "historical disrepute" (p.407)[21] associated with care.

In particular, the principle of self-advocacy – central to disability rights activism and scholarship – adds new perspectives to the CSW's debates about care. In self-advocacy, emphasis is placed on the fact that disabled people need human rights and control over their own lives, including choice and control over how any help or assistance necessary to facilitate their independence is provided. This results in a strong push for user-led or needs-led services, and it reinforces the importance of centring disabled people (and others classified as "care receivers") in the planning and evaluation of care policies.[21]

In this regard, the Agreed Conclusions presume a dichotomy between caregivers and care receivers, and policy prescriptions privilege the former. While the dichotomy itself has been troubled by some care research and by disability scholarship and activism,* the latter community has engaged in extensive debate about the decentring of care receivers in care policy. There has been "deep and bitter controversy" over how family members and other informal carers are positioned in relation to the struggle for disabled people's rights,[24] in part because the principle of empowerment for disabled people requires going so far beyond investment in carers' projects (p.356).[22] Moreover disability activism has consisted, in many cases, of wrestling control

*E.g. many feminist care researchers have emphasized the universal nature of human dependence.[23] In turn, disability research has long challenged the idea of independence as self-sufficiency while also highlighting the care done by people regarded as "dependant", especially disabled women.[22]

202

away from care professionals (p.801),[25] a reality which sits uncomfortably alongside the fact that several Agreed Conclusions embrace the provision of more – unaltered – professional care services, e.g. paragraphs aa, bb, and mm.[5]

Finally, incorporation of a disability rights perspective into care conversations would bring new insights to ongoing conversations over the role of the market in care. There has been, for example, extensive debate in several countries (including Canada, the UK, and the US) over the issue of direct payments for personal assistance. Direct payments aim to transform care provision into a less personal, more formal relationship, where people needing assistance can be better protected from the pejorative aspects of caring relationships (p.405).[21] However, debate continues to rage over the problems of marketized delivery;[26,27] the emancipatory and oppressive experiences of employee-employer relations; the limits of consumer choice in terms of genuine empowerment;[28] the need to defend robust collective service provision; and the tensions caused by the low level of payments, resulting in reliance on low-paid workers vulnerable to exploitation. While there were disputes at the CSW over paying wages for informal care, and whether this undermined affective attachments, none of the aforementioned *disability* debates about marketizing care were foregrounded.

That said, however, the failure of the Agreed Conclusions to link up to the vibrant UN work on disability was noted by several interviewees as an obvious gap, and it was registered at the time as well. In a 17 March press release from the Economic and Social Council, delegates lamented that the Agreed Conclusions made no reference to the new disability Convention (p.1).[29] Moreover, as one participant noted, there is a clear common cause between disability rights advocates and HIV/AIDS activists to increase the voices of care recipients in the UN system and to resist binarized understandings of who gets and gives care (Interviewee 15). These possibilities for cross-movement organizing, along with the high levels of state and NGO mobilization around disability in the global policy arena, suggest that a revisited CSW on care would forge better links between care and disability. It also raises the possibility that the UN's ongoing disability conversations can draw on the 53rd session's Agreed Conclusions to push

forward their own struggles around user-led assistance provision.

Diversity of family formations in care conversations

"In some parts of the negotiations, delegations proposed language on various forms of the family... but after more negotiations these... disappeared. Instead they were replaced by family kinship and community responsibilities. That is because some of the delegations understand that [acknowledging] various forms of the family is contrary to the view that there is one [kind of] family, meaning, one man and one woman and that's it...." (Interviewee 7)

A second important gap in the Agreed Conclusions relates to the diversity of family forms and kinship arrangements through which care is provided. The Agreed Conclusions strengthened the notion that the privatized nuclear family consisting of a long-term male-female partnership, sharing care and paid work in an egalitarian way, is the ideal for better care and better development, albeit supported with stronger state services. For example, member states pledged to "take appropriate measures to achieve equal sharing of work and parental responsibilities between women and men, including measures to reconcile care and professional life and emphasize men's equal responsibilities with respect to household work" (p.4),[5] and their conversations about family were largely limited to this model. Attempts to create space to discuss other kinship arrangements were, overall, unsuccessful.

This is most obvious in relation to sexual minorities, such as gay and lesbian communities. Although sexuality-based organizations attended the CSW, and there were NGO sessions held on sexual rights, in general the groups attending these meetings did not engage with the care agenda. Some of the experts consulted for the CSW mentioned same-sex families, and the final report of the Expert Group Meeting raised this issue (p.10),[18] but it was not taken up as a major theme of the meeting. Likewise the groups and individuals working to challenge dominant masculinities as part of gender and development initiatives repeatedly put the issue of homophobia on the agenda, both in presentations at the CSW and in statements submitted to the Secretary General, but these references

203

were absent in the Agreed Conclusions. Similarly, one participant recalled an NGO panel at the CSW that included a man relaying his experience of caring for his HIV-positive male partner: "It was brilliant and powerful and he spoke brilliantly, but I didn't see that kind of thing reflected more broadly in the discussions." (Interviewee 11)

This is unsurprising. The CSW, like other UN gender fora, has experienced conflict over sexuality since the mid-1990s, and the issue still threatens to divide Member States and provoke confrontation.[10,30] As one participant put it:

"Ideally I'd be talking about lesbians and sex workers. That is really difficult in these environments, and we – meaning a small group of allies who are sexual rights advocates – we use every entry point we can. But it is also sometimes difficult because we know that to put in certain language in a particular area will elicit not only scrutiny but a fight, and a fight that could cost us elsewhere. So if we are trying to have an particular outcome without, sorry, I'm going to be crass, but without a dogfight around certain language, you know – I mean we pick and choose what our battles are going to be." (Interviewee 14)

Moreover, as suggested above, the progress being made in carrying forward the global gender equality project via a unifying focus on care, and by moving beyond the fights of the last decade, is in part based on a consensus about a universal model of a male–female couple, and a silence about the fights around sexuality at Cairo and Beijing. A battle to get the language of sexual rights or sexual diversity into care debates was thus one that sexual rights activists were bound to lose.

What is perhaps more surprising is the fact that other references to the diversity of family formation also dropped out at the 53rd CSW. Gay and lesbian communities are not the only groups excluded from consideration when "family" is defined as being about privatized nuclear units, after all. In fact there was quite considerable discussion of the role of grandparents in care, of female-headed households, of children caring for parents, and of extended family support in the NGO online discussion forum, the Expert Group Meeting, the NGO sessions, and formal statements to the Secretary General. The CSW's background document included key recognition of diverse family forms; a section on "innovative approaches to leave provisions and benefits" highlighted the value of leave for grandparents, and the importance of giving child support grants to a child's primary caregiver, "regardless of whether that person is the child's biological parent" (p.3).[7] Crucially, the Secretary General's report also made the issue of "changes… in household composition" explicit (para.20, p.8).[17]

In response, while a few references to extended families did make it into the Agreed Conclusions, they did not fundamentally disrupt the ideal of the sharing couple on which the care conversations hinged. As one participant noted in recalling the conversations about extended family units, older relatives, neighbours and so on in HIV/AIDS care: "What I don't see people doing is saying 'OK, if that is the case why are we still talking about this as if it's a nuclear family setup?' I'm not sure people were necessarily framing responses differently because of that recognition." (Interviewee 11)

The failure to mainstream debates about diverse family formation may in part be due to the marking of those forms of care provision as problems. For example, the high proportion of female-headed households in some Latin American countries was identified as part of the problem to be solved by many CSW participants,[6] rather than as an indication of the need to fundamentally reassess how we are talking about family, care, and intimate attachments. Family diversity is recognized here, but only as a problem to be overcome.

However, some more positive discussion of diverse family formation also occurred. The ILO emphasized the crucial role in care played by sisters, mothers, aunts, co-wives and daughters, and advocated widening entitlement to parental leave to grandparents (p.15).[4] Several of the groups working on HIV/AIDS were at the cutting edge of these debates, noting how their experiences of care had challenged stereotypes about what family meant. These HIV/AIDS activists were joined by civil society groups focused on the needs of ageing populations. For example, in its statement to the Secretary General, the American Association of Retired Persons discussed grandparents who are caring for children,[6] not as a problem per se, but as receiving inadequate resources stemming from a narrow definition of who counts as family.

On these grounds, it is clear that the issue of diverse family formation is already on the table in relation to care, sometimes as a problem but

204

sometimes in a more positive way. Honest conversation about diverse family formation thus seems long overdue. As one participant commented:

"The issue of single female-headed households is a huge policy issue in Latin American countries. I think that sometimes the language in UN documents gets filtered or laundered a little bit... back to this stereotype [of a nuclear family]. People are very aware from their own national context, [but] UN documents don't always acknowledge those issues... But as soon as you start talking about migration, the disruption of extended households, you know, single-parent families, orphaned families, it resonates immediately. There wasn't so much discussion about it, because I think people are just already thinking about it from their national perspective. But there should be." (Interviewee 3)

Such conversations will be immensely difficult, raising key questions for feminists and others about what UN agreed language on "partnership" between men and women in the family means; about the role that conjugality should play in determining care arrangements; and about how to reconcile the enthusiasm for increasing men's involvement in families as fathers with recognition of diverse intimate lives.* Those conversations are unlikely to happen through the inter-state negotiations process: there is justified fear that the limited commitments to sexual rights and autonomy forged at Cairo and Beijing might be rolled back rather than advanced if diverse family forms were to be put centre stage in debates. However, the NGOs who mobilized so successfully around care in 2009 may be able to continue these conversations horizontally, should they consider them relevant.

Conclusion

This article is both backward- and forward-looking, seeking a better understanding of the processes through which care emerged as such a powerful theme at the CSW, aiming to unpack what was achieved there, and trying to identify the constraints that stemmed from the care frame.

---

*Several UN actors spoke about the importance of men's involvement in families as fathers, e.g. Zukang,[6] and the Secretary General's report mentioned numerous examples of countries taking measures to support and strengthen men's involvement in caregiving (p.12–14).[8]

I have suggested that the agreement forged at the 53rd CSW session offers to harmonize global care policy around key principles of the equal sharing of responsibilities within male/female partnerships, state responsibility for care, and the importance of including care-givers' voices in care debates. Consensus on these issues allowed the discussions of care at the CSW to link up with the existing objectives of a wide range of actors, including conservative religious actors who might otherwise be hostile to gender equality measures. One can see a new coalition emerging here which may prove significant in defending care services from state cutbacks in a recession, and in helping civil society actors mobilize around care, especially in HIV circles.

Notwithstanding the advances secured, however, the framing of care at the 53rd session, and the policy alliance that it facilitated, also had costs. It severely limited the potential for fruitful interaction on disability rights and gender issues, and it shut down space to talk about diverse family formation and the right to sexual autonomy. The challenges of including these themes should not be underplayed. Taking disability and diverse family formation into account reveals some key limitations of current care framings, such as that care is a universally endorsed concept, that care-givers are the key policy constituency, and that certain intimate attachments – but not others – should be promoted by social policy. Unsettling such core assumptions risks destabilizing the current policy alliance, but it also enables us to imagine new frameworks bringing new actors into the conversation about how human (inter)dependency is to be secured in feminist ways.

205

References

1. Commission on Status of Women. Short History of the Commission on the Status of Women. 2006. At: <http://www.un.org/womenwatch/daw/CSW60YRS/CSWbriefhistory.pdf>. Accessed 14 October 2009.

2. Lombardo E, Meir P, Verloo M, editors. The Discursive Politics of Gender Equality: Stretching, bending and policymaking. London: Routledge; 2009.

3. Division for the Advancement of Women. Background note on the 53rd Session of the CSW. New York: UN; 2009. (On file with author)

4. Addati L, Cassirer N. Background Paper. Presented at: CSW Expert Group Meeting. Geneva, 6–9 October 2008.

5. Commission on the Status of Women. Report on the fifty-third session (2–13 March 2009). Economic and Social Council Official Records, E/2009/27E/CN.6/2009/15. New York: UN; 2009.

6. Commission on the Status of Women. 53rd Session. At: <www.un.org/womenwatch/daw/csw/53sess.htm>. Accessed 26 November 2009.

7. Division for the Advancement of Women. UN CSW Backgrounder: the equal sharing of responsibilities between women and men, including caregiving in the context of HIV/AIDS. 2009. At: <www.un.org/womenwatch/daw/csw/csw53/media/CSW53_backgrounder.pdf>. Accessed 24 July 2009.

8. UN Secretary General. Progress in mainstreaming a gender perspective in the development, implementation and evaluation of national policies and programmes, with a particular focus on the equal sharing of responsibilities between women and men, including caregiving in the context of HIV/AIDS.

E/CN.6/2009/4. UN: New York, 2–13 March 2009.

9. Petchesky R. Rights of the body and perversions of war: ten years past Beijing. UNESCO's International Social Science Journal 2005;57(2):475–92.

10. Corrêa S, Jolly S. Development's encounter with sexuality: essentialism and beyond. In: Cornwall A, Corrêa S, Jolly S, editors. Development with a Body: Sexuality, Human Rights and Development. London: Zed Books; 2008. p.22–42.

11. Riles A. The Network Inside Out. Ann Arbor: University of Michigan Press; 2000.

12. Buss D, Herman D. Globalizing Family Values: The Christian Right in International Politics. Minneapolis: University of Minnesota Press; 2003.

13. Bedford K. Developing Partnerships: Gender, Sexuality, and the Reformed World Bank. Minneapolis: University of Minnesota Press; 2009.

14. UNAIDS/UNIFEM. Caregiving in the context of HIV/AIDS. Presented at: CSW Expert Group Meeting. Geneva, 6–9 October 2008.

15. Esquivel V. A "macro" view on equal sharing of responsibilities between women and men. Presented at: CSW Expert Group Meeting. Geneva, 6–9 October 2008.

16. Peacock D, Weston M. Men and care in the context of HIV and AIDS: structure, political will and greater male involvement. Presented at: CSW Expert Group Meeting. Geneva, 6–9 October 2008.

17. UN Secretary General. The equal sharing of responsibilities between women and men, including caregiving in the context of HIV/AIDS. E/CN.6/2009/2. New York: UN; 2009.

18. Division for the Advancement of Women. The equal sharing of responsibilities between women and men, including caregiving

in the context of HIV/AIDS: Report of the Expert Group Meeting, 6–9 October 2008. New York: UN, 2008.

19. Sen G. Neolibs, neocons and gender justice: lessons from global negotiations. Occasional Paper 9. UNRISD: Geneva; 2005.

20. International Disability Alliance. CRPD Forum: Informal session on disability and poverty with special reference to the current economic crisis. New York; 3 September 2009.

21. Kröger T. Care research and disability studies: nothing in common? Critical Social Policy 2009;29(3):398–420.

22. Parker G, Clarke H. Making the ends meet: do carers and disabled people have a common agenda? Policy & Politics 2002; 30(3):347–59.

23. Williams F. In and beyond New Labour: towards a new political ethics of care. Critical Social Policy 2001;21(4): 467–93.

24. Ungerson C. Give them the money: is cash a route to empowerment? Social Policy & Administration 1997;31(1): 45–53.

25. Oldman C. Later life and the social model of disability: a comfortable partnership? Ageing & Society 2002;22: 791–806.

26. Rummery K. Disabled citizens and social exclusion: the role of direct payments. Policy and Politics 2006;34(4):633–50.

27. Lyon J. A systems approach to direct payments: a response to 'Friend or foe? Towards a critical assessment of direct payments'. Critical Social Policy 2005;25(2):240–52.

28. Spandler H. Friend or foe? Towards a critical assessment of direct payments. Critical Social Policy 2004;24(2):187–209.

29. Economic and Social Council. Women's Commission ends session, calls for shared responsibility for caregiving

206

CONFLICT AND HEALTH

CH7

A window of opportunity for reform in post-conflict settings? The case of Human Resources for Health policies in Sierra Leone, 2002–2012

Maria Paola Bertone[1*], Mohamed Samai[2], Joseph Edem-Hotah[2] and Sophie Witter[3]

Abstract

Background: It is recognized that decisions taken in the early recovery period may affect the development of health systems. Additionally, some suggest that the immediate post-conflict period may allow for the opening of a political 'window of opportunity' for reform. For these reasons, it is useful to reflect on the policy space that exists in this period, by what it is shaped, how decisions are made, and what are their long-term implications. Examining the policy trajectory and its determinants can be helpful to explore the specific features of the post-conflict policy-making environment. With this aim, the study looks at the development of policies on human resources for health (HRH) in Sierra Leone over the decade after the conflict (2002–2012).

Methods: Multiple sources were used to collect qualitative data on the period between 2002 and 2012: a stakeholder mapping workshop, a document review and a series of key informant interviews. The analysis draws from political economy and policy analysis tools, focusing on the drivers of reform, the processes, the contextual features, and the actors and agendas.

Findings: Our findings identify three stages of policy-making. At first characterized by political uncertainty, incremental policies and stop-gap measures, the context substantially changed in 2009. The launch of the Free Health Care Initiative provided to be an instrumental event and catalyst for health system, and HRH, reform. However, after the launch of the initiative, the pace of HRH decision-making again slowed down.

Conclusions: Our study identifies the key drivers of HRH policy trajectory in Sierra Leone: (i) the political situation, at first uncertain and later on more defined; (ii) the availability of funding and the stances of agencies providing such funds; (iii) the sense of need for radical change – which is perhaps the only element related to the post-conflict setting. It also emerges that a 'windows of opportunity' for reform did not open in the immediate post-conflict, but rather 8 years later when the Free Health Care Initiative was announced, thus making it difficult to link it directly to the features of the post-conflict policy-making environment.

Keywords: Post-conflict, Human resources for health, Policy analysis, Window of opportunity, Sierra Leone

Introduction

In the immediate aftermath of a conflict, governments and international donors alike recognize the necessity to rapidly rebuild the health system and increase health service provision for the population, as a goal in itself as well as an entry point for peace building [1]. At this time, one of the most problematic aspects lies in striking the balance between the humanitarian aid, focused on saving lives, and the longer term development approach to health system reconstruction and strengthening, aimed at consolidating the state, providing legitimacy to the government and ensuring effective and equitable service delivery [2-4]. This balance is even more delicate as decisions taken in the early recovery period are thought to affect the long-term development of the health system, including its efficiency and equity [5]. For this reason, it is particularly useful to reflect on the policy space that exists in the post-conflict period, by what this space is shaped and how

* Correspondence: maria.bertone@lshtm.ac.uk
[1]ReBUILD Consortium & Department of Global Health and Development, London School of Hygiene and Tropical Medicine, London, UK
Full list of author information is available at the end of the article

decisions are made, and about the long-term implications of those decisions. A longitudinal approach to examining policy-making going beyond the immediate recovery years is particularly needed and has been highlighted as a gap in the literature on health systems in post-conflict and fragile settings [6].

This study aims to address this gap by focusing on the development of policies and reforms around the issue of human resources for health (HRH) in Sierra Leone over the decade that followed the end of the civil war, from 2002 until 2012. It is widely recognized that HRH represent a key component of health systems, albeit an often overlooked one, especially during the rebuilding of the health system and the re-establishing of the health services after conflict [7]. Moreover, public health workers (HWs) are an essential link between the government and the population in all areas of the country, including the most remote ones, which could help develop the legitimacy of the government and demonstrate the government's commitment to service provision and equity [8]. However, beyond the importance of health workforce reconstruction in the post-conflict period and the need to establish an effective incentive environment to recruit, retain and motivate HWs, focusing on HRH policy development may also provide a useful case study to (i) explore the pattern of reform and features of the post-conflict policy environment and (ii) verify the hypotheses suggested in relation to post-conflict policy settings. In particular, we explore whether policies developed according to 'path-dependency' [9] because of historical decisions made (or not made) in previous stages and linked (or not) to the post-conflict setting. Or rather, whether there was a political 'window of opportunity' for reform in the post-conflict period, as suggested by some [5,7,10].

In line with this aim, the focus on the study is rather on the policy choices, the 'drivers' and reasons of these choices, than on the evaluation of the policy outcomes[a]. We look at the trajectory taken by the HRH policy, including the official strategic documents and the practical shifts and measures introduced to address the HRH challenges over the first post-conflict decade. Our objective is to narrate the 'policy story' and investigate how decisions were made, which factors and actors influenced them and what defined their timing. We believe that looking at the path taken by the HRH policy trajectory can illuminate the policy-making patterns in the post-conflict period and the legacies of such decisions in the longer term.

This paper is structured as follows. The next section briefly sets the context of the health status of the population and the health system in Sierra Leone before the conflict. Then, we present the methods and some limitations of our study. The findings section begins with the health system and HRH context in the immediate aftermath of the war and then narrates the policy story, depicting how HRH policy developed from 2002 until 2012. In the discussion section, the post-conflict policy-making trajectory and its features are identified and analyzed, before concluding with a review of the research questions.

Context

Sierra Leone emerged in 2002 from a 10-year period of war and social and economic unrest. During that time, about 50,000 people were killed and 2 million displaced, which amounted to almost half of the population. It is estimated that more than 20,000 children were conscripted as soldiers [11].

Studies carried out before the conflict provide some information on the health status of the population and on the health system. Data from the 1974 census show that life expectancy at birth was 36–40 years for females and 33–37 years for males and the infant mortality rate was 225 per 1000 [12,13]. In 1980, 31 of the 146 chiefdoms (the lower level in the administrative system in Sierra Leone) had no government health facilities, whether a hospital or a dispensary, and only 5-10% of children below the age of 5 were enrolled at a clinic [12]. According to some studies, the underutilization of health care services, particularly in rural areas, was related to the low availability of healthcare facilities, poor quality of services in the available public facilities [14], frequent drug stock-outs and irregular payment of health workers salaries [15]. As a consequence, most people chose to buy drugs from the market, visit private or mission clinics or make unofficial payments to healthcare workers in public health facilities. Against this background, user fees were introduced in the 1980s, through the Cost Recovery Policy of the Ministry of Health and Sanitation Sierra Leone emanating from the Bamako Initiative. Public health expenditure declined by 60% between 1980 and 1987, such that by 1995 91% of the health expenditure were private, of which 95% were out-of-pocket expenditures, providing no financial protection against illness [15].

The conflict lasted between 1991 and 2002 and, although it alternated between periods of higher and lower intensity and affected the areas of the country in different ways, it paralyzed the economy and the provision of public services and caused the destruction of the infrastructures and governmental institutions throughout the country. The public health system in the aftermath of the conflict was practically collapsed. Only 16% of the health centers were still functioning by 1996, mainly in Freetown [16]. Recent data paint a dire picture of the health situation in the country. Maternal mortality remains extremely high at 857 deaths per 100,000 live births for the period between 2003–2008 [17], while in 2010 under-five mortality was estimated at 217 per 1,000 live births and infant mortality at 128 [18].

Methods

This study is part of a research project carried out by the ReBUILD Project Consortium in Sierra Leone which specifically focused on health workers incentives. The overall objectives of the project are, to document how the incentive environment has evolved after the conflict and understand what influenced the trajectory; to describe the reform objectives, mechanisms, intended and unintended consequences; and to document lessons learned (on design, implementation, sustainability and suitability to context), reflecting on how they can be used to guide future interventions. The study received ethics approval from the Liverpool School of Tropical Medicine and from the Sierra Leone Ethics and Scientific Review Committee.

The overall study design of the research project utilizes both quantitative and qualitative methods and is based on retrospective collection of data and information on the 10-year period between the end of the conflict in 2002 and the time of the research, which started in 2012. Six different tools were applied to gather data. A half-day stakeholder mapping (SM) workshop was held in October 2012 in Freetown with 23 stakeholders in the health sector in order to understand the key actors who have influenced policy and practices in HRH in Sierra Leone over the post-conflict period [19]. Subsequently, a document review was carried out, based on documents retrieved through contacts in country, as well as in journals and grey literature. A total of 76 documents were identified, of which 57 were deemed relevant for HRH issues [20]. Finally, 23 key informant interviews (KII) were conducted, in and outside Sierra Leone, between October 2012 and June 2013. Twelve of the interviewees work(ed) with the Ministry of Health and Sanitation (MoHS), 6 were NGO representatives, 4 donor representatives and 1 a technical assistant to the MoHS[b] [21]. The other three data collection methods were: routine HRH data analysis, in-depth interviews with health workers and a survey of health workers. These are not described in detail in this article as this study draws from the first three research components only[c].

The methodology adopted reflects the difficulty of collecting original data over such a long period of time and in a post-conflict setting, where information is scarce and difficult to retrieve [22]. The combination of methods was conceived so that each could build upon the others, allowing for the collection of information to be enriched in an iterative way. For instance, the document review was helpful in order to formulate preliminary hypotheses and guide the key informant interviews, and the interviews were critical to illuminate on the gaps that had emerged in the documentary review, in particular regarding the discussions, processes and dynamics between actors, for which the documents were silent. Due to the combination of data collection methods, it was possible to compare and thoroughly triangulate findings. Similarities and discrepancies were analyzed in a reflective way to better understand why perceptions and insights differ between actors and sources. This process ensured that the methodologies are complementary and helpful in shedding light on the processes of policy-making in a comprehensive way and from different perspectives.

Despite the careful triangulation of information, our methodology and sampling present the following limitations: (i) the majority of the participants during the key informant interviews and in the group discussion for the stakeholder mapping, as well as the bulk of the documents retrieved (about half), are from the MoHS or from other governmental bodies; (ii) few documents referred to the HRH situation prior to 2009, whilst more than 50% of the documents were dated after 2011; and (iii) only few respondents were present in Sierra Leone and engaged in HRH policy-making for the period under review, and particularly during the immediate post conflict period. Those who were present for the entire time found it difficult to recall events that occurred in the immediate post conflict period and emotional and personal narratives emerge rather than organizational ones.

Although the findings section is based on the chronological narration of the HRH policy evolution and does not follow in its structure the conceptual elements of an analytical framework, the analysis is inspired by political economy and policy analysis approaches [23,24]. Drawing from these approaches, rather than looking exclusively at the policy content and implementation, our analysis focuses on the interactions between the context, including the historical legacies, the evolving formal and informal institutions and power structures; the actors, both national and external, applying ideological, political and financial pressures to decision-making; and the dynamic processes of the political system [25-28]. We use these analytical tools in a flexible manner as our analysis is not performed cross-sectionally looking at a specific moment in time, but rather covers a 10-year period. We explore, for each reform or policy stage in turn, the political processes and dynamics of change, looking at the key drivers of reform, the main actors, their roles, agendas and influences, and the formal and informal arenas in which they interacted.

Findings: the unfolding 'policy story'
Immediate post-conflict context and HRH challenges

By the end of the conflict in 2002, the situation of the health system was extremely challenging. Concerning HRH, little data and documentation exist and those available are often unreliable and contradictory [29]. As one respondent noted, this reflects the fact that all actors were primarily concerned with the pressing needs of the early recovery and little time was available for the

production of documents and reports, and even less for academic research.

The available information shows that the challenges faced at the time in Sierra Leone are not dissimilar to those in other post-conflict contexts [7,10,29]. The basic health infrastructure was destroyed and most services were completely disrupted, especially in the eastern and southern part of the country where most of the rebel activity took place. Health facilities were grossly understaffed as many HWs had left the country, and particularly those in the higher cadres. Other HWs were employed by NGOs or held dual positions with NGOs and the MoHS [30]. The majority of those HWs who stayed in the government service preferred to work in Freetown or in the Western Area around the capital. The data available for that period clearly indicate a significant loss of qualified HWs in the public health sector in Sierra Leone which created a gap that remained to be filled in the aftermath of the conflict. Of the 203 Medical Officers that were present in the country in 1993, only 67 remained in 2005 and of the 623 State Registered Nurses (SRN) 152 remained [31]. While the private sector employed only a small minority of the health workforce, centered in the capital, in the few years immediately after the conflict, many HWs in the public sector were working with NGOs in the governmental facilities, for which they would receive incentives and training, whether under a formal agreement with the MoHS or without. NGOs supporting public facilities also recruited and funded personnel, which was later absorbed in the MoHS payroll.

In those early years, the extreme lack of coordination between the different actors in the health system appears to be an important feature of the policy context. The term 'chaos' frequently emerged in the respondents' narratives:

"What happened was, during a period of chaos, most of the NGOs were operating on their own" (KII - MoHS).

"After the war, it was complete chaos. The NGOs came and went [...]. They employed the nurses directly, without even consulting the Ministry. [...] They never presented any budget. But this was a war. We had to bend backwards in the Ministry" (SM – MoHS).

This highlights the fragmentation of the health system at this stage and the struggle that the government through the MoHS faced to create a system and establish control over the health workforce. However, it seems that the MoHS was able to maintain a certain leadership to start the process of reconstructing the public health system. For example, in contrast to other countries in similar post-conflict situations [6,32-34], in Sierra Leone

health services were provided by public facilities and were not contracted-out to other actors of the health system. Although the choice of not adopting a contracting-out approach did not appear to be made explicitly by any of the actors but was rather the consequence of the specific context, it clearly had lasting consequences which affected the future development of the healthcare system.

The development of formal HRH policies: 2002–2009

Against this backdrop, HRH reforms began to develop. Our findings reveal that between 2002 and 2009 the progress towards policy-making for a coherent restructuring of the health workforce was not rapid or effective. Although the challenges were correctly identified by the MoHS and potential solutions being proposed (cf. for example [30,35]), very little was happening in practice.

Relatively minor changes were introduced to improve the management of HWs in order to keep the system functioning. For instance, between 2006 and 2007, the Scheme of Service was reviewed to ensure a clearer career path and HWs started receiving allowances for housing, remote area placements, and leave [35,36]. However, the major reforms suggested in the annual presentations of the MoHS HRH Manager and in other informal MoHS documents [30,35], remained unfunded and unimplemented and the response to the HRH challenges was fragmented. At the same time, a series of broad policies and strategies were being drafted – in 2002 the *National Health Policy* (NHP) [37], followed by the *Human Resources for Health Development Plan 2004– 2008* [38] and then the *Human Resources for Health Policy in Sierra Leone* [39]. Similar to other post-conflict contexts, these documents tended to remain relatively vague normative frameworks rather than operational documents to be reflected in changes at peripheral level [7,22,40]. As the most recent *HRH Policy* (2012) states, "there have been two attempts to formulate national policy to guide the development and management of Human Resource for Health in Sierra Leone [...], but none was finalized or adopted for implementation" ([41]: p.6). The lack of technical and implementation capacity within the MoHS could explain why policies remained on paper. Additionally, external agencies played a significant role in this, in particular because their mandate narrowly focused on production rather than implementation of the strategies. Some key informants pointed out to the fact that these policies were externally-driven, lacking the national ownership that would ensure their effective implementation:

"People started working on their own areas and they started developing a policy and plan and things like that [...]. But it was all happening in parallel, also depending [...] on the focus of donors to provide TA

A HEALTH POLICY AND SYSTEMS RESEARCH READER ON HUMAN RESOURCES FOR HEALTH

and funding for certain things. So I think a lot of policies applied at the beginning were definitely donor-driven. WHO said 'you don't have a policy on this and this. We have to develop it', and you'll get it." (KII - NGO).

The piecemeal support of the international community did not allow for the strengthening of the MoHS, especially as donors focused on 'their' programmes, supporting one or another department or units, undermining the overall capacity of the MoHS and creating a fragmentation within the Ministry, with long-lasting consequences [4].

Among the reasons for the delay in the adoption and implementation of major shifts in HRH policy may be the lack of clear political vision on the future of the health system more broadly. Indeed, key informants agree that in the years following the conflict, strategic policies and plans were slow to be put in place or missing altogether.

> "The main issue during this time [was that] the Human Resources Strategic Plan was not adequately addressing the issues of Human Resources. Because of the absence of a strategic plan, we were just swimming with ideas […] and there was no clear direction as to what to do." (KII – donor).

> "Let me tell you something, in life when you do not have a goal you are working towards and you go purposeless, aimless, you're slow at it." (KII – MoHS).

The consequence of the lack of political guidance and strategic vision was a general sense of 'purposelessness'. This resonates with the findings of the documentary review, where it emerged how fluid and uncertain policy context was, as explicitly recognized by the *HRH Development Plan 2004–2008* which states that a certain flexibility will be allowed in the proposed activities "given the current level of *uncertainty* regarding the exact nature of the reforms" ([38]: p.80 – italics added). Obviously, the broader political dimension is important to understand the lack of strategic vision for the health sector. The government elected in 2002, which seemed to initially enjoy some support, soon lost much of its popularity given its weaknesses in terms of leadership to drive for reform, especially compared to the following administration in power from 2007 ([4] & KII). For the HRH sector, the consequence of drafting broad policies without an overall vision on the ways to rebuild and strengthen the health system was a relatively static approach, which left little space for innovation and focused mostly on "fire-fighting", as suggested by a respondent, i.e. tackling the most

immediate issues with quick-fix solutions. The situation substantially changed with the introduction of the 'free health care initiative' (FHCI).

The introduction of the FHCI: 2009–2010
In September 2009, the President of Sierra Leone, Ernest Bai Koroma, announced at a donors' conference in London his intention to launch a reform to introduce free healthcare for pregnant women, lactating mothers and children under 5 years of age [42]. Soon after, the announcement was made in Sierra Leone to the MoHS and partners and an official launching document was drafted [43]. A few months were allowed to prepare the launch of the new policy in April 2010. Without doubt, the introduction of the Free Health Care Initiative (FHCI) is the key event that emerged from the document review and that informants consistently mentioned in their narratives about the reconstruction of the health sector.

Different factors emerge as the 'drivers of change' for this reform. Certainly, the health status of the population with one of the highest maternal mortality rates in the world, as well as emerging evidence of financial barriers in access to healthcare, played an important part in promoting the policy ([44] & KII). However, even more critical seems to be the role of the President and the lead he took to include the FHCI among the government's priorities. The political dimension of the FHCI is confirmed by the President's direct involvement in the announcement of it as a 'Flagship Project', by the work done by the Strategy and Policy Unit, a very influential, high-level advisory unit in charge of promoting the presidential agenda [42], as well as in numerous interviews. Additionally, the international environment and the pressure from external actors also contributed to the decision. Indeed, free healthcare was at the time an increasingly popular reform in many African countries, supported by some of the international donors, and in particular the UK Department for International Development (DfID), which also made funding available tied to the implementation of this particular reform. As one informant stated:

> "You have to have it [the FHCI] in context. I know that there was a push in 2008/2009 by Gordon Brown and he decided, DfID decided to support [the reform]. And because of DfID support, […] that is why it was able to get off. Under our government's own resources they could not [support it]." (KII – MoHS).

The launch of the FHCI provided an opportunity for health system strengthening and to address in a more comprehensive and organic way the issues that previously were partially solved with piecemeal changes. The design and preparation of the FHCI (much more than its implementation) represented an occasion to increase

and improve coordination among actors and provide a broad, common objective to all stakeholders (KII). Six Technical Working Groups were put in place, of which one focused on HRH, which held meetings weekly and were tasked with designing the necessary reforms, as well as of coordinating among the different partners [45].

With reference to HRH, the launch of the FHCI played an instrumental and catalytic role in pushing reforms. It was explicitly recognized by all stakeholders that addressing issues affecting the health workforce was critical for the success of the FHCI, for at least two reasons: firstly, HWs would have to deal with an increased workload; and secondly, in order to compensate facilities and HWs for the loss in revenues due to the end of the cost-recovery. With the inputs from the Working Group, HRH reforms started developing. The result was that, by April 2010, salaries had been increased for all HWs in technical positions. The increase was substantial, ranging from 314% for the lower grades up to 705% for the higher grades [46]. As a corollary to the salary increase, an in-depth verification and cleaning of the MoHS payroll was carried out to ensure that only legitimate staff were included and to eliminate 'ghost workers' [47]. Additionally, a mobile recruitment programme at district level was put in place for the fast-track recruitment of new workers and of those already volunteering in the facilities [47]. At the same time, discussions began about the introduction of a system to monitor the presence of HWs in the facilities, which was later introduced in mid-2010 when staff absence begun being monitored through the Attendance Monitoring System, and January 2011 when the Sanctions Framework was implemented [48].

Obviously, the decision-making process that led to the choice, design and implementation of these reforms was less smooth and linear that it would appear from the end results. While the creation of inter-agency working groups undoubtedly increased coordination, some issues were hidden under the surface. As one respondent recalls,

"Of course we had our Working Group meetings and we would talk, but these were the 'big lines'. If you go to the little activities, we were not so well coordinated". (KII – NGO).

In particular, concerns emerged around the role of the donors, their different views on FHCI and on how different components of the health system could be reorganized to provide free health services. In particular, the argument between two donors around the merits of a salary increase compared to the introduction of a performance-based financing (PBF) scheme stalled the discussion for some time. As a key informant recalls,

"These meetings [of the HRH Working Group] were completely dominated by [two donors] having their ideological fight effectively. I mean, it wasn't just those two individuals but these meetings achieved very little, because, when these two big donors are busy having a fight, week after week after week not much else gets discussed." (KII – TA).

In the end, while conflicting agendas and ideologies may have played a role in the decision, the choice of policy approach (i.e. the salary increase) was ultimately taken on the basis of practical feasibility. Although it was recognized that PBF would have had the advantage of improving the accountability of HWs, it was also agreed that setting up a PBF scheme would have higher transaction costs and take longer than a salary increase. This was perceived as a major disadvantage given the urgency of the launch of the FHCI (KII – donor). Moreover, after a nation-wide HWs strike which took place in March 2010 in request for higher salaries, this option became inevitable. What emerges from the analysis is that the MoHS perspective seemed to have been caught in the cross-fire of the donors' agendas and the funding possibilities that came with donors' support. It also appears that the corollary measures taken, such as the payroll cleaning and the introduction of the Sanctions Framework, were not only strategies to improve the HRH management and performance, but also a conditional request from the donors funding the reform, and DfID in particular, in order to "protect their investment" and "minimize risk" of misuse of their funds (KII – donor).

Several episodes confirm the influence of external actors, as well as the fragmented and 'serendipitous' nature of policy-making at the time. Many respondents recognized the drawbacks of the technical assistance provided, characterized by high turnover and little coordination, which resulted in the loss of institutional memory, duplications and incoherence in policy-making and implementation. This is, for instance, the case with the cleaning of the MoHS payroll which was done in 2009–2010, but had already been carried out a few years before for the entire civil service ([49] & KII). Providing another example, some informants recalled how, despite the pressures and promises of some partners, the issue of funding the salary increase, was resolved in an "entirely coincidental" way (KII – TA), when the Global Fund's Health System Strengthening funds became available. Interestingly, the Global Fund had not participated in the Working Group's discussions directly and its low level of engagement contributed to creating a commonly accepted narrative around the role of donors, where DfID (contributing, over three years, about 22% of the total health salaries after the increase, but highly involved in the discussion and providing substantial, direct support to the MoHS

through numerous technical assistants) took a much more central role and was able to steer critical decisions, than the Global Fund (contributing 20% of the total amount, in the initial 3 years) [50].

HRH policy-making after the Free Health Care Initiative: 2011–2012

Beyond the urgency of the FHCI launch, the momentum for the collaboration between MoHS and partners seems diminished, if not lost, afterwards. The Working Groups are reported to meet much less regularly after the launch of the FHCI and were almost inactive by March 2013. Nevertheless, two major reforms were implemented after 2010, which in fact had been discussed or planned at the time of the FHCI design: a Performance-based Financing (PBF) scheme and a Remote Allowance for HWs working in rural posts.

While the discussion of a PBF scheme became detached from the design and the planning of the FHCI as the salary increase option was preferred, meetings for the planning of PBF continued, especially between the World Bank and the Department for Planning and Information (DPI) of the MoHS. The scheme was designed and has been implemented since April 2011. Along with the World Bank, which as the promoter and the funder of the scheme is recognized to be the driving actor for its implementation, the DPI also played a critical role and remains in charge of the operationalization of the policy. In contrast, the Department for HRH (D-HRH) which is in charge of the payroll management (which, incidentally, is supported by a different donor) is far less involved in the scheme and has surprisingly little overview of the working mechanisms of PBF. The consequence of this is a further fragmentation, not only in terms of the design of the HRH policies and the package of incentive for HWs, but also of the implementation of the PBF scheme. This has been plagued with severe delays in the payments made to the facilities, which undermine the effectiveness of the scheme and may have had negative consequences on the performance of the HWs (KII).

A similar story applies to the Remote Allowance for HWs, which was introduced in early 2012. This policy had already been discussed before the launch of the FHCI; however, it was not implemented because of the lack of resources. As further funding from the Global Fund became available, the policy was finally designed and introduced. Again, the DPI is mainly responsible for its implementation and, despite some collaboration with the D-HRH to access payroll data, there appears to be a strict division of tasks between the two departments, with little transparency in its management. As a consequence, few actors seem familiar with the mechanisms for eligibility and funding. Furthermore, the Remote Allowance currently rarely reaches the HWs that are eligible for it, due to the

discontinuity of the Global Fund funding, as well as the poor communication and coordination within the MoHS (KII). The separate management of the Remote Allowance creates a further fragmentation of policies and activities, even within the MoHS.

Beyond these two major reforms (and their implementation challenges), several HRH issues remain unsolved or only partially addressed. For instance, during the preparation for the FHCI, a mobile recruitment programme had been set up. However, this remained a one-off exercise. For the routine recruitment of HWs, the establishment of a Health Service Commission (HSC) was planned to replace the Human Resources Management Office (HRMO). Despite the HSC being established by a Governmental Act in 2011 and the Commissioners being nominated, the HSC appears to be still not functional in March 2013. Similarly, pre-service training has been overlooked in the rush for the launch of the FHCI, in order to focus on aspects that it was possible to address faster (e.g., recruitment of HWs and in-service training). In-service training proliferated in an uncoordinated manner and only in early 2014 was the D-HRH of the MoHS preparing an HRH Training Plan for the next 10 years, to ensure the standardization and coordination of both pre-service and in-service training. Additionally, the role of non-financial incentives for the motivation of HWs, and in particular for those in rural postings, also emerges as largely ignored by policy-makers.

In terms of official MoHS policies, while the documents prepared before 2009 have remained mostly on paper, as described above, those approved following the launch of the FHCI, and in particular, the *Human Resources For Health Policy* and the *Human Resource for Health Strategic Plan 2012–2016* [41,51] seem to have been prepared to give an *ex-post*, official shape to the changes that had already taken place at operational level in HRH strategies.

Discussion
The stages of policy-making in post-conflict Sierra Leone
Figure 1 plots the sequence of Sierra Leone's main HRH policy and operational reforms over time. It points out to three broad stages in the policy-making process.

The initial post-conflict period was certainly critical to define the trajectory in the reconstruction of the health system and determine the shape of the system in place. It was, for example, the decision *not* taken to contract-out health services that put the MoHS in charge not only of the stewardship of the system, but also of service delivery. The decision appears to be based on contextual factors. First, the government legitimacy was (more or less) extended to the entire country and its authority recognized by all [4]. This means that the MoHS was recognized to have sufficient capacity to reach all areas, and that public services could be provided safely without the need of
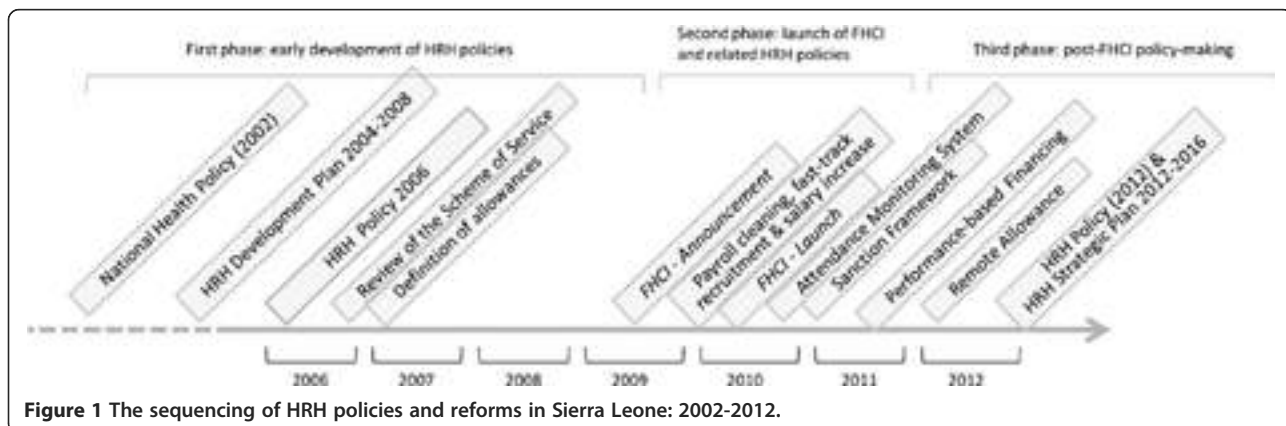
Figure 1 The sequencing of HRH policies and reforms in Sierra Leone: 2002-2012.

delegating to third-parties. More importantly, the influence of the UK, because of the historical relations between the two countries (from the freed slaves' settlements in Sierra Leone to the active role played by the British Army at the end of the conflict) may have led to a certain pattern in terms of aid and development. DfID preferences in terms of health systems organization may have influenced the decision to opt for direct public provision of healthcare.

However, in the immediate post-conflict, efforts to tackle HRH issues were limited to 'fire-fighting' measures, as noted in other post-conflict settings [4,7]. Rarely were these measures translated into formal, coherent and comprehensive Ministerial policies, as partners adopted a fragmented approach, often implemented without the involvement of the MoHS (for example, by providing salary supplementations or hiring HWs directly). Little or no opportunities opened for strategic reforms, possibly because of the uncertain political context, which is a common feature of post-conflict settings [10,22,40].

While these difficulties are generally recognized, some authors suggest that there is a 'window of opportunity' for reform in the immediate post-conflict period due to the political energy released by the change of regime, the fluidity of the situation with new players and ideas entering the political arena, and increased funding available [5,7,10,40]. Sierra Leone experienced a prolonged transition at the end of the conflict comparable to that of Liberia and South Sudan, rather than a 'sudden onset' of peace [3], but, for example in contrast to Liberia, there was no transitional government. National elections were held immediately after the peace agreement (in 2002) and the government retained a certain degree of legitimacy, control and capacity to provide services [4]. Despite these possibly favorable conditions, in those early years, there was no decision space opening for strategic health system strengthening reforms (including HRH changes), under the weak leadership of the government and the patchy interventions of the development partners. In terms

of funding, the National Health Accounts reveal that the donors' contribution to the Total Health Expenditure (THE) was 146.86 billion Leones in 2004. It then decreased to 109 billion in 2007, but substantially increased to 450.77 billion in 2010. In relative terms, this represented 18% of the THE in 2004, 12% in 2007 and 25% in 2010 [52,53]. The data confirm that, while donor funds were higher in 2004 than in 2007 both in absolute and relative terms, the substantial increase in funding followed the establishment of the FHCI.

Therefore, in the case of HRH policy in Sierra Leone, the 'window of opportunity' seems to have opened later than usually recognized and for reasons not necessarily linked to the post-conflict phase, but rather to the momentum created around the FHCI. Indeed, it took about eight years after the official end of the conflict for a second phase of intensive policy-making to begin, brought by strategic reforms for the health system. The disappointingly late onset and slow pace of the reconstruction process has been noted in other contexts. In South Sudan, it took three years after the peace agreement before an actual start to the recovery activities was made [3], while in Liberia the international community was not able to stimulate preparatory steps for an organic health system strengthening reform during the initial 3-year transitional phase, so that another 3 years under the new government had to go by before it was possible to start addressing the reconstruction of the health sector [54]. Also, for the case of Sierra Leone, it was a separate event, i.e. the launch of the FHCI, not related to the post-conflict setting that made it possible to overcome the political uncertainty and bring pressure for change, opening a political 'window' for it.

The announcement of the FHCI was the necessary instrumental event and catalyst for action in all respects of the health system, including HRH. This pattern of HRH reform is not uncommon to other contexts, whether post-conflict or not. The most salient moment in this trajectory was the introduction (for reasons mostly external to the health sector) of a broader health financing reform, not

A HEALTH POLICY AND SYSTEMS RESEARCH READER ON HUMAN RESOURCES FOR HEALTH

specifically focused on HRH, but which had a critical impact on the HRH reform process and was instrumental to it. While Sierra Leone has been one of the few (if not the only) country to explicitly address the link between the removal of fees and the incentives faced by HWs [46], thus making the FHCI more effective (at least, in the design), the fact that a broader health financing reform may be a helpful or even indispensable entry point for HRH reform is a key insight common to other contexts ([22] & KII).

Undeniably, following the introduction of the FHCI, some important progress was made, at least in the design of HRH policies and likely in their implementation and impact on the health system (an evaluation of the effects of the FHCI and related reforms is currently underway). However, below the surface appearance of successful reforms, issues remained for the overall planning and, as noted in other post-conflict settings [22], different HRH-related policies were managed separately with little coordination between donors, as well as within the MoHS, between the different departments.

After the launch of the FHCI and related reforms, a new phase in HRH policy-making can be identified. In this phase, post-conflict issues and features become less apparent. Compared to the previous phase, the pace of HRH decision-making and reforms slowed down, losing the previous momentum. The Working Groups almost stopped meeting altogether and coordination became more difficult. Additionally, with reduced political pressure for the policies introduced after the FHCI, implementation of the policies has not followed the design and there are several problems and delays in their execution.

Features of the policy-making context

The HRH policy trajectory in Sierra Leone shows the role played by historical events and contextual factors in constraining future choices (the concept of 'path dependency'). As noted in other post-conflict countries, uncontrovertibly "the future health system [is] shaped by the present decisions" ([22]: 665). In the case of Sierra Leone, for example, the fact that the contracting-out approach, which is often adopted in post-conflict settings, was not taken, has affected the subsequent trajectory of policy-making in HRH and beyond. However, despite the fact that some decisions appear irreversible because of how policies developed in previous stages, the Sierra Leonean HRH policy trajectory also shows that it is possible to generate radical reforms in the health sector. As pointed out in the literature, political uncertainty and (politically) fragmented health systems are unlikely to produce "big non-incremental change". Nevertheless, the realization of propitious conditions could increase the likelihood of such change taking place [55]. In the case of Sierra Leone, the emergence of a powerful initiative, which acted as catalyst both with respect to the internal political will and the

external (political and financial) support, was critical to build momentum, open a political 'window of opportunity' and create widespread support for radical reform in all aspects of the health system, including HRH.

It could be argued that some elements more common in a post-conflict context facilitated this process. One of these features is the fluidity of power relations and dynamics between influential actors that could facilitate reform. An example of this emerged in our study. While in other countries the professional boards are a powerful actor and the relations between those bodies and the MoH are entrenched in the system, often limiting the space for reform on HRH issues, in Sierra Leone the power relations with the professional associations seemed much more fluid. The Nursing Board, for instance, is chaired by the Chief Nursing Officer (Director of Nursing) at the MoHS, and is by definition aligned to the decisions taken by the MoHS, so that there is less or no opposition to radical changes. No opposition to the introduction of the Sanction Framework came from any of the professional boards on behalf of their affiliates (KII). Secondly, it is possible that because of the state of the health system, the launch of the FHCI could not be based on some relatively minor, incremental measure, but it required wider reforms, including for HRH. It could be hypothesized that in other non post-conflict contexts, such reforms could be postponed or diluted over time, while in a reconstruction context, the gravity of the situation, accompanied by the general climate of reform, renovation and change could foster new initiatives and gather national and international support around them. Indeed, similarly to South Africa in 1994 where the post-crisis situation created both an opportunity and a need for dramatic change [56,57], Sierra Leone has enjoyed high levels of political interest and pressure. This was coupled with substantial donor funding and technical assistance, while in other sub-Saharan Africa countries free health care initiatives were introduced without generating such momentum (as for example in Burundi, Burkina Faso, Ghana, Senegal, Sudan and others [58-64]). The reasons are likely to be related to the combination between (i) the national political conjuncture under the new government interested in implementing a visible and successful flagship reform, (ii) the international momentum around the improvement of Maternal and Child Health and the introduction of fee exemptions, as well as the major role played by some donors, and especially by a donor such as the UK with close historical ties to Sierra Leone, and (iii) the health needs of the population (in particular, with reference to the high maternal mortality levels).

Other features of the policy-making environment that our analysis highlights are less specific to the post-conflict context. It could be argued that they are not qualitatively different from those in low-income settings, but that

perhaps the differences are only quantitative (i.e. same issues but worse) or, in fact, negligible. One such feature relates to the role of external actors in influencing the policy-making processes, which occurs in non post-conflict settings and is well documented in post-conflict where governments are under-resourced and weak [3,10,40,54,65]. Sierra Leone is no exception and, although evidence and health needs certainly played a role, the approach adopted for decision-making seems to be a pragmatic one, where the critical issue of the availability of funding allowed space for donor influences. Also, some HRH measures, such as the reorganization and management of the payroll, received high levels of donor-funded technical assistance, which may have allowed their realization, but raises concerns around their sustainability in the longer-term. Additionally, despite the noteworthy increase in the alignment of partners to the ministerial policies during the preparation of the FHCI, there appear to be some disconnections between the different actors. The fragmentation of views and agendas was partially overcome by the urgency to make decisions at the time of the launch of the FHCI. However, the lack of coordination became problematic later on, as the political pressure for rapid reforms was reduced. The result was fragmented policy-making, a set of policies that are not completely coherent and a largely ineffective implementation of some of those policies [10]. Moreover, reforms remained incomplete as the adoption and implementation of other necessary measures (e.g., recruitment and deployment of HWs, improved pre-service training and development of non-financial incentives) were not pursued or pursued in a slow and partial manner.

Finally, the apparent success of Sierra Leone in addressing HRH issues by taking advantage of a window of opportunity for reform cannot hide the evident challenges of having HRH changes pushed forward by a short-lived political pressure. As a consequence of the urgency of the reforms, preference was often given to one-off exercises, such as the mobile recruitment, or shorter-term solutions (as for example the decision to overlook pre-service training or the postponement of the introduction of the remote allowance). Similarly to other settings [65], much attention was generated around the design of the policies, while far less was given to their implementation at local level, which remains problematic, despite some innovative features, such as use of civil society monitors at facility level[d].

Conclusions

'Post-conflict' is a relatively little studied and poorly understood period of time, which may be extremely influential for the reconstruction of the health system after a period of social and political unrest. The trajectory of HRH policy developments in Sierra Leone provides a useful case study to examine the pattern of reform and the features of the post-conflict policy-making environment, as well as to reflect on the hypotheses about 'path-dependency' and 'windows of opportunity' in the policy-making processes.

Our analysis identifies different stages in the policy-making processes and discusses the key drivers that determined the shifts and the progression along the policy trajectory. In terms of context, it appears that policy-making was driven by the changing overall political situation, at first uncertain and later on more clearly defined as the new government set its priorities and put pressure for the success of its 'flagship' reform. It has also shown that the sense of need for radical change (and the decision space for it given by the evolving political dynamics) also played an important part. In terms of actors, the will of internal high-level political players, as well as the pressure of international partners contributed to the emergence of a catalyst initiative (the FHCI). Looking specifically at the decisions taken on HRH, the role of the agencies in influencing the reform options adopted emerges more clearly, given the fluidity of power relations in the health sector, as well as the relatively weak hierarchical structures and the fragmentation between departments within the MoHS. The donors' availability of funds to support reform, but also, importantly, their direct participation in policy-making forums and the provision of technical assistance in key roles within the MoHS defined the relative capacity of these agencies to influence policy-making.

Our analysis of 'path-dependency' and 'windows of opportunities' allows reflection on the overall processes and patterns of policy change over time. 'Path-dependency' and the influence of the decisions taken (or not taken) in previous stages of the policy-making process contributed to define the trajectory and limit the options available. Nevertheless, the case of Sierra Leone shows that some events, by creating an alignment of actors and agendas, can act as catalyst for substantial (not incremental) change. Indeed, the pattern of HRH policy in Sierra Leone allows us to reflect on the timing of such political 'window of opportunity' for reform along the recovery process. As noted for other post-conflict countries, despite the potential opportunities for needed reforms to be introduced with less resistance post-conflict, "long-suffering health systems are poor reformers" ([51]: 662). From our analysis, it emerged that the decision space for the reform of the health system did not open in the immediate post-conflict period, which was instead characterized by incremental policy-making and stop-gap measures. A window of opportunity opened later on (8 years after the end of the war), making it difficult to link it directly to the features of the immediate post-conflict policy-making environment.

Endnotes

[a]For an assessment of the outcomes of the HRH policy making, and an analysis of the evolving incentive environment in the post-conflict period and how it affected the recruitment, retention and performance of HWs, see further work carried out by the ReBUILD Consortium (www.rebuildconsortium.com/publications/index.htm).

[b]Quotes from the stakeholder meeting are marked SM, while those from key informant interviews are marked KII. In both cases, the type of organization to which the respondent belongs to is also detailed (i.e., MoHS, donor, NGO, or TA), unless the same issue was mentioned by more than one respondent.

[c]Further work making use of these data is ongoing and will be available on the ReBUILD Consortium website (www.rebuildconsortium.com).

[d]A civil society organization, the Health for All Coalition (HAC), was entrusted in 2011 with the function of guaranteeing an independent oversight on the implementation of the FHCI and in particular to monitor the possible under-the-table payments of patients and HWs' attendance.

Author details
[1]ReBUILD Consortium & Department of Global Health and Development, London School of Hygiene and Tropical Medicine, London, UK. [2]ReBUILD Consortium, College of Medicine and Allied Health Sciences, University of Sierra Leone, Freetown, Sierra Leone. [3]ReBUILD Consortium, Reader, IIHD, Queen Margaret University, Edinburgh, UK.

References
1. Smith J, Kolehmainen-Aitken R-L: *Establishing Human Resource Systems for Health during Postconflict Reconstruction.* Boston, Ma: Management Science for Health, Occasional Paper No.3; 2006. 3.
2. WHO: *Everybody's business. Strenghtening Health Systems to improve health outcomes.* Geneva: World Health Organization; 2007.
3. Cometto G, Fritsche G, Sondorp E: **Health sector recovery in early post-conflict environments: experience from southern Sudan.** *Disasters* 2010, **34**:885–909.
4. Eldon J, Waddington C, Hadi Y: *Health Systems Reconstruction: Can it Contribute to State-building?* London: HLSP Institute; 2008.
5. Kurtenbach S: *Post-War and Post-Conflict Challenges for Development Cooperation.* Duisburg: Institute for Development and Peace - University of Duisburg Essen; 2009.
6. Witter S: **Health financing in fragile and post-conflict states: what do we know and what are the gaps?** *Soc Sci Med* 2012, **75**:2370–2377.
7. WHO: *Guide to health workforce development in post-conflict environments.* Geneva: World Health Organization; 2005.
8. Kruk ME, Freedman LP, Anglin GA, Waldman RJ: **Rebuilding health systems to improve health and promote statebuilding in post-conflict countries: a theoretical framework and research agenda.** *Soc Sci Med* 2010, **70**:89–97.
9. Liebowitz S, Margolis S: **Path dependence.** In *Encyclopedia of Law and Economics.* New York: Springer; 2000:981.
10. Pavignani E, Colombo S: *Analysing Disrupted Health Sectors: A Modular Manual.* Geneva: World Health Organization; 2009.
11. Smillie I, Minear L: *The Charity of Nations: Humanitarianism in a Calculating World.* Bloomfield: Kumarian Press; 2004.
12. MacCormack CP: **Primary health care in Sierra Leone.** *Soc Sci Med* 1984, **19**:199–208.
13. Kandeh BS: **Causes of infant and early childhood deaths in Sierra Leone.** *Soc Sci Med* 1986, **23**:297–303.
14. Kanden H, Dow T: *Correlates of Infant Mortality in the Chiefdoms of Sierra Leone.* Njala: University College; 1980.
15. Fabricant SJ, Kamara CW, Mills A: **Why the poor pay more: household curative expenditures in rural Sierra Leone.** *Int J Health Plann Manag* 1999, **14**:179–199.
16. Gberie L: *A Dirty War in West Africa. The RUF and the Destruction of Sierra Leone.* Bloomington: Indiana University Press; 2005.
17. Statistics Sierra Leone: *Sierra Leone - Demographic and Health Survey 2008.* Freetown and Calverton, MA: Statistics Sierra Leone & Ministry of Health and Sanitation & ICF Macro; 2009.
18. Statistics Sierra Leone & UNICEF-Sierra Leone: *Sierra Leone Multiple Indicator Cluster Survey 2010.* Freetown: Statistics Sierra Leone & UNICEF; 2011.
19. Witter S, Kosia YJ, Samai M: *Health Worker Incentives: Stakeholder Mapping Report (Sierra Leone).* Freetown and Liverpool: ReBUILD Consortium; 2012.
20. Bertone MP, Witter S, Samai MH: *The development of HRH Policy in Sierra Leone, 2002–2012 – A Document Review.* Liverpool and Freetown: ReBUILD Consortium; 2013.
21. Bertone MP, Witter S: *The Development of HRH Policy in Sierra Leone, 2002–2012 – Report On Key Informant Interviews.* Liverpool and Freetown: ReBUILD Consortium; 2013.
22. Pavignani E: **Human resources for health through conflict and recovery: lessons from African countries.** *Disasters* 2011, **35**:661–679.
23. Walt G, Gilson L: **Reforming the health sector in developing countries: the central role of policy analysis.** *Health Policy Plan* 1994, **9**:353–370.
24. DfID: *Political Economy Analysis: How To Note.* London: DfID - Practice Paper; 2009.
25. Moncrieffe J, Luttrell C: *An analytical Framework for Understanding the Political Economy of Sectors and Policy Arenas.* London: Overseas Development Institute; 2005.
26. Leftwich A: *Drivers of Change: Refining the Analytical Framework - Part 1: Conceptual and Theoretical Issues.* York: Department of Politics, University of York; 2006.
27. Leftwich A: *Drivers of Change: Refining the Analytical Framework - Part 2: A Framework for Political Analysis.* York: Department of Politics, University of York; 2006.
28. Leftwich A: *From Drivers of Change to the Politics of Development: Refining the Analytical Framework to Understand the Politics of the Places where we Work - Part 3: Final Report.* York: Department of Politics, University of York; 2006.
29. Tulloch O, Raven J, Martineau T: *Human Resources for Health in Post-Conflict Settings.* Liverpool: ReBUILD Consortium; 2011.
30. Sandi A: *Human Resources Status in MoHS.* Freetown: Ministry of Health and Sanitation - annual presentation; (nd).
31. MoHS: *Human Resources Capacity Challenges in the Health Sector in Sierra Leone.* Freetown: Ministry of Health and Sanitation; (nd).
32. Palmer N, Strong L, Wali A, Sondorp E: **Contracting out health services in fragile states.** *Br Med J* 2006, **332**:718–721.
33. Newbrander W, Waldman RJ, Shepherd-Banigan M: **Rebuilding and strengthening health systems and providing basic health services in fragile states.** *Disasters* 2011, **43**:639–660.

34. Loevinsohn B, Harding A: **Buying results? Contracting for health service delivery in developing countries.** *Lancet* 2005, **366:**256–261.

35. Sandi A: *Overview of HR Status in MoHS.* Freetown: Ministry of Health and Sanitation - annual presentation; 2007.

36. MoHS: *Human Resources for Health Situation in Sierra Leone - The Consequences of Brain Drain.* Freetown: Ministry of Health and Sanitation - Minister's communication to the Cabinet; 2007.

37. MoHS: *National Health Policy.* Freetown: Ministry of Health and Sanitation; 2002.

38. MoHS: *Revised Human Resource for Health Development Plan 2004–2008.* Freetown: Ministry of Health and Sanitation; 2006.

39. MoHS: *Human Resources For Health Policy in Siera Leone for the Ministry of Health and Sanitation.* Freetown: Ministry of Health and Sanitation; 2006.

40. Macrae J, Zwi AB, Gilson L: **A triple burden for health sector reform: "post"-conflict rehabilitation in Uganda.** *Soc Sci Med* 1996, **42:**1095–1108.

41. MoHS: *Human Resources For Health Policy.* Freetown: Ministry of Health and Sanitation; 2012.

42. Scharff M: *A Promise Kept: How Sierra Leone's President introduced free health care in one of the poorest nations on earth, 2009–2010.* Princeton, NJ: Princeton University - Innovations for Successful Societies; 2012.

43. GoSL: *Free healthcare services for pregnant and lactating women and young children in Sierra Leone.* Freetown: Government of Sierra Leone; 2009.

44. Ponsar F, Tayler-Smith K, Philips M, Gerard S, Van Herp M, Reid T, Zachariah R: **No cash, no care: how user fees endanger health — lessons learnt regarding financial barriers to healthcare services in Burundi, Sierra Leone, Democratic Republic of Congo, Chad, Haiti and Mali.** *Int Health* 2011, **3:**91–100.

45. GoSL: *Health Compact.* Freetown: Government of Sierra Leone; 2011.

46. Newlands D, Ensor T, McPake B: *Removing Financial Barriers to Access Reproductive, Maternal and Newborn Health Services: The Challenges and Policy Implications for Human Resources for Health (HRH): Sierra Leone Case Study.* Edinburgh: Queen Margaret University; 2011.

47. Heywood T: *Report of the short term Technical Assistant in Human Resources for Health - March-April 2010.* Freetown: Ministry of Health and Sanitation & Concern Worldwide; 2010.

48. MoHS: *MoHS Conduct and Sanctions Framework and Implementation.* Freetown: Ministry of Health and Sanitation; 2011.

49. Hoke GEJ: **Ghost-busting in Sierra Leone.** *Infonomics* 2010, **24:**32–36.

50. Stevenson D, Kinyeki C, Wheeler M: *Evaluation of DFID Support to Healthcare Workers Salaries in Sierra Leone.* London: DfID Human Development Resource Centre; 2012. 44.

51. MoHS: *Human Resource for Health Strategic Plan 2012–2016.* Freetown: Ministry of Health and Sanitation; 2012.

52. MoHS: *Republic of Sierra Leone National Health Accounts - Financial Year 2007, 2008, 2009 and 2010.* Freetown: Ministry of Health and Sanitation; 2012.

53. MoHS: *National Health Accounts. Financial Year 2004, 2005 and 2006.* Freetown: Ministry of Health and Sanitation; 2007.

54. Sondorp E, Coolen A: *The Evolution of Health Service Delivery in the Liberian Health Sector between 2003 and 2010.* London & The Hague: LSHTM & KIT; 2012.

55. Wilsford D: **Path dependency, or why history makes it difficult but not impossible to reform health care systems in a big way.** *J Publ Pol* 1994, **14:**215–283.

56. Gilson L, McIntyre D: **Removing user fees for primary care in Africa: the need for careful action.** *Br Med J* 2005, **331:**762–765.

57. Walker L, Gilson L: **"We are bitter but we are satisfied": nurses as street-level bureaucrats in South Africa.** *Soc Sci Med* 2004, **59:**1251–1261.

58. Nimpagaritse M, Bertone MP: **The sudden removal of user fees: the perspective of a frontline manager in Burundi.** *Health Policy Plan* 2011, **26:**63–71.

59. Ridde V: **"The problem of the worst-off is dealt with after all other issues": the equity and health policy implementation gap in Burkina Faso.** *Soc Sci Med* 2008, **66:**1368–1378.

60. Ridde V, Morestin F: **A scoping review of the literature on the abolition of user fees in health care services in Africa.** *Health Policy Plan* 2011, **26:**1–11.

61. Richard F, Antony M, Witter S, Kelley A, Meessen B, Sieleunou I: **Fee exemption for maternal care in Sub-Saharan Africa: a review of 11 countries and lessons for the region.** *Global Health and Governance* 2013, **VI:**53–73.

62. Witter S, Khalid K, Abdel-Rahman M, Hussein R, Saed M: **Removal of user fees for caesareans and under-fives in northern Sudan: a review of policy implementation and effectiveness.** *Int J Health Plann Manag* 2013, **28:**95–120.

63. Witter S, Garshong B, Ridde V: **An exploratory study of the policy process and early implementation of free NHIS coverage for pregnant women in Ghana.** *Int J Equity Health* 2013, **12:**16.

64. Witter S, Dieng T, Mbengue D, Moreira I, De Brouwere V: **The free delivery and caesarean policy in Senegal – how effective and cost-effective has it been?** *Health Policy Plan* 2010, **25:**384–392.

65. Percival V, Sondorp E: **A case study of health sector reform in Kosovo.** *Confl Heal* 2010, **4:**7.

Participatory evaluation of reproductive health care quality in developing countries

Janet E. Bradley[a],*, Marcia V. Mayfield[a], Manisha P. Mehta[a], Anatole Rukonge[b]

[a] EngenderHealth (formerly known as AVSC International), 440 Ninth Avenue, New York, NY 10 001, USA
[b] Tumaini Comprehensive Infirmary, Tanzania

Abstract

Participatory approaches are becoming increasingly important in the field of health, and many organizations, governments and donors have recognized the need to increase stakeholder involvement to ensure sustainable and real change. However, commitment to participation is often lacking and participatory processes, if applied, tend to be short-term and discrete, especially in institutional settings. Rarely, for example, are stakeholders involved in long-term monitoring and evaluation activities, due the time-consuming nature of participation, and to perceptions on the part of donors and other decision-makers that participation lacks the rigor and objectivity of external evaluation. This paper describes the strategies used by an international reproductive health organization to collaborate with local stakeholders in a long-term participatory approach to quality improvement, focusing on defining quality of care, identifying problems in health facilities, setting goals and seeking solutions to those problems, tracking changes in quality over time, and feeding this monitoring and evaluation information back into the quality improvement process. The paper also illustrates how greater participation was achieved over time as local stakeholders moved away from traditional models and relationships and started working together to meet their quality improvement goals. The paper argues that participatory techniques are essential if the real needs of clients are to be met through sustained change and continuous quality improvement at the site level. © 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Participation; Evaluation; Quality; Reproductive health; Supervision; Tanzania

A HEALTH POLICY AND SYSTEMS RESEARCH READER ON HUMAN RESOURCES FOR HEALTH

HUMAN RESOURCES
FOR HEALTH

CH 3 | 6

RESEARCH   **Open Access**

District health managers' perceptions of supervision in Malawi and Tanzania

Susan Bradley[1], Francis Kamwendo[2], Honorati Masanja[3], Helen de Pinho[4], Rachel Waxman[4], Camille Boostrom[1] and Eilish McAuliffe[1*]

Abstract

Background: Mid-level cadres are being used to address human resource shortages in many African contexts, but insufficient and ineffective human resource management is compromising their performance. Supervision plays a key role in performance and motivation, but is frequently characterised by periodic inspection and control, rather than support and feedback to improve performance. This paper explores the perceptions of district health management teams in Tanzania and Malawi on their role as supervisors and on the challenges to effective supervision at the district level.

Methods: This qualitative study took place as part of a broader project, "Health Systems Strengthening for Equity: The Power and Potential of Mid-Level Providers". Semi-structured interviews were conducted with 20 district health management team personnel in Malawi and 37 council health team members in Tanzania. The interviews covered a range of human resource management issues, including supervision and performance assessment, staff job descriptions and roles, motivation and working conditions.

Results: Participants displayed varying attitudes to the nature and purpose of the supervision process. Much of the discourse in Malawi centred on inspection and control, while interviewees in Tanzania were more likely to articulate a paradigm characterised by support and improvement. In both countries, facility level performance metrics dominated. The lack of competency-based indicators or clear standards to assess individual health worker performance were considered problematic. Shortages of staff, at both district and facility level, were described as a major impediment to carrying out regular supervisory visits. Other challenges included conflicting and multiple responsibilities of district health team staff and financial constraints.

Conclusion: Supervision is a central component of effective human resource management. Policy level attention is crucial to ensure a systematic, structured process that is based on common understandings of the role and purpose of supervision. This is particularly important in a context where the majority of staff are mid-level cadres for whom regulation and guidelines may not be as formalised or well-developed as for traditional cadres, such as registered nurses and medical doctors. Supervision needs to be adequately resourced and supported in order to improve performance and retention at the district level.

Keywords: Supervision, Mid-level cadres, Malawi, Tanzania, District health management, Supervision paradigm, Measuring performance

* Correspondence: eilish.mcauliffe@tcd.ie
[1]Centre for Global Health, University of Dublin, Trinity College, Dublin, Ireland
Full list of author information is available at the end of the article

Background

In many African countries, such as Tanzania and Malawi, mid-level cadres are a core component of the health system. However, insufficient and ineffective human resource management (HRM) of these staff constrains their ability to provide patients with high quality care [1-7]. Effective management of human resources requires that workers know exactly what tasks they are expected to perform, have the necessary skills and resources to perform these tasks, and receive feedback that assists them in improving their performance [8]. Supervision is central to this - it is thought to play an important role in the performance and motivation of health workers [9-12] and is particularly relevant in the context of task shifting [13-15]. While it is difficult to be certain of the long-term effectiveness of supervision activities in low-income contexts due to limited published evidence, supervision from higher to lower levels of the health service is widely recommended as a mechanism for supporting staff and ensuring quality of care [16].

'Supervision' is an ill-defined, complex activity [17]. In many resource-constrained settings it has its roots in hierarchical notions of the supervisor as the overseer [18], whose role is ensuring that the health system's requirements are met, rather than addressing the development of skills and competencies of individual health workers [19]. In this context supervisory visits are the responsibility of external supervisors from the District Health Management Team (DHMT), and the supervision paradigm is commonly one of periodic inspection and control, rather than support. There is broad consensus that this is not effective [19,20] and that a widespread lack of recognition or reward for good performance leaves health workers with little incentive to perform well [21]. Recognition is a vital aspect of supervision that is all too often neglected. It plays a key role in the motivation and retention of health workers [22,23].

There is growing impetus for a move towards supportive supervision, which is defined as "an approach to supervision that emphasizes joint problem-solving, mentoring and two-way communication between the supervisor and those being supervised" [19]. This form of supervision promotes quality at all levels of the health system by strengthening relationships, optimizing the allocation of resources and fostering high standards and teamwork. Evidence of a conceptual move from traditional to supportive supervision exists in policy documents in many low-income countries, but is less apparent in practice changes at the district level [17]. This is compounded by a lack of clarity on the core elements of supervision as well as continuing debate, particularly in the nursing literature, on the boundaries between 'clinical' and 'managerial' aspects of supervision [24-26]. There is broad agreement in the health

professions that supervision has three functions – management, education and support [27] – but less consensus on whether the same person should carry out these roles [24,28]. However, managerial supervision and support are seen as the foundation that is necessary to allow clinical supervision to function [26].

Tanzania and Malawi, the two countries involved in this study, have both increased their commitments to addressing their human resources for health constraints. Malawi has been engaged in a comprehensive national scale-up of health care workers. An ambitious Emergency Human Resources Programme (EHRP) was incorporated into the 2004 Health Sector Wide Approach as one pillar of a plan to deliver an Essential Health Package [29]. An integrated supervision checklist was developed to facilitate regular monitoring and supervision of service delivery at the operational levels [30]. The checklist was designed as a guide for use by zonal officers in their supervision of DHMTs and by the DHMT to supervise the facility staff in the districts for which they were responsible. There is also programme-specific supervision for key areas, such as HIV/AIDS and Integrated Management of Childhood Illness.

Malawi's Ministry of Health has also committed itself to accelerating the reduction of maternal and neonatal death [31]. To achieve this goal, the government has expanded the number of cadres who are trained and authorised to perform the emergency obstetric care (EmOC) signal functions[a], with delegation of some of these tasks to registered nurse-midwives, nurse-midwife technicians, clinical officers and medical assistants. This has clear implications for the need for effective, supportive supervision.

Tanzania has its own commitments to address human resource constraints [32,33] and reduce maternal mortality by scaling up provision of emergency obstetric care [34]. Health sector strategic plans now target urgent performance management and productivity issues by focusing on improved supervisory support and employee relations [32,33]. New supportive supervision guidelines [35] emphasise a process of problem solving, communication, teamwork and quality improvement, but there are still challenges and shortcomings to effective integration and implementation [36].

Responsibility for the management of health care services has been decentralised in Tanzania. At the regional level there is supervision and support of Council Health Management Teams (CHMTs). The CHMTs are responsible for implementation and evaluation at the district level. CHMT staff use a number of tools to monitor health programmes and services. The MTUHA (Health Management Information System) hospital data book has been in use since 1994 and is submitted to the CHMT every quarter. It provides a record of facility

level indicators, logs all supervisory visits, and contains a table for problems identified and suggested solutions. More recently an Open Performance Review and Appraisal System (OPRAS) for the public service was introduced, to provide an open, formalised system for benchmarking and assessing staff performance [32]. At the time of data collection (October to December 2008) OPRAS was still being rolled out across the health sector, so its impact had not yet been documented.

The Health Systems Strengthening for Equity (HSSE): The Power and Potential of Mid-Level Providers project aimed to support health system strengthening for equity in Africa by building an evidence base on the role of mid-level cadres in maternal and neonatal health. HSSE was a large, mixed methods study that took place in Malawi, Tanzania and Mozambique. All quantitative and qualitative data were collected concurrently. This paper reports on the qualitative findings from that study in Malawi and Tanzania only. Analysis of the quantitative element of this research [37] provided robust evidence of the impact of supervision on health worker outcomes such as job satisfaction and intention to leave. It also identified differences in the types and frequency of supervision reported in Malawi and Tanzania. This evidence supports the need for systematic supportive supervision. Given that district personnel are responsible for carrying out supervision, it is important to examine their understanding of the role and purpose of this crucial aspect of the HRM system. It is also necessary to identify how the paradigm in which they operate and the challenges they face impact on regular supportive supervision of staff in primary health care facilities. The qualitative component of the HSSE research explored, *inter alia*, the perceptions of C/DHMT members on supervision practices in their respective districts and is reported here.

Methods

This exploratory qualitative study took place as part of the larger HSSE project. Semi-structured, in-depth individual interviews were conducted with C/DHMT personnel in Malawi and Tanzania. The interview guide was based on *a priori* themes arising from the literature and was designed to elicit the perceptions of these personnel on a range of human resource issues. A comprehensive set of over 40 open-ended questions and additional relevant prompts was developed. These addressed seven key thematic areas related to human resource management, but maintained sufficient flexibility to allow for emerging themes to be evoked. The key areas of interest were: the autonomy of the district team; the current human resources situation; job descriptions and roles; supervision and performance assessment; working conditions, workloads and the work environment; motivation; and education and training.

Sample

The data for this component of the HSSE research were gathered from a purposive sample of C/DHMT personnel in a subset of the districts selected for the main project. The qualitative researchers were part of the full HSSE data collection team and travelled with them through all the districts that were included in the HSSE project's sampling frame. They were asked to interview C/DHMT personnel in two districts in each of five geographical zones in Malawi, and in two districts in each of eight selected regions in Tanzania. This sample size was deemed sufficient to provide a comprehensive overview of the perceptions of these cadres on human resource issues. In Malawi the key cadres targeted were District Health Officer (DHO), District Nursing Officer (DNO), or a Human Resources Officer in districts where this cadre was available. For Tanzania the key CHMT personnel were District Health Secretary (DHS), Reproductive and Child Health (RCH) Coordinator and District Medical Officer (DMO).

In both countries the research teams were directed to obtain interviews with all three key personnel, but C/DHMTs were extremely busy and this was not always possible. The researchers started trying to obtain interviews in the first district they visited in each region by making appointments with relevant senior staff. If they were unable to secure at least two interviews in that district they waited until the project team reached the next district, then tried again. This process continued until they had secured the required quota of interviews. Data were only included from districts where at least two of the key members of the C/DHMT were available to be interviewed at the time of data collection. Only two single interviews in Malawi had to be excluded from the analysis.

In both countries the teams met or exceeded their data collection target. In Malawi, 20 interviews were carried out in 10 of the 24 eligible districts. In Tanzania there were 47 eligible districts and a total of 37 interviews were conducted in 16 of these districts.

Data collection

Data collection took place from October to December 2008. The Tanzanian research team consisted of eight experienced researchers who were either employees of Ifakara Health Institute or identified from Ifakara Health Institute's database of researchers. Most were educated to Bachelor degree level. The Malawian team included three experienced researchers who were educated to at least Bachelor degree level, and there were two clinical officers. A one-week training programme on the HSSE project and methods was conducted with all research team members in each country prior to commencing data collection.

Interviews were conducted in English in Malawi and in Kiswahili in Tanzania. All interviews lasted approximately 1 to 1.5 hours. The objectives of the study were explained and confidentiality was assured. All data and records were rendered anonymous through the use of a unique identity number. Informed, signed consent was obtained from every respondent and all interviews were tape-recorded. Interviews were transcribed verbatim using Microsoft Word (Microsoft, Redmond, WA, USA). The Kiswahili transcripts were then translated into English by researchers fluent in both languages.

Data analysis

All Word files were exported to NVivo8 software (QSR International Pty Ltd, Doncaster, Victoria, Australia) for thematic analysis. The analysis team consisted of two experienced researchers, one in Malawi and one in Tanzania (who did the coding), an experienced qualitative researcher (SB), and one of the study Principal Investigators (EM) who performed random checks on the coding. Emerging themes were developed through inductive and deductive processes [38]. The initial analysis used a coding framework, based on the thematic areas covered by the research questions, to generate top-level categories (tree nodes). The design of the interview schedule allowed the data to be auto-coded into these tree nodes. A detailed description of the expected content of each tree node was used by the analysis team to validate the content of each one, ensuring that all data within a node were true to the description of that node. Data that were relevant to other top-level nodes were also cross-coded into these nodes. The next phase of analysis involved bottom-up coding, with the team identifying and agreeing key subcategories emerging from each tree node. These data were coded into additional sub-codes (child nodes). The analysis team discussed their coding and interpretation of the transcripts in detail in order to improve inter-coder reliability.

One main area of the analysis explored responses to the interview questions about supervision and performance. The emergence of the central role of supervision in job satisfaction and retention as a key finding in the quantitative data warranted a deeper focus on the supervision-related aspects of the qualitative data. References to supervision permeated other sections of the data, so the coding exercise was further refined to gain a more nuanced and textured understanding of C/DHMT perceptions of this salient factor. The research team clustered related codes under broader categories to interpret the data and then used a process of synthesis to draw out five key themes.

The study was approved by the Global Health Ethics Committee, Trinity College, Dublin, and by the Institutional Review Boards of Columbia University, New York, the College of Medicine, Malawi, and Ifakara Health Institute, Tanzania.

Results

Five major thematic areas emerged: the current supervision paradigm; why supervision is important; supervision in practice; assessing performance; and challenges to implementation.

The current supervision paradigm
Malawi
The picture emerging from the interviews in Malawi was of a supervision paradigm focused on periodic inspection and control. Much of the language was couched in terms of fault-finding, poor performance and weakness. Respondents spoke of health workers being "corrected on their shortfalls" and wanted feedback so "we would know the weaknesses of that person" or "congratulate what they did well and rebuke them on what they did not do". There were fewer references to supervision in terms of its potential to support staff, mentor them or recognise achievement. However, there were voices recognising the need for a change to a different form of supervision. These respondents wanted supervision that was more supportive of health workers, articulating a desire for a system that helped health workers address the challenges they face and acknowledged the good work that they do. They also spoke of the need to move from supervision as a periodically occurring activity to an ongoing, continuous process.

Tanzania
The paradigm expressed by CHMT members had an emphasis on assisting and supporting health workers. Many respondents talked explicitly of practicing 'supportive supervision'.

> "We do supportive supervision in health facilities. It means observing strengths and weaknesses, listening to the employees themselves as they give their views on the services they provide. After supervision they give feedback as to what was seen there, what needs to be improved. They apply what would need to be added in order to provide better health services."
> (RCH Co-ordinator, 482)

Language such as "improve", "instruct", "advise", "congratulate", "assist", "together" and "listen" was common and there seemed to be a focus on improvement, teaching and problem solving. "We should strategise for improvement. We sit, we talk, we discuss, at least trying to improve the quality." (RCH Co-ordinator, 253) CHMT members were enthusiastic about the benefits of supportive supervision for both health workers and

supervisors but recognised that some staff still did not value supervision and saw the supervisory team as coming to assess and judge them.

Why supervision is important
Retention, motivation and performance

Malawi There was a growing recognition among Malawian respondents of the importance of supervision to retention. "I always believe in supportive supervision. If you supervise these people regularly the chances of you retaining them are very high, unlike when you are not supervising them." (DNO, 262) Another respondent felt it was important for management to see how difficult conditions were for nurses where staff shortages left them struggling to cover labour, antenatal and postnatal wards. He thought it was valuable for staff to be visited and felt that this could support them in addressing challenges. "When you go to do the supervision you see that really they are tired and frustrated." (Deputy DHO, 252)

Tanzania Managers in Tanzania displayed a robust appreciation of the importance of supervision and were positive about the structures in place to support staff. They felt it was a constructive way to improve motivation and performance in facilities, as it made staff feel appreciated. "…if you go there regularly they feel good and their performance improves." (RCH Co-ordinator, 253) Supportive supervision was seen as a way to develop good management–staff relations and to demonstrate that their work was valued by the district. "…you should value your staff, I mean respecting one another… if you are capable you can motivate them so that they can see that you value their work." (RCH Co-ordinator, 362) Two-way communication was appreciated as a critical factor in staff motivation. It was also described as an important mechanism to create team spirit by ensuring that workers were able to express their opinions and make suggestions to management, and allowing managers to ensure that lower cadres received information and support. "For the providers to have good work morale, the first thing is to have meetings where they can speak about their concerns and these can be dealt with." (RCH Co-ordinator, 141)

Quality of care

Malawi DHMT respondents appreciated that maternity differed from other departments because of overwhelming workloads and staff working in emergency mode for much of the time. "…they should…work hand in hand or close relationship with someone who is more senior to them…rather than just being left alone and hoping that they will manage all these things by themselves."

(Acting DHO, 311) The need for effective supervision or mentoring for cadres providing emergency obstetric care was clear to many respondents, but this had become more of a concern with the influx of large numbers of newly qualified staff due to the pre-service training element of the EHRP.

> "…large numbers is nothing on its own. It is better to have numbers of good quality. So, they may produce [new staff] but they need to be followed up, supervised and possibly mentored properly when they start working. Not that after the training just dump them…make sure that when they recruit staff….they are monitored properly and again they are supervised, they are supported, to make sure that they meet the standards. Um, that is something to me that is very important step that we need to be taking." (DHO, 162)

In addition, respondents thought that some of the new health workers did not always have the confidence or practical experience to perform the functions for which they had, theoretically, been trained. "…we don't have the cadre that qualify right away from the college to do emergency obstetric care. They have to be trained, on job training…they need to be further reoriented to handle the basic emergency obstetric care…" (DHO, 121) In some districts where this was an issue, or where health worker cadres with EmOC skills were in short supply, this training was seen as part of the supervision process. "…it's like on job training because of now we have a full time safe motherhood supervisor who goes out in the health centres one full day at the particular health centre…to teach them on EmOC issues and just to make supportive supervision." (Deputy DHO, 252)

Tanzania In Tanzania supportive supervision was seen as a way of disseminating new ideas and techniques and informing staff of changes in policy and guidelines. However, there were contradictions between respondents regarding how well maternity staff were supervised. CHMT respondents in some districts felt "…in reproductive issues we were very close to them and their work was better…" (RCH Co-ordinator, 253) Others were concerned that "…the way we are doing supervision to health workers who are providing emergency services during delivery it is not good to be honest. We don't have that close supervision to tell them that you are supposed to do 1,2,3…sometimes people are doing things based on experience." (DHS, 441) Additional difficulties arose when staff exceeded their scope of practice in emergency situations or due to staff shortage. "…the health providers they have deviated so much, these medical attendants he/she attend a patient, he/she gives injection, medicine, and sometimes performs delivery

services, at the same time he/she has responsibility of doing cleanliness..." (Assistant DMO, 363)

Supervision in practice
Malawi
The DHMT aimed to visit all health facilities on a quarterly basis, with one respondent characterising this as "regular management supervision". Multi-disciplinary teams carried out integrated supervisory visits to assess all aspects of service level performance, while specific teams (such as the Safe Motherhood and RCH Coordinators for maternal health) supervised specialities and had the flexibility to visit facilities more frequently. There was little mention of a system or clear process, other than the use of a checklist. Staff who were based in the district hospitals described a dual role as external supervisors who visited peripheral facilities to carry out supervisory processes, but who also performed direct supervision within their own departments or wards.

> "I do quarterly supervision in the health centres and at district I do go maybe twice a week to the wards just to see how the nurses are performing, and for the health centres I normally have a checklist which I use which has all components: maternity, infection prevention whatever...so I do use a checklist to do my supervision...and wherever I find the gaps I do on the job training." (DNO, 172)

At facility level the departmental in-charges were expected to carry out immediate supervision of health workers.

Respondents described a variety of feedback mechanisms. A number of respondents were quick to stress that verbal feedback should be immediate and followed up with a written report. This verbal feedback could be given on an individual basis, or be presented to all facility staff at the end of a supervisory visit. Subsequent written reports were provided on a quarterly basis. One respondent described the use of action points for the next 3 months.

> "Then when we come back from the supervision there's also written feedback on what was discussed during the verbal feedback, so that in the next visit that we go to that facility we should also reflect on the action points that were documented...to see which have been done and which haven't been done and what are the challenges." (Deputy DHO, 261)

All managers at the district level were supported and supervised by zonal-level supervisors. "They do come now and again to see to it that actually we are administering our human resources properly. They have their own checklist which they bring when they come...a way of supervising as to what we are doing." (Human Resources Manager, 161) Respondents valued this zonal oversight, as it encouraged them to focus on the HRM component of their work and provided an opportunity to problem solve and share good practice.

Tanzania
CHMT members reported high levels of responsibility for supervision of facilities in the district. Many teams aimed to visit health facilities every month, although the minimum requirement was that these visits should happen once a quarter. However, there was considerable variability in the frequency with which some facilities were supervised. Some CHMT members reported that they prioritised facilities from which they received complaints, where they then used "...another style of supervision, we do call it prompt supervision and we do this especially on places where we do receive complaints." (DHS, 361)

Supervision was usually done as a team, with members of different departments going out to facilities together on scheduled visits. Some facilities were warned in advance that the teams were coming. Most respondents said they endeavoured to use supportive supervision and the techniques that this involved. Supervision guidelines, authorised by the Ministry of Health and Social Welfare, were used to carry out inspection of facilities. A supervision matrix and checklist were provided by the Department of Health in the District. These were based on national guidelines and focused on areas such as maternal and child health, immunisation, and voluntary counselling and testing for HIV/AIDS, but there were concerns that the checklists were not comprehensive enough to cover all necessary aspects, or lacked sufficient space to adequately capture all the issues. Another layer of record keeping involved completion of the MTUHA logbooks, which stipulated the criteria used to assess facility level performance. Participants agreed that these should be completed at each visit and remain in the health facility to leave a written record of the visit, allowing subsequent supervisors to follow up on outstanding action or issues. Many respondents felt that these provided a structure and target for the visit, as well as clear expectations and records of feedback.

CHMT supervisors also noted that spending time with health workers was an important component of supportive supervision. Some did this on an individual basis while others interacted with groups of health workers at the facility. They described observing daily activities and watching staff techniques, then following up with a discussion of strengths and weaknesses and plans made for improvement. There was widespread agreement that feedback should be given as soon as possible and that

staff should feel supported and able to ask for help if needed. One mechanism cited was the use of the facility's regular morning meetings as a platform to report on issues that had been resolved, or to discuss outstanding concerns and possible solutions. A written report was subsequently generated and sent back to the health facility, while other reports were filed in the CHMT offices.

Assessing performance

There was a significant distinction between measuring facility level service provision and assessing individual staff performance. Participants in both countries were more likely to discuss indicators such as availability of supplies, number of deliveries and maternal mortality figures, as well as properly filled in registers and cleanliness of wards. This is unsurprising given their primary role of facility level oversight. However, there were cross-country differences in their discussion of the mechanisms available to C/DHMT staff to monitor the performance of health workers.

Malawi

There was a clear expectation that departmental in-charges would report to the DHMT on the performance of facility staff. However, few respondents discussed a mechanism to assess staff performance, or any system to oversee proper implementation of an assessment process.

> "…there is gap in assessing supervision as well as assessing performance of staff…we also do use like the indicators that we have at the district to look at performance of the service, but not necessarily performance of the staff. If it's performance of staff, it would be general in the sense that you would know that in reproductive health we are performing poorly because our indicators are poor, not looking at an individual performance." (DNO, 122)

Even where DHMT members mentioned assessing performance themselves, there were inconsistencies in their reports of the criteria used. Any individual measures that were mentioned, such as punctuality, response time for on-call staff, absenteeism or staff reporting to work at recommended times, were notable in that they were not competency-based. Attempts to assess individual performance were complicated by lack of explicit expectations. Health workers were assumed to know the performance and quality expected of them based on their knowledge from school or in-service training. Many staff and facilities were reported to lack written job descriptions and, even if these were present, they tended to be generic and did not necessarily relate to the increased scope of practice of some cadres or

changes to protocols for care. In these cases the DHMT relied on staff being familiar with the charts, procedure manuals and protocols that were supposed to be displayed in the facility to guide their performance. Staff meetings and departmental monthly meetings were expected to be used to inform health workers.

Tanzania

As in Malawi, some CHMT personnel relied on departmental supervisors to report to them on individual health worker performance, but many checked this for themselves as described above. Over half of the districts sampled in Tanzania explicitly discussed the use of a newly introduced mechanism, OPRAS, to define expectations and assess performance. Most were very positive, saying it provided a fair, open assessment from the health worker and the supervisor, with set targets and indicators that allowed progress to be verified and which made staff feel responsible. "Now that is the advantage with OPRAS. It defines clearly what a person has to deliver and in what quality. We agree upon this, everybody knows what is expected from him/her what she/he has to achieve this year, this month, semi-annually." (DMO, 151) However, some participants were concerned that health workers at lower levels of the health service would find it difficult to articulate and quantify their performance aims and targets. In addition, although job descriptions were provided, the actual tasks staff did were not necessarily reflected in these documents. "They each have their own job description which is permanent but in practice it changes according to the environment." (DHS, 522) Much of this was driven by circumstances. "They can do tasks which are not in the job description due to a shortage of employees. Yes, it is there, you find a medical attendant who has all the responsibilities which normally a doctor would do." (DHS, 251)

Challenges to implementation

Respondents in both countries described similar challenges that impacted on the frequency of supervisory visits and on C/DHMT autonomy. District management teams were involved in many other programmes, leading to conflicting responsibilities and multiple demands on their time, which were often given precedence over supervisory tasks. This caused particular difficulties where schedules for the whole team needed to be coordinated to ensure their availability. Financial constraints also caused frustration and led to cancellation or rescheduling of planned visits. "…we have supervisory systems and we aim to go there each month but we are stuck due to shortage of fuel and sometimes the delay of money reaching our account…The autonomy we have is hampered by lack of money, so what do you do?" (DHS, 402) This could lead to some remote

facilities only being visited once a year. Given that external supervisory visits were sometimes their only link to more experienced health professionals, this could leave staff in rural facilities feeling abandoned and isolated.

Staff shortages, both of C/DHMT members themselves and staff at facility level, were described as a major impediment to effective supervision. Within facilities, absolute shortages of staff were also cited as a challenge to adequate supervision, particularly the dearth of the more senior grades, such as doctors and registered nurse-midwives, who were expected to supervise facility staff. In addition, when district managers visited facilities the shortage of lower level cadres hampered effective supervision.

"The workload is such…and there is such a shortage of staff that sometimes instead of going for supervision you have to assist the person you were going to supervise because they are so overburdened with work. You work, so in most cases even the supervision becomes minimal because you have to join them in dealing with patients, rather than sitting and supervising or observing." (Nursing Officer, 461)

Discussion

This research revealed divergent attitudes regarding the nature and purpose of the supervision process in the two countries studied. These attitudes are nested in the policy environment and the value or support that is given to the supervision function and can have a significant impact on the implementation of supervision activities. In Tanzania, where there is policy-level attention to the importance of supportive supervision as a tool for advancing health sector objectives, CHMT attitudes clearly suggested a paradigm of teaching, problem solving and improvement. This reflects a national commitment, reinforced with clear mechanisms, structures and shared expectations, that views supportive supervision and the attitudes upon which this is based as a necessary part of the HRM process. However, in Malawi, where DHMT members described a context that lacked a systematic, accountable supervision structure, with unclear criteria and assumed expectations of staff performance, supervision practice was dependent on the attitudes and priorities of supervisors. The prevailing supervision paradigm has important repercussions for health worker motivation, retention and performance. Fault-finding inspection models coupled with a lack of transparency in HRM processes and criteria can have negative impacts on staff motivation [4,22]. Conversely, supportive supervision practices can influence a range of outcomes, including job satisfaction [39], turnover intention [40] and performance [41].

Central to the discussion about integrated supervision at the district level is the need for clarity and support for the DHMT in their role. Participants in this study revealed complex demands in their capacity as managerial supervisors carrying out external supervision to lower-level health facilities, combined with clinical supervisory responsibility either within the district hospital in which they were based, or driven by staff shortages or lack of senior cadres in smaller district facilities. This demonstrates the all-encompassing conception of 'supervision' in these contexts and adds to the lack of a common understanding of supervision's purpose and role within the HRM function. It is clear that the DHMT need to monitor and evaluate supervision processes within the district, but they do not have the time or resources to supervise individual staff. Their effort would be most effectively targeted at setting up and monitoring the mechanisms at facility level that support staff performance, rather than overseeing individual health workers. CHMT personnel in Tanzania had the new OPRAS system in place that should address some of these issues. In Malawi, however, respondents voiced concerns about the lack of mechanisms to define and assess individual performance, outlining a clear discrepancy between their recognition that health workers need to be supported and appreciated for the work they do and the lack of mechanisms to measure or reward this effort. The implications of this for health worker motivation and retention have been documented elsewhere [2-5,11,22,23]. Even where individual level performance indicators were cited, they were not competency-based. This is of concern in the context of scaling up health worker numbers and the changes to scope of practice that have been introduced to increase access to basic emergency obstetric care. The influx of large numbers of newly qualified staff, who may lack the skills and experience to perform well, coupled with the absence of an effective supervision system, has obvious ramifications for quality of care [42] and is increasingly recognised by managers as an area to be addressed. Enhanced mechanisms at district level, such as audit and feedback to reduce maternal complications [43], could justifiably fall within the DHMT's supervision remit and form part of a suite of measures to support performance and accountability.

None of these measures can be implemented without sufficient senior staff with the requisite knowledge and skills. These supervision capacity constraints, particularly in more rural areas, will need to be addressed in order to create the sort of supportive workplace environment that will attract and retain health workers [44]. Even when supervisory staff are available, there are challenges to carrying out scheduled supervision visits. Visits are often postponed due to over commitment with other, perceived higher priority HRM roles, inadequate finances,

or transport and accessibility problems, underlining the need for proper prioritisation and adequate resourcing of supervision as a key HRM activity. This study reported infrequent supervision of remote facilities, which may contribute to absenteeism and reduced performance [45].

Supervision ought to be a formalised HRM tool, which is integrated into the day-to-day functioning of a health sector organisation and in which supervisors encourage quality improvement and genuinely value their staff [1]. It should take into account health workers' personal goals and needs, while working to support good practice and to correct shortcomings [11]. Supervisors themselves need to have good leadership skills and treat all employees fairly [10]. The concept of supportive supervision focuses particularly on the importance of mentoring, joint problem solving and two-way communication. It emphasises that supervisors must have the solid technical knowledge and skills needed to perform tasks, the know-how to access additional support as needed, and have time to meet with the staff they supervise [46].

Without functional and supportive supervision, it is unlikely that incentive systems aiming to retain health workers will be effective [47]. With it, health workers are more likely to experience a sense of self-efficacy and feel motivated and satisfied [11]. A focus on supportive supervision engenders a mind-set where teams of health workers identify their own challenges and achieve results with support from their supervisors. It moves away from an 'inspection and blame' model to one characterised by 'support, shared responsibility and problem solving'. This can address motivators such as achievement (goals are clear and achievable), recognition (performance is recognised), responsibility (health workers feel ownership of their work) and advancement (performance and commitment are rewarded) [10]. Ultimately, the implementation of supervision systems at the national level requires commitment and support from leadership to promote supervision and remove impediments to its implementation [48]. The intervention of governments and their partners is crucial in translating the language and policy of supervision into improvements in the motivation, satisfaction and retention of health workers.

Conclusion
HRM aims to enable motivated, competent staff to meet health sector objectives. Supervision is one mechanism that helps to achieve this and is particularly important when staff operate in a challenging work environment or in the context of task shifting. In order to understand the gaps between practice and policy it is important to include the perspectives of those staff tasked with carrying out the supervisory role. The findings of this study have important implications for policy makers. National supervision plans are only as good as the supervisors

who implement them and can fail if the underlying ethos and attitude towards supervision is not clear to all health workers involved in the supervision process. This study revealed divergent attitudes to supervision and differing perceptions of the level of support for this crucial aspect of HRM, particularly in Malawi. Key to the provision of supportive supervision is the presence of an effective HRM structure and practice, at both national and district levels, which is appropriately prioritised. Policy level attention and commitment is crucial to ensure an adequately resourced, systematic, structured process at district level that is based on common understandings of the role and purpose of supervision.

Limitations
Data for this element of the HSSE study were drawn from a purposive sample of C/DHMT members, where at least two of the three key cadres identified were available during the time when data collection teams were present in their district. In addition, the logistics of the data collection process meant that a target was set in advance for the number of interviews that could be collected. This may have led to some bias, as districts where at least two of these senior staff were available may not be representative of the entire C/DHMT population.

Endnotes
[a]Basic EmOC is comprised of seven signal functions: 1. Administer parenteral antibiotics; 2. Administer uterotonic drugs; 3. Administer parenteral anticonvulsants for pre-eclampsia and eclampsia; 4. Manual removal of placenta; 5. Removal of retained products of conception; 6. Assisted vaginal delivery; 7. Neonatal resuscitation. An additional two signal functions indicate comprehensive EmOC: 8. Perform emergency obstetric surgery (e.g. caesarean section); 9. Perform blood transfusion.

Abbreviations
CHMT: Council Health Management Teams; DHMT: District Health Management Teams; DHO: District Health Officer; DHS: District Health Secretary; DMO: District Medical Officer; DNO: District Nursing Officer; EHRP: Emergency Human Resources Programme; EmOC: Emergency obstetric care; HRM: Human resource management; HSSE: Health Systems Strengthening for Equity: The Power and Potential of Mid-Level Providers; OPRAS: Open Performance Review and Appraisal System; RCH: Reproductive and Child Health.

Authors' contributions
SB participated in the study design, data collection/analysis and drafted this paper. EM participated in the study design and data analysis and contributed to the paper. FK participated in the study design, data collection and data analysis (particularly in Malawi). HM participated in the study design, data collection and data analysis (particularly in Tanzania). HdP managed the project and participated in the study design, data collection and data analysis, and contributed to the paper. RW participated in the study design, data collection/analysis and contributed to the paper. CB contributed to the

Author details
^{1}Centre for Global Health, University of Dublin, Trinity College, Dublin, Ireland. ^{2}University of Malawi, College of Medicine, Centre for Reproductive Health, Blantyre, Malawi. ^{3}Ifakara Health Institute, Dar Es Salaam, Tanzania. ^{4}Averting Maternal Death and Disability Program (AMDD), Heilbrunn Department of Population and Family Health, Mailman School of Public Health, Columbia University, New York, NY, USA.

References
1. EngenderHealth: *COPE Handbook: a Process for Improving Quality in Health Services.* New York: EngenderHealth; 2003.
2. Franco LM, Bennett S, Kanfer R: **Health sector reform and public sector health worker motivation: a conceptual framework.** *Soc Sci Med* 2002, **54**:1255–1266.
3. Lehmann U: *Mid-Level Health Workers. The State of the Evidence on Programmes, Activities, Costs and Impact on Health Outcomes. A Literature Review.* Geneva: WHO; 2008.
4. Manafa O, McAuliffe E, Maseko F, Bowie C, MacLachlan M, Normand C: **Retention of health workers in Malawi: perspectives of health workers and district management.** *Hum Resour Health* 2009, **7**(65).
5. McAuliffe E, Manafa O, Maseko F, Bowie C, White E: **Understanding job satisfaction amongst mid-level cadres in Malawi: the contribution of organisational justice.** *Reprod Health Matters* 2009, **17**:80–90.
6. Capacity Project: *Planning, Developing and Supporting the Health Workforce: Results and Lessons Learned from the Capacity Project, 2004–2009.* Chapel Hill, NC: Capacity Project; 2009.
7. World Health Organization: *Working Together for Health: the World Health Report 2006.* Geneva: World Health Organization; 2006.
8. Iles V: *Really Managing Health Care.* Buckingham, MK: Open University Press; 1997.
9. Benavides BM: *Supporting Health Worker Performance with Effective Supervision.* Chapel Hill, NC: Capacity Project; 2009.
10. McCaffery JA, Joyce S, Massie B: *Health Worker Retention and Performance Initiatives: Making Better Strategic Choices. Technical Brief 16.* Chapel Hill, NC: Capacity Project; 2009.
11. Mathauer I, Imhoff I: **Health worker motivation in Africa: the role of non-financial incentives and human resource management tools.** *Hum Resour Health* 2006, **4**(24).
12. Rowe AK: **How can we achieve and maintain high-quality performance of health workers in low-resource settings?** *Lancet* 2005, **366**:1026–1035.
13. Chu K, Rosseel P, Gielis P, Ford N: **Surgical task shifting in Sub-Saharan Africa.** *PLoS Med* 2009, **6**:e1000078.
14. World Health Organization: *Taking Stock: Task Shifting to Tackle Health Worker Shortages.* Geneva: World Health Organization; 2007.
15. Bluestone J: *Task Shifting for a Strategic Skill Mix. Technical Brief 5.* Chapel Hill, NC: Capacity Project; 2006.
16. Bosch-Capblanch X, Liaqat S, Garner P: **Managerial supervision to improve primary health care in low- and middle-income countries.** *Cochrane Database Syst Rev* 2011, **9**:CD006413.
17. Bosch-Capblanch X, Garner P: **Primary health care supervision in developing countries.** *Trop Med Int Health* 2008, **13**:369–383.
18. Clements CJ, Streefland PH, Malau C: **Supervision in primary health care – can it be carried out effectively in developing countries?** *Curr Drug Saf* 2007, **2**:19–23.
19. Marquez L, Kean L: *Making Supervision Supportive and Sustainable: New Approaches to Old Problems. MAQ Paper No. 4.* Washington, DC: USAID; 2002.
20. Rohde J: *Supportive Supervision to Improve Integrated Primary Health Care. MSH Occasional Paper No. 2.* Cambridge, MA: Management Sciences for Health; 2006.
21. Huddart J, Picazo O, Duale S: *The Health Sector Human Resource Crisis in Africa: an Issues Paper.* Washington, DC: USAID Bureau for Africa, Office of Sustainable Development; 2003.
22. Bradley S, McAuliffe E: **Mid-level providers in emergency obstetric and newborn health care: factors affecting their performance and retention within the Malawian health system.** *Hum Resour Health* 2009, **7**(14).
23. Willis-Shattuck M, Bidwell P, Thomas S, Wyness L, Blaauw D, Ditlopo P: **Motivation and retention of health workers in developing countries: a systematic review.** *BMC Health Serv Res* 2008, **8**(247).
24. Driscoll J: *Practising Clinical Supervision: a Reflective Approach for Healthcare Professionals.* Edinburgh: Bailliere Tindall; 2007.
25. Cutcliffe JR, Hyrkäs K: **Multidisciplinary attitudinal positions regarding clinical supervision: a cross-sectional study.** *J Nurs Manag* 2006, **14**:617–627.
26. Yegdich T: **Clinical supervision and managerial supervision: some historical and conceptual considerations.** *J Adv Nurs* 1999, **30**:1195–1204.
27. Kilminster S, Jolly B: **Effective supervision in clinical practice settings: a literature review.** *Med Educ* 2000, **34**:827–840.
28. Cutcliffe JR, Lowe L: **A comparison of North American and European conceptualizations of clinical supervision.** *Issues Ment Health Nurs* 2005, **26**:475–488.
29. Palmer D: **Tackling Malawi's human resources crisis.** *Reprod Health Matters* 2006, **14**:27–39.
30. Ministry of Health, Malawi: *A Joint Programme of Work for a Health Sector Wide Approach (SWAp) 2004–2010.* Lilongwe: Ministry of Health, Department of Planning; 2004.
31. Ministry of Health, Malawi: *Road Map for Accelerating the Reduction of Maternal and Neonatal Mortality and Morbidity in Malawi.* Lilongwe: Government of Malawi; 2005.
32. Ministry of Health and Social Welfare, Tanzania: *Human Resource for Health Strategic Plan 2008 – 2013.* Dar es Salaam: Ministry of Health and Social Welfare; 2008.
33. Ministry of Health and Social Welfare, Tanzania: *Health Sector Strategic Plan III July 2009 - June 2015.* Dar es Salaam: Ministry of Health and Social Welfare; 2009.
34. Ministry of Health and Social Welfare, Tanzania: *National Road Map Strategic Plan to Accelerate Reduction of Maternal, Newborn and Child Deaths in Tanzania: 2008–2015.* Dar es Salaam: Ministry of Health and Social Welfare; 2008.
35. Ministry of Health and Social Welfare, Tanzania: *National Supportive Supervision Guidelines for Quality Healthcare Services.* Dar es Salaam: Ministry of Health and Social Welfare; 2010.
36. National Audit Office: *A Performance Audit Report on the Management of Primary Health Care: a Case Study of Health Centres.* Dar es Salaam: Office of the Controller and Auditor General of Tanzania; 2008.
37. McAuliffe E, Daly M, Kamwendo F, Masanja H, Sidat M, de Pinho H: **The critical role of supervision in retaining staff in obstetric services: a three country study.** *PLOS ONE* 2013, **8**(3):e58415.
38. Green J, Thorogood N: *Qualitative Methods for Health Research.* London: SAGE Publications; 2009.
39. Abualrub RF, Omari FH, Abu Al Rub AF: **The moderating effect of social support on the stress-satisfaction relationship among Jordanian hospital nurses.** *J Nurs Manag* 2009, **17**:870–878.
40. Delobelle P, Rawlinson JL, Ntuli S, Malatsi I, Decock R, Depoorter AM: **Job satisfaction and turnover intent of primary healthcare nurses in rural South Africa: a questionnaire survey.** *J Adv Nurs* 2011, **67**:371–383.
41. Frimpong JA, Helleringer S, Awoonor-Williams JK, Yeji F, Phillips JF: **Does supervision improve health worker productivity? Evidence from the upper east region of Ghana.** *Trop Med Int Health* 2011, **16**:1225–1233.
42. McAuliffe E, Manafa O, Bowie C, Makoae C, Mseko F, Moleli M, Hevey D: **Managing and motivating: pragmatic solutions to the brain drain.** In *Human Resources in Healthcare, Health Informatics and Healthcare Systems.* Edited by Kebane SM. New York: Medical Information Science Reference; 2010:79–95.

43. van den Akker T, van Rhenen J, Mwagomba B, Lommerse K, Vinkhumbo S, van Roosmalen J: **Reduction of severe acute maternal morbidity and maternal mortality in Thyolo district, Malawi: the impact of obstetric audit.** *PLoS ONE* 2011, **6:**e20776.
44. World Health Organization: *Increasing Access to Health Workers in Remote and Rural Areas through Improved Retention: Global Policy Recommendations.* Geneva: World Health Organization; 2010.
45. Manzi F, Schellenberg JA, Hutton G, Wyss K, Mbuya C, Shirima K, Mshinda H, Tanner M, Schellenberg D: **Human resources for health care delivery in Tanzania: a multifaceted problem.** *Hum Resour Health* 2012, **10**(3).
46. EngenderHealth: *Facilitative Supervision Handbook.* New York: EngenderHealth; 2001.
47. Buchan J, McCaffery J: *Health Workforce Innovations: a Synthesis of Four Promising Practices.* Chapel Hill, NC: Capacity Project; 2007.
48. Rowe AK, Onikpo F, Lama M, Deming MS: **The rise and fall of supervision in a project designed to strengthen supervision of integrated management of childhood illness in Benin.** *Health Policy Plan* 2010, **25:**125–134.

HUMAN RESOURCES
FOR HEALTH

CH 7

RESEARCH

Open Access

Health workforce responses to global health initiatives funding: a comparison of Malawi and Zambia

Ruairí Brugha[1,5*], John Kadzandira[2], Joseph Simbaya[3], Patrick Dicker[1], Victor Mwapasa[4], Aisling Walsh[1]

Abstract

Background: Shortages of health workers are obstacles to utilising global health initiative (GHI) funds effectively in Africa. This paper reports and analyses two countries' health workforce responses during a period of large increases in GHI funds.

Methods: Health facility record reviews were conducted in 52 facilities in Malawi and 39 facilities in Zambia in 2006/07 and 2008; quarterly totals from the last quarter of 2005 to the first quarter of 2008 inclusive in Malawi; and annual totals for 2004 to 2007 inclusive in Zambia. Topic-guided interviews were conducted with facility and district managers in both countries, and with health workers in Malawi.

Results: Facility data confirm significant scale-up in HIV/AIDS service delivery in both countries. In Malawi, this was supported by a large increase in lower trained cadres and only a modest increase in clinical staff numbers. Routine outpatient workload fell in urban facilities, in rural health centres and in facilities not providing antiretroviral treatment (ART), while it increased at district hospitals and in facilities providing ART. In Zambia, total staff and clinical staff numbers stagnated between 2004 and 2007. In rural areas, outpatient workload, which was higher than at urban facilities, increased further. Key informants described the effects of increased workloads in both countries and attributed staff migration from public health facilities to non-government facilities in Zambia to PEPFAR.

Conclusions: Malawi, which received large levels of GHI funding from only the Global Fund, managed to increase facility staff across all levels of the health system: urban, district and rural health facilities, supported by task-shifting to lower trained staff. The more complex GHI arena in Zambia, where both Global Fund and PEPFAR provided large levels of support, may have undermined a coordinated national workforce response to addressing health worker shortages, leading to a less effective response in rural areas.

Background

Annual funding for the control of HIV/AIDS in resource poor countries rose from $US 1.6 billion in 2001 to $US 10 billion in 2008 [1]. By 2006, an estimated 49% of all external funding disbursed for HIV/AIDS came from two global health initiatives (GHIs) [2]: The Global Fund to Fight AIDS, Tuberculosis and Malaria and the United States President's Emergency Plan for AIDS Relief (PEPFAR). Between 2002 and 2007,

the numbers of people on antiretroviral therapy (ART) in developing countries rose from 300,000 to 3 million, leading to a decline in annual AIDS deaths from 2.2 to 2 million [3] and an estimated 550,000 life years saved across 14 African countries [4]. Prevention of Mother to Child Transmission (PMTCT) coverage increased from 9% in 2004 to 33% in 2007 [3]. In some African countries, external HIV/AIDS funding (mainly from GHIs) has exceeded countries' total spend on their health sectors [2], accounting for between 67% and 98% of all AIDS funding in five of the poorest countries [4]. This has fuelled debates about the effects of GHIs on health systems [5]. However, peer-reviewed [6] and other multi-country studies [7,8], until now, have reported

* Correspondence: rbrugha@rcsi.ie
[1]Department of Epidemiology and Public Health Medicine, Division of Population Health Sciences, Royal College of Surgeons in Ireland, Dublin, Ireland
Full list of author information is available at the end of the article

BioMed Central

mainly national level perspectives, which report contrasting views and expectations of largely positive or negative effects.

The effects of GHIs on countries' health systems is being researched across 16 countries under the umbrella of the Global HIV/AIDS Initiatives Network (GHIN), which supports independent country research teams that have agreed network aims and principles by which they are researching common themes: http://www.ghi-net.org. The principal GHIN themes include the effects of GHIs on human resources for health (HRH), on other priority services, on the capacity of countries to coordinate GHIs alongside traditional aid mechanisms, and effects on equitable access to services. Research teams from Malawi and Zambia were among four African country teams and GHIN coordinators who agreed on common research questions, approaches and methods at a research planning workshop in Malawi in September 2006.

Between 2004 and 2008, both countries received large grants from GHIs (see Table 1); and national data illustrate the rapid scale-up in the delivery of HIV/AIDS services (see Table 2). Malawi received large levels of funding from only one GHI (the Global Fund) whereas Zambia received funding from both the Global Fund and PEPFAR. We hypothesised, in conducting the comparative analysis, that it might be easier to roll out a coordinated national human resource for health strategy in a less complex GHI arena. PMTCT services have been rolled out to all 28 districts in Malawi and all 72 districts in Zambia; and nationally reported ART coverage was close to 50% in both countries by 2008 [3]. The World Bank Multi Country AIDS Program (MAP) has

also been an external player in funding for HIV in both countries. However, their programme focus was mainly not on health facility scale-up, and therefore was not considered in this paper. This paper presents comparable findings from Malawi and Zambia on the scale-up in service delivery and workload at health facilities, and in numbers and distribution of health workers. The aim is to report trends in health worker numbers, distribution and workload, and to explore and compare the effects of different GHI inputs - Global Fund alone in Malawi and Global Fund and PEPFAR in Zambia - on human resources for health (HRH) strategies and responses, in the light of greatly increased resources for HIV/AIDS.

An analysis of Global Fund proposals [9] and disbursement levels [9], recorded on the Global Fund website, shows that staff training and supplies for Voluntary Counselling and Testing (VCT) and PMTCT were an important component of Zambia's successful 2003 Round 1 US$90 million HIV/AIDS grant. Zambia's late 2005 Round 4 US$236 million HIV/AIDS allocation included a major component of in-service training for 5,264 health professionals and 32,868 non-health agents. US PEPFAR organisations based in Zambia, where US$ 571 million had been allocated by the end of 2007, reported a range of health systems strengthening, infrastructural development and training components. This included the training in 2006 of 'more than 15,000 Zambian health care workers' in the delivery of a range of HIV services [10]. In 2003 Malawi was awarded a large (US$342.6 million) Round 1 grant from the Global Fund to HIV/AIDS control. By 2005 it had re-allocated its grant to support its national Emergency Human Resource Programme [11-13]. The significance of this is considered in the Discussion.

Methods
Sampling
Baseline data were collected at district and sub-district facilities in December 2006 - February 2007 and again in June-July 2008. There were common research questions and objectives in the two country studies and standardised tools and indicators were used to research these, with adaptation of questions to suit each country's health information system context. However, both teams had research questions and objectives that were specific to their country, which resulted in different sampling strategies. The Malawi team's main focus was on the effects of HIV service scale-up on health facility staff, for which they derived a nationally representative sample of district and sub-district, urban and rural health facilities. The Zambia team restricted their study to three districts so as to conduct an in-depth analysis of district and sub-district coordination of HIV services,

Table 1 Summary of Global Fund and PEPFAR HIV funding to Malawi and Zambia (in million US$)

	Global Fund		PEPFAR^
	Allocated	Disbursed	Allocated
Malawi			
Round 1	$342.6 m	$229.6 m (Dec 09)	$14.5 m (2004)
Round 5	$17.6 m	$13.0 m (Oct 09)	$15.2 m (2005)
Round 5 (HSS)*	$ 52.0 m	$21.3 m (Aug 09)	$16.4 m (2006)
Round 8	$15.1 m		$18.9 m (2007)
			$23.9 m (2008)
Zambia			
Round 1	$90.3 m	$81.9 m	$82 m (2004)
Round 4	$236.3 m	$128.0 m	$126 m (2005)
Round 8	$129.4 m		$147 m (2006)
			$216 m (2007)
			$269.2 m (2008)

HSS* Health Systems Strengthening

^ Detailed PEPFAR disbursements are not available.

A HEALTH POLICY AND SYSTEMS RESEARCH READER ON HUMAN RESOURCES FOR HEALTH

Table 2 Core HIV Indicators in Malawi and Zambia

Indicator	Malawi				Zambia		
	2004	2005	2006	2007	2005	2006	2007
Population (in millions)	11.9	12.3	12.8	13.2	11.4^	11.8^	12.2^
Adult HIV prevalence (15-49)% Epidemiological indicators	14.4 (2003)	14.2	No data	12.0	13.9	13.5	13.1[+]
HIV prevalence in pregnant women (%)	19.8	16.9	No data	12.0	19.1	19.1	19.3
Number (%) of adults and children with advanced HIV infection receiving ART	13 183 (6%)	37 840 (14%)	85 200 (33%)	130 488 (43%)	39 351	80 030 (32.9%)	149 199 (50.5%)
Number (%) of pregnant women needing and receiving ART to reduce the risk of mother to child HIV transmission (PMTCT)	2719 (3%)	5076 (7%)	9231 (22%)	23158 (35.4%)	No Data	25,578 29.7%	35,314 39.1%
Women and men 15-49 who received a test in the last 12 months and knew their results.	283 467	482 364	661 400	461 038*	15.6%	234 430 (15.4%)	254 585 (15.4%)
Numbers of sites providing ART	20	60	104	109	107	156	322
Numbers of sites providing PMTCT	36	40	60	84	67	307	678
Numbers of sites providing HIV Counselling and Testing (VCT)	146	239	351	370	No data	883	1028

Source: UNGASS Country Reports 2008

^ Total projected population

[+] Zambia Demographic and Health Survey (ZDHS) 2007 shows 14.3% prevalence rate for 2007

* 4th Quarter missing

hypothesising that there would be a strong PEPFAR-effect with large-scale utilisation of non-government providers. In Malawi, the districts containing the three tertiary referral hospitals (one from each region) were purposively selected so as to include urban populations; and six out of the 24 rural districts were randomly selected. The 52 facilities sampled included the three central hospitals, seven district government hospitals, and 42 sub-district government health centres. The latter, which represented 30% of district health centres, were randomly selected, with probability of selection proportionate to district facility size, based on a 2005 country-wide survey of HIV and AIDS services [14]. The objective of the Malawi study team was to obtain a representative sample of government health facilities, which were the main providers of ART in Malawi during 2005-08. Non-government organisations (NGOs) and mission (faith-based) facilities were not sampled, as they were not important providers of core HIV/AIDS services in the country.

In Zambia, three districts were purposively selected to represent the capital city (Lusaka), an urban district (Kabwe) and a rural district (Mumbwa). District health facilities were mapped, producing 41 facilities providing fixed HIV or AIDS services. Based on discussions with District Health Management Teams (DHMTs), 39 facilities were selected for the survey (n = 33 government and n = 6 NGO/mission). Facility ART provision was the main criterion for inclusion in the study, and the

sample included all 29 facilities that reported delivering ART (24 government and 5 NGO/mission), while excluding Ministry of Defence and private for-profit facilities. The sample also included a purposive sample of 10 facilities that were reported by the DHMTs as important providers of HIV services, though not ART (1 facility in Lusaka, 3 in Kabwe and 6 in Mumbwa). All district, mission and central hospitals, and the University Teaching Hospital (UTH) in Lusaka, were surveyed. The reason for sampling only three districts in Zambia was because a research objective of the Zambian and GHIN researchers was to conduct an in-depth study that explored the roles of non-governmental as well as government providers in HIV scale-up and to assess coordination among providers, in what was known to be a complex provider context. Ethics approval for the study was granted by the University of Zambia Research Ethics Committee and from the College of Medicine in Malawi.

Data collection tools

Proformas for recording facility record data were drafted by the Dublin GHIN coordination team, adapted from tools used in an earlier SystemWide Effects of the Fund (SWEF) study [7]. These were further adapted, based on lessons learned from a baseline facility survey in Zambia in January 2007. The Malawi team incorporated indicators for measuring scale-up into their tools, which had additional

objectives on measuring task-shifting. Semi-structured interview topic guides were drafted by each country team, which included a focus on HRH.

Surveys, data collection and analysis

Following pilot surveys in both countries, after which further modifications to the data extraction tools were made, trained and supervised teams of field workers visited the selected hospitals and health centres and extracted and recorded facility record data on to the proformas. Facility staff numbers, patient/client records and service episode records covered quarterly periods in Malawi (October 2005 to March 2008) and annual periods in Zambia (2004-2007 inclusive). In Malawi, senior researchers conducted semi-structured interviews with facility frontline health workers (doctors and nurses), facility and human resource managers, and district managers (151), including: facility heads, nurses in-charge of health centres; and district coordinators of ART, VCT and PMTCT. In Zambia, senior researchers conducted semi-structured interviews at the national level (16), including government, donor and NGO representatives. Interviews at the district level (53) were with district health and administration managers, and government and NGO facility managers.

Data on health worker distribution in January 2006 and 2008 that were collected by the research team in Malawi were verified by data provided by district health offices. In Zambia, non-HIV patient record data that were collected by field workers directly from facilities were supplemented by electronic summaries of facility record-return data kept at district health offices. Where there were two sources of data, the most complete data set was used in the analysis. For example district offices had complete data on numbers of Out-Patient Department (OPD) visits from 2004 through to 2007 from 34 of the 39 facilities, compared to 25 facilities whose records' departments had complete data on OPD visits. HIV service data were not available from district offices in Zambia and were collected directly only from the facilities that were delivering ART, VCT or PMTCT.

Quantitative data were entered, cleaned and analysed using SPSS (Version 16.0). Further analysis was conducted using SAS (Version 9.1) to translate data and present findings in similar formats. In Malawi two field workers wrote up contemporaneous notes of interviews, whilst in Zambia, semi-structured interviews were recorded and transcribed. Data coding of different themes was conducted by individual team members and at least two team members undertook thematic analyses [15,16]. Health worker themes included staff categories, numbers, distribution and workload, related to HIV service scale-up.

Data analysis revealed problems with respect to data availability and completeness, which reduced the numbers of facilities that could be included in some of the analyses. Where facility data were missing for one time period within a trend analysis, this required that that facility be omitted from the analysis, which reduced the numbers of units in some analyses (see Figures 1, 2, and 3). Only facilities that were visited during the December 2006 - February 2007 baseline surveys in both countries were revisited in the follow up surveys (June-July 2008).
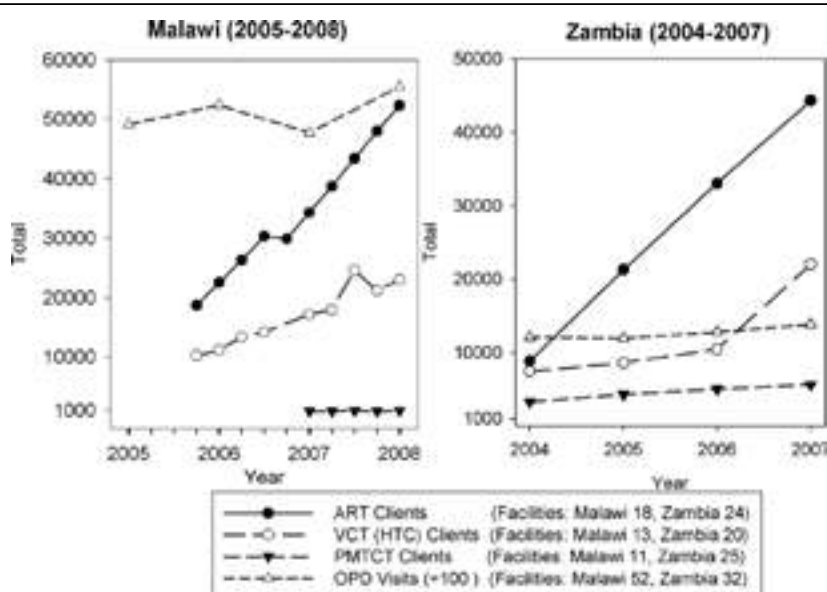
Figure 1 Scale-up of clients receiving ART, PMTCT, VCT and OPD visits: Malawi (2005-08) Zambia (2004-2007).
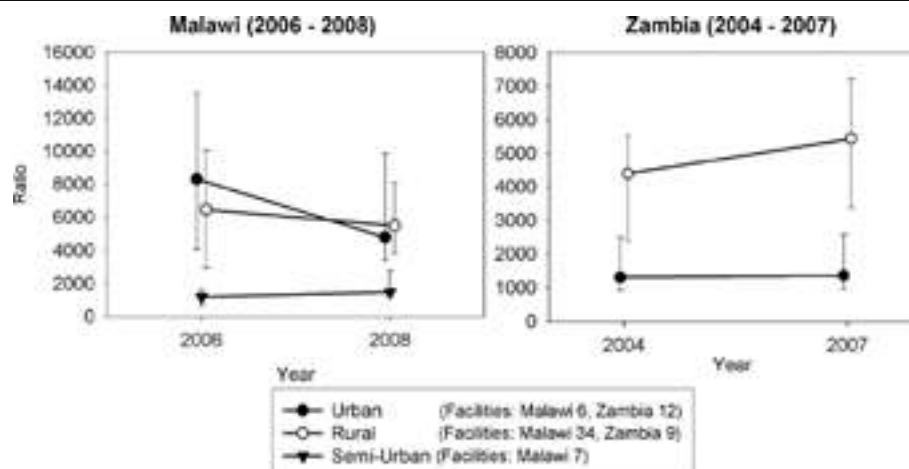
Figure 2 Urban, semi-urban and rural routine OPD workload per clinical staff member: Malawi (2006-08) Zambia (2004-07).

Therefore, data were not collected from new facilities that opened, or from existing facilities that started to offer HIV related services, during 2007-08. Data cleaning also revealed two implausible records for antenatal clinic registration numbers in Zambia (not part of the analysis for this paper).

Results
Trends in scale-up of services: Malawi and Zambia
Figure 1 shows trends in numbers of clients receiving HIV-related services. The numbers of clients on ART and receiving VCT increased consistently over the two time periods in Malawi and Zambia, with similar upward trends across urban and rural districts and at district and sub-district (health centre) levels. In Malawi the 15 month period for which there were PMTCT data showed little increase. This was attributed by national stakeholders to a historical problem with the national collation of PMTCT data, which was the responsibility

of a separate section of the Ministry of Health to that collating ART data. In Zambia, there was a steady increase in numbers receiving PMTCT, which almost doubled from 3286 (2004) to 5624 (2007), mainly at urban health centres.

Annual outpatient department (OPD) visits (Figure 1) excluded visits of clients attending for HIV services and women attending for antenatal care or PMTCT in both countries and were used as an indicator of non-HIV routine workload. OPD patient visits were judged to have relied mainly on clinical staff (doctors, nurses and midwives, and clinical officers), who were also responsible for ART service delivery. In Malawi, all 52 facilities surveyed provided OPD care and VCT services, and 29 provided ART. In Zambia, 32 of the 39 facilities reported complete OPD visit data. Six of the other seven, five of which were in Lusaka, were facilities providing HIV related services, such as AIDS care and support, but not routine health services. Twenty six
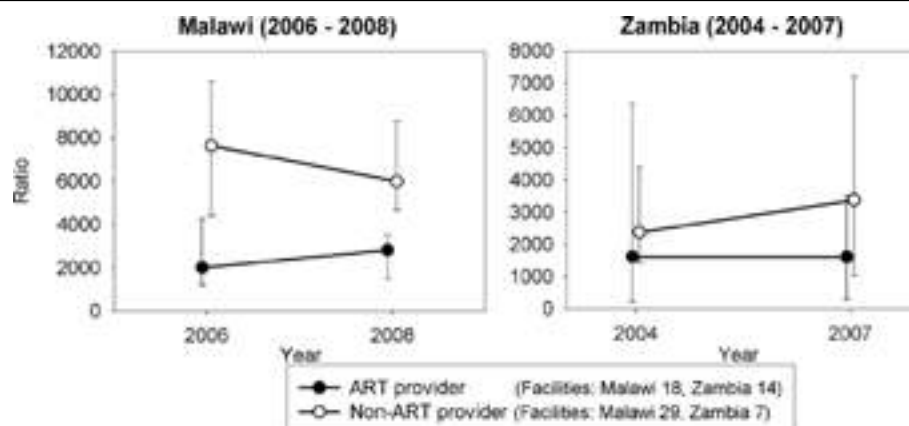
Figure 3 Routine workload in ART and non-ART providing facilities per clinical staff member: Malawi (2006-08) Zambia (2004-07).

facilities reported ART client data; and 22 reported both ART and OPD visit data. National level respondents in Zambia credited both the Global Fund and PEPFAR for scale-up of HIV services; whereas, at the district level, scale-up was attributed to 'global funds' generally rather than to specific GHIs.

In Malawi, there was a 6% rise in routine outpatient department (OPD) visits, from 5.24 (2006) to 5.56 million (2008). The increase was mainly in semi-urban (district hospital) facilities, where visits increased by 41%, from 0.46 to 0.77 million. In Zambia, there was little change in the numbers of OPD visits, which decreased marginally in urban areas, from 654,132 (2004) to 635,020 (2007) and increased in the rural facilities from 84,229 to 91,444. The higher ratio of OPD to ART clients in Malawi, compared to Zambia, is because a higher proportion of Malawi's large general government health facilities were surveyed, capturing a higher proportion of Malawi's OPD as well as its ART client numbers. In Zambia, most ART scale up was in Lusaka, especially in the University Teaching Hospital and four faith-based clinics, which had a higher ratio of ART to OPD clients compared to Malawi. Lusaka accounted in 2004 for 96% of the ART clients across the three districts in this study, falling to 90% by 2007. The Lusaka ART client numbers, reported in our study, accounted for 54% of *all* ART clients reported by Zambia for 2005, falling to 30% of Zambia's population on ART by 2007 [17].

Numbers and categories of health workers
Malawi
In Malawi, between December 2006 and June 2008, there was a modest (10%) rise in clinical staff (doctors, nurses/nurse-midwives, clinical officers and medical assistants), 127 of 140 (91%) of which were allocated to facilities providing ART (Table 3). Much of the increase was in nurses, whose numbers increased by 13%. There was a larger (81%) increase in laboratory and pharmacy staff, all in urban and semi-urban (district hospital) facilities. Health Surveillance Assistants (HSAs), who were responsible for supporting community Primary Health Care service delivery and had been retrained to support HIV counselling, accounted for three quarters of the 33% rise in all health facility staff. Most of the increase in HSA numbers was in rural health centres where 58% of HSAs were located by 2008.
Zambia
In Zambia, between 2004 and 2007, total numbers of health staff increased only slightly (by 4%), from 677 to 703, and numbers of clinical staff remained virtually static (Table 3). Technical support staff (laboratory and pharmacy technicians) increased from 55 to 73 and numbers of dedicated HIV counsellors only increased from 63 to 77. Between 2004 and 2007, clinical staff numbers remained stagnant in both rural facilities (falling from 83 to 82) and urban facilities (falling from 476 to 471).

Table 3 Trends in numbers of facility health staff in Malawi (52 facilities) and Zambia (27 facilities): baseline and follow-up [1]

Health worker category	Malawi:								Zambia:					
	Mar 2006	Mar 2008	Mar 2006	Mar 2008	Mar 2006	Mar 2008	Mar 2006	Mar 2008	2004	2007	2004	2007	2004	2007
	Urban	Urban	Rural	Rural	Semi-urban[2]	Semi-urban	Total	Total	Urban	Urban	Rural	Rural	Total	Total
Doctors[3]	59	65	2	5	8	10	*69*	*80*	16	23	6	6	*22*	*29*
Nurses[4]	523	651	221	199	295	329	*1039*	*1179*	384	381	61	61	*445*	*442*
Clinical Officers & Medical Assistants [5]	135	94	67	85	103	115	*305*	*294*	76	67	16	15	*92*	*82*
Total doctors, nurses, clinical officers, medical assistants	**717**	**810**	**290**	**289**	*406*	*454*	*1413*	*1553*	476	471	83	82	*559*	*553*
Technicians[6]	37	65	1	1	24	46	*62*	*112*	51	62	4	11	*55*	*73*
Health Surveillance Assistants + Dedicated HIV counsellors[7]	74	158	456	737	205	381	*735*	*1276*	47	56	16	21	*63*	*77*
TOTAL	828	1033	747	1027	635	881	*2210*	*2941*	574	589	103	114	*677*	*703*

[1]Numbers of each category of health worker shown are for facilities reporting such staff at baseline and follow-up

[2]The term semi-urban area has been used here to denote district capitals (district hospitals). Rural in Malawi refers to rural health centres. Urban refers to the three main urban centres where the central hospitals and urban health centres are located

[3]Doctors include general and specialist doctors

[4]Nurses include all categories of nurses, midwives and nurse technicians

[5]Malawi: Clinical Officers and Medical Assistants. Zambia does not have a medical assistant cadre

[6]Technicians include laboratory technicians and assistants; and pharmacy technicians and assistants

[7]Health Surveillance Assistants exist only in Malawi only. Dedicated HIV counsellors are reported for both Malawi and Zambia

HIV and non-HIV workload

Figure 2 shows trends in the average (median) ratios of non-HIV OPD visits to numbers of facility clinical staff in surveyed facilities across the two time periods. Medians are used instead of means to reflect the effects of changes in small as well as large facilities, as changes in facilities with very large numbers of OPD visits can have a disproportionate effect on overall mean staff-patient ratios. Where trends in median and mean ratios diverged, these differences are presented.

Malawi

In Malawi, there was a 24% increase between 2006 and 2008 in median OPD workload in semi-urban district hospitals, though rising from a low baseline of 1202 to 1493 patient visits per clinical staff member (Figure 2). There was twice as fast an increase (51%) in the overall mean patient-staff ratio at district hospitals. Median OPD workload reduced from higher levels in both rural health centres (from 6483 to 5574 visits per staff member) and in urban hospitals and clinics (8325 to 4793). However, the overall mean workload remained around 4000 visits per staff member in rural health centres and fell only slightly from 5216 to 4561 in urban facilities. Across the 52 facilities surveyed, the increase in clinical staff and OPD patient visit numbers were comparable so that there was little overall change in workload.

Figure 3 shows a similar analysis of workload, comparing facilities providing ART with those not providing ART. Rural health centres constituted almost all (28 of 29) of the non-ART providers, where workload was measured, so that the downward trend in workload corresponds closely with the downward rural trend shown in Figure 2. The upward trends in non-HIV workload in ART providing facilities in Malawi were from a low base and were found in six rural health centres (rising from 2024 to 2709 OPD visits per staff member) and in the seven district hospitals (1202 to 1493 - see above). In summary, the data show higher routine workloads for clinical staff in rural non-ART providing health centres; and low but rising workloads in all facilities that were providing ART.

Facility managers in Malawi reported that staff numbers had increased, but not at the rate of increase in work-load due to HIV/AIDS service scale-up. The provision of new services, such as nutritional support alongside ART services, had resulted in increased patient attendances, workload and client waiting times due to staff shortages. There were other examples:

> *".... The procurement of the CD4 machine has made our workload even worse because everybody in town wants to prove their HIV status here .... the fact that soon we will be doing viral loads will stress us more if no additional laboratory staff will be recruited" -*
> (Hospital laboratory technician, Malawi)

District nursing officers stated that nurses were the most overburdened because they provided most direct care to patients, as well as delivering HIV/AIDS services. Some respondents believed that this was impairing quality of care (though this study did attempt to substantiate this view):

> *"... Although the nurses have the skills necessary to counsel a client, they are still following short cuts when executing their duties because of too much work ...... this is so because counselling takes more time to complete and with many clients waiting for you outside, you just do what you can afford......"*
> (District Nursing Officer, Malawi)

Other respondents believed that service quality was being maintained and that contrary views were more an expression of frustration due to work overload than to actual deteriorations in care. Staff training was reported as a positive effect, in that general care for non-HIV as well as HIV services had improved. By mid 2008, newly trained HSAs in Malawi were providing VCT, reducing the need for clinical staff to allocate time to these activities, especially in district hospitals and health centres. Also, the opening of more sub-district facilities was reported to be reducing client numbers at district and central hospitals.

Facility managers reported that workload, which had been a long-standing and worsening problem in Malawi, was being tackled in several ways, including: training and rotating additional clinical staff through HIV/AIDS clinics, thereby increasing the pool of trained staff and reducing the risk of 'burn-out'. Burnout was more likely if facilities relied on a small number of dedicated staff for delivering HIV/AIDS care. Other strategies included training HSAs, volunteers and retired nurses to provide VCT; integrating PMTCT into routine antenatal care and delivering it after antenatal clinics closed; and paying staff a Global Fund-supported over-time allowance. However, the latter was criticised by laboratory technicians, HSAs and ward attendants who were excluded from the increment and felt it discriminatory when they also worked additional hours.

Zambia

In Zambia, routine non-HIV OPD workload, which was already more than three times higher in rural facilities, rose by 24% (from 4397 to 5439 patient visits per clinical staff member - Figure 2), whereas urban OPD workload increased only slightly (from a median of 1319 to

1371). Mean workloads also rose in rural areas, but were only around 20% (18-21%) of the median workloads, principally because the 46-48 clinical staff in Mumbwa district hospital represented around 60% of all clinical staff across the nine rural facilities that were included in the analysis. If this rural district hospital, which appeared to be relatively well staffed and had much lower patient-staff workload ratios, is excluded from the analysis, the mean workloads are twice as high in the remaining rural facilities and the median workload shows a 35% increase over the 2004-07 time period. These findings illustrate the importance of using medians as well as means to measure average workload in samples that include a small number of large and many small facilities.

The analysis of workload (Figure 3) comparing ART and non-ART providing facilities in Zambia suggests that routine workload increased in facilities that did not provide ART, rising from a median of 2380 in 2004 to 3381 OPD visits per clinical staff member in 2007. However, the analysis was based on only seven facilities and the mean workload fell slightly in these non-ART providing facilities. Stratified analysis showed that the increase in mean and median workload, the latter up by 40%, was in the four *rural* facilities that did not provide ART and both measures showed a decrease in workload in the three urban facilities. Mean and median workloads also increased greatly in the five rural facilities providing ART, with the median workload increasing by over 80%, from 3001 to 5439 OPD visits per clinical staff member. In summary, the data show a persistent upward trend in both median and mean rural facility OPD workloads between 2004 and 2007.

Respondents in Zambia reported that voluntary lay counsellors were relieving some of the HIV counselling burden on health staff and that the biggest obstacle now was the shortage of frontline clinical staff (nurses, clinical officers and doctors), especially in rural areas. One district informant commented that due to the significant shortage of staff, it was common for one nurse to attend to up to sixty patients in a ward at a time. Informants in rural Mumbwa, in Zambia, attributed increases in staff workload to the scale-up of HIV/AIDS services coupled with the fact that there had been no corresponding increases in the numbers of staff brought into the health system.

Rural facilities were having difficulty attracting health staff due to a lack of accommodation, despite the rural retention programme [18], introduced as a pilot in 2003, which aimed to retain health workers through the provision of a hardship allowance, housing rehabilitation and vehicle loans. A lack of existing accommodation was mentioned as one reason for the scheme's failure. Several respondents spoke of rural health centres that had

only one nurse or clinical officer who was rolling out VCT and ART services in addition to routine duties.

"... Let's take the rural health centre, where we have only 3 staff they also have to do all this extra paper work, follow-ups etc, so in the end the people are overworked ... No new staff have been brought to the system since these HIV programmes were introduced".
(Hospital manager, Mumbwa rural district, Zambia)

During Round Two follow up field work, Mumbwa's district health team was piloting an initiative to encourage school-leavers to take up nursing training and then return to work in the district. The inability to retain staff in Zambia was seen as a financial issue and there were frequent references to higher salaries being offered by PEPFAR-funded NGOs, which were attracting staff away from government service.

"The biggest problem is like where they have been also providing support to the NGOs and NGOs tend to offer good salaries and health workers (when) trained go to the private sector. The support ... has contributed to brain drain, work overload for the remaining staff".
(Donor, national level Zambia)

Where available, population catchment data were collected from district offices in Zambia and from the national level in Zambia to compute and demonstrate trends in clinical staff densities, i.e. the ratios of health facility clinical staff numbers (doctors, nurses and clinical officers/medical assistants) to health facility catchment population sizes, adjusted for population growth. Both sets of data (staff numbers and catchment populations) were available in 36 facilities in Malawi and 18 facilities in Zambia. In Malawi between 2006 and 2008, health worker densities fell slightly in rural health centres from 1.8 to 1.7 per 10,000 and in surveyed urban health centres from 1.7 to 1.25 per 10.000. In Zambia, clinical staff densities in surveyed rural facilities fell from 2.9 (2004) to 2.1 (2007) per 10,000. In contrast, clinical staff densities increased in the urban areas from 6.0 to 7.0 per 10,000, rising from a two-fold to a three-fold greater staff density in urban versus rural areas.

Discussion

These findings add to the 'thin and contested ... knowledge base' around the effects of GHIs on countries' health systems [19]. Data collected directly from facilities and district offices corresponded with nationally reported data [17,20], confirming that population-wide scale-up of ART, PMTCT and VCT services has been happening in Malawi (2006-08) and Zambia (2004-07).

More importantly, it provides facility level data that demonstrate large increases in HIV service client loads, including an almost threefold increase in ART clients over 30 months in Malawi, and a fourfold increase in ART clients over 48 months in Zambia. The type of intra-facility analysis conducted in this study has been able to demonstrate the correlations in trends between ART scale-up, routine workload and the availability of clinical staff at the facility level. While OPD visits provide only one measure of clinical staff workload, they represent an indicator that was routinely reported by facilities to District Health Management Teams. Such evidence therefore does not rely on special data collection exercises.

In Malawi, there was a modest (10%) increase in clinical staff numbers (doctors, nurses and midwives, and clinical officers and medical assistants) at district hospitals and urban health centres, but not in rural health centres where the increase in staff was principally through non-clinical HSAs. The increase in routine workload in facilities providing ART, notably at the district hospitals but also at rural health centres, suggests a steady increase in client utilisation of these facilities. Whether Malawi's decision to allocate most (91%) of the increases in clinical staff to ART facilities was in response to the increased workload, and/or the greater availability of staff helped to attract more patients, it suggests a coherent approach to health worker distribution when faced with the challenge of delivering ART on top of routine care. The increase in clinical staff in Malawi resulted in a decrease in OPD workload in rural and urban facilities, with a slight increase in semi-urban (district hospital) facilities.

ART scale-up in these three districts of Zambia between 2004 and 2007, was set against a static urban routine outpatient workload, a 24% increase in workload in rural facilities and a 35% rise in smaller rural facilities. A recent study [21] reported workload as the most important cause of health worker burnout in urban health facilities. These facilities experienced a net decrease in clinical staff numbers, which was proportionately greater in the rural district, and only a modest increase in support staff (technicians and dedicated HIV counsellors). In 2004, rural Mumbwa facility staff were coping with four times as many OPD visits as Lusaka (the capital city) facilities and twice as many as facilities in urban Kabwe. By the end of 2007, dedicated HIV counsellors in Zambia still only accounted for 11% of staff directly delivering a service to clients/patients in surveyed facilities, compared to counsellors and HSAs in Malawi who accounted for 43% of such staff. Unlike Malawi, these district facilities in Zambia did not appear to be using task shifting to non-clinical staff to manage the increased HIV workload during this period. While

there was an upward trend in non-HIV workload in ART providing facilities, which may mean they were attracting more patients, the urban-rural disparity was stronger.

The GHIs, notably Global Fund in both countries and PEPFAR in Zambia, were clearly providing the significant proportion of the external funding which was achieving this impressive scale-up in life-saving HIV/AIDS service coverage. An increase from US$3 (2003) to US$5 (2006) per capita expenditure on HIV in Malawi and from US$10 to US$14 per capita in Zambia was due to external resources [4]. The perception at the national level in Zambia was that in 2008-09 PEPFAR would account for half and the Global Fund for one third of all funding for ART roll-out [22]. Several reports and other studies have pointed to a large and longstanding degree of rural-urban inequity in Zambia. Only 52% of all health workers and 24% of doctors live and work in rural areas where two thirds of Zambians reside [23], and there are high vacancy rates and a rapid turnover of staff in rural areas [24]. Zambia's Public Expenditure Review national HRH survey [25] reported much higher vacancy rates in rural compared to urban health centres for the following health worker categories: doctors (91%:38%), clinical officers (58%:43%), midwives (50%:32%), nurses (43%:23%). Attribution of findings on health workforce distribution, trends and incentives to the inputs and influence of the Global Fund and PEPFAR - and to government responses to GHIs - is more difficult. However, the findings from this study show a divergence and a deterioration in rural-urban equity in Zambia, during the period when PEPFAR and the Global Fund were likely to be having a major impact.

WHO specifies a minimum workforce threshold estimate of 2.28 clinical staff (doctors, nurses, midwives) per 1,000 people [26] (23 per 10,000). Clinical staff densities in our study (between 2.9 and 2.1 in the rural facilities and between 6 and 7 in urban facilities) were lower than the 7.9 per 10,000 that have been reported nationally in Zambia in 2004 which had risen to 9.8 per 10,000 in 2007 [23]. This could partly be attributed to lack of designated catchment populations for the large district and central hospitals. The University Teaching Hospital did not provide data on staff numbers. Rural Mumbwa district (at 2.9 in 2004 falling to 2.1 in 2007), however, was typical of health worker densities in three of six rural districts cited in an early draft of the Global Fund's Five Year Evaluation [4], which were categorised as 'poor infrastructure rural' (mean 2.6, range 1.7-3.5). More weight can be given to the Zambian than to the Malawi staff density findings, as in the former all public and private fixed facilities were mapped and were included in the study if they were providing ART. In

Malawi, only public sector and faith-based facilities were included, which meant that clinical staff in NGO facilities, likely to be common in urban areas, were not included in the study.

The slightly larger rural-urban difference in nationally reported health worker density in Zambia (4.5:16.0) [23], compared to Malawi (3.5:11.7) [27], may reflect contextual differences: an estimated 35% of Zambia's population live in urban areas [28], compared to 18% in Malawi [29]. The population density in rural areas of Malawi is six times that of Zambia and is among the highest rural densities in the world [30]. However, whatever the underlying factors, the evidence (based on one rural district) suggests that some rural areas have been falling behind urban areas in Zambia in terms of clinical staff allocations, during the period that GHI funded scale-up accelerated. While this study did not aim to measure rural-urban ART coverage levels, the high proportion of Zambia's nationally reported ART client estimates that were attending facilities in Lusaka suggests that ART service scale-up was heavily skewed towards the capital city, at least during the 2004-07 period.

Quantification of inputs and expenditure on specific health systems components, and efforts by us and by the Global Fund [4] to track funds to the district and facility level, were unsuccessful. Therefore, establishment of a causal chain and reliable attribution of health systems effects to particular GHIs is not possible. However, our district level findings do provide empirical evidence that supports other mainly national level studies and government and Ministries of Health reports of increasing workload for health staff, especially in rural areas. Malawi appears to have been somewhat more successful than Zambia in recruiting clinical staff, and more so in allocating HSAs and counsellors to supporting scale up. Despite Zambia's efforts and donor support to its rural health worker incentive and retention scheme [18], progress in implementing its human resources strategic plan has been slow and postings have favoured urban areas at the expense of rural areas [17,23]. The scheme has had limited success due to accommodation shortages, a short timeframe for retention allowances and eligibility criteria that until 2007 included only doctors, though it has since been extended to include nurses and nurse tutors [23]. According to the Ministry of Health in 2009, the current staff establishment contained 32,688 approved positions, though not necessarily funded posts, representing 65% of the staffing requirements for the new structure [31]. Zambia's national Human Resources for Health Strategic Plan [18] has also lacked concerted GHI-support for hiring new health workers [31].

Two explanations may account for the overall less effective scale-up in clinical staff in Zambia: the country may have produced additional clinical staff over 2004-07, but was losing them to better funded posts in the NGO and private for profit sectors (and to emigration) [32], or it was not producing sufficient clinical staff to meet replacement needs. Others have commented on how rural-to-urban staff migration is compounded by public-to-private provider brain drain, as part of a broader phenomenon of rural-urban inequity [33]. Key informant interviews in our study reported that urban facilities in Zambia had benefited more than rural facilities from large levels of new resources; and they also reported significant migration from government employment to well funded NGOs, which we could not confirm and quantify. Two studies have reported that the higher wages offered by PEPFAR-funded NGOs were attracting staff away from the public sector [22,34]. Up to 2007, PEPFAR was paying salary top-ups and overtime payment for ART delivery [34]. Together, these findings suggest a PEPFAR-effect that was benefiting the facilities it supports at the expense of other facilities. Prior to the GHIs becoming major players, NGOs were reported to be paying between 23% and 46% more than government [35]. As Dussault and Franchescini have reported, even where countries have comprehensive health worker policies and strategies, funding may not follow and geographical imbalances result: "Highly-skilled professionals and institutions respond more to incentives than to control mechanisms" [33].

Malawi's health workforce response suggests differences to Zambia in GHI health systems' effects. Support from donors in April 2005 [11], including the Global Fund which agreed to the re-allocation of Malawi's Round 1 grant, enabled Malawi to start to implement its Emergency Human Resource Programme [12]. Demand-side differences, whereby Malawi exerted pressure on the Fund, or supply-side differences, whereby Global Fund portfolio managers interpreted the Fund's guidelines differently in Malawi, could have accounted for this decision to re-allocate the Round 1 grant. As a result, Malawi's Programme has focused on funding basic training (doubling the number of nurses and tripling the number of doctors in training), staff recruitment, deployment (including to rural areas), retention (partly through salary top-ups), basic training and retraining of HSAs to deliver HIV services, and incentives for training tutors [11-13]. Malawi, with the support of the Global Fund through a central pooled mechanism, has been able to invest a greater proportion of its resources on basic training: "... a 165% increase in pre-service training and 79% increase in post-basic training" [12], compared to Zambia.

Conclusions

The importance of these findings is that they represent what the Global Fund Five Year Evaluation was unable

to demonstrate - facility level scale up in clients and service episodes, associating these with indicators of health systems capacity - in this case health worker categories and numbers. The data time-periods are not the same - Malawi's baseline data range from the last quarter of 2005 to early 2008, compared with the start of 2004 to the end of 2007 for Zambia - but clear differences as well as similarities in trends are evident.

Getting better evidence for action

Our findings illustrate much of the 'messiness' associated with reliance on the data obtained from routine health facility information systems, which health systems in sub-Saharan African countries generate and on which they rely for evidence for action. Routine data that are based on health facility records are prone to errors at all stages from initial recording in facility registers, through compilation of data at the facility level for returns to district health offices, during compilation at the district level for reporting to national level, and in analysis at the national level. Data analysis in this study enabled outliers and data of questionable plausibility to be identified and checked, using original research tools/proformas where available. However, this could not preclude errors earlier in the health information system chain, at the level of the health facility recording and reporting system. Health information performance and problems can also be programme-specific. For example, routine PMTCT data in Malawi was not considered to be reliable up to 2007.

One objective of this paper has been to illustrate the potential from analysing health facility data and our analysis demonstrated some of the methodological problems and responses: median workloads (staff-client ratios) are better measures than means for taking into account changes in smaller facilities with low client numbers, because a small number of facilities with large client numbers can have a disproportionate effect on an analysis that uses means, but both measures are important. The collection of facility level data on trends in this study, which the Global Fund Five Year Evaluation did not attempt, demonstrated how health facilities in Malawi and Zambia have been managing to deliver HIV and AIDS services to much greater numbers, while coping with routine workload. The key informant interview data corroborated and helped to illustrate the effects - and the potential for burnout among health workers. The findings are also consistent with and reinforce other findings on rural-urban inequities in Zambia, particularly in terms of workload. Considerable effort was invested by researchers in Zambia to obtain complete data-sets directly from facilities at baseline (2006-07) and again at follow-up (2008) using improved tools. The objective was to show trends in facility outputs of

interest: numbers of HIV and non-HIV clients and service episodes. Similar data were collected from national programme offices in Malawi.

In mid-2008, data sets recording OPD and non-HIV priority service clients and episodes were obtained in electronic format directly from district health management offices in Zambia. Reasons for greater completeness of district records, where this was found, were that many health facilities kept no copies of the returns they had sent to district offices; and some, over-time, discarded or mislaid original records. District health offices in Zambia were more consistent than facilities in recording catchment populations (numbers of adults, under ones and under five year old children, women of child bearing age), which facilitated calculation of coverage rates, including immunisation and family planning coverage (data not shown).

The value of staff-population density calculations is more limited in areas where there is a mixture of government and non-government (for-profit and non-profit) providers, and where there are tertiary specialist hospitals that attract patients from afar. Both of these features are characteristic of urban areas. Where staff density data are more useful is to demonstrate health worker allocations and policy responses in rural districts, as in the case of rural Mumbwa district in Zambia where staff densities were falling. The data in this study do not definitely show a growing health worker density gap between rural and urban facilities, but they point to such a gap in those facilities providing HIV service that had catchment population data. Even in the absence of data from non-public facilities, as was the case in Malawi, the available data can still be translated into evidence that should be available to government, with respect to staff allocations to public sector facilities, and to assist with implementation of the WHO rural retention guidelines and policy recommendations [36].

Acting on the evidence

Staff retention is not only about salaries, top-ups and financial incentives and includes motivational factors that stem from having the infrastructure, management systems, drugs and other commodities for delivering services [37], which the GHIs have supported. The Global Fund was contributing an estimated 23% of its funding to human resources, though mostly (apart from Malawi) on improving the capacity of existing staff rather than on training and hiring new staff [19]. Malawi's receipt of large levels of resources from only one GHI - the Global Fund, which was aligning itself with government and pooling its funding with other donors and government - may have made it easier for government to roll out a coordinated national health workforce strategy. The training of new clinical staff, which started in 2005-06

in Malawi, would take time; and the training of volunteers and HSAs as HIV counsellors has been a useful quick response [38]. However, task-shifting and short-term in-service training should not be considered panaceas [39] and need to be part of comprehensive government-led strategies [40]. An even greater investment by donors and governments in the basic pre-service training of nurses, clinical officers, medical assistants and doctors is required. It is shortages and lower densities of clinical staff that lead to higher maternal, infant and under-five mortality rates [41].

Up to 2007, PEPFAR had a limit of $1 million per-country to be spent on pre-service training, which was raised to $6 million (or 3% of country budgets) from 2009 [34]. A limited pool of health workers provokes an inevitable competitive tension between programmes funded by government and different donors, especially where GHIs can fund higher salaries and incentives. Reports have highlighted to PEPFAR its lack of support for the production of new health workers and its effects on health worker distribution [31]. The 2008 PEPFAR reauthorisation promised to take the bold step of training 'at least 140,000 new healthcare workers in HIV/AIDS prevention, treatment and care' [42], by 2013, with an initial phase (2009-2010) of identifying opportunities for joint health worker training with GHIs [10]. This may form part of the health systems strengthening component of the new US Global Health Initiative [43]. If overall levels of GHI funding to countries such as Zambia 'flat-line' or decrease [44,45], decisions around the use of available funds to produce and retain new clinical staff, as the Global Fund has enabled to happen in Malawi, will become even more important.

Author details

[1]Department of Epidemiology and Public Health Medicine, Division of Population Health Sciences, Royal College of Surgeons in Ireland, Dublin, Ireland. [2]Centre for Social Research, University of Malawi, Zomba, Malawi. [3]Institute of Economic and Social Research, University of Zambia, Lusaka, Zambia. [4]College of Medicine, University of Malawi, Blantyre, Malawi. [5]Department of Global Health Development, Faculty of Public Health and Policy, London School of Hygiene and Tropical Medicine, London, UK.

Authors' contributions

RB led on study design, data analysis, and drafting of the article. JK participated in study design, data analysis (particularly the Malawi data) and drafting of the article. JS participated in data collection, data analysis (particularly the Zambia data) and drafting of the article. PD participated in data analysis and drafting of the article. VM participated in study design, data analysis (particularly the Malawi data) and drafting of the article). AW participated in data collection, data analysis and drafting of the article. All authors read and approved the final manuscript.

References

1. UNAIDS: Financial Resources Required to Achieve Universal Access to HIV Prevention, Treatment, Care and Support. *Geneva* 2007.
2. Oomman N, Bernstein M, Rosenzweig S: Following the Funding for HIV/AIDS: a comparative analysis of the funding practices of PEPFAR, the Global Fund and World Bank MAP in Mozambique, Uganda and Zambia. Center for Global Development: Washington 2007.
3. UNAIDS: Report on the global AIDS epidemic. *Report on the global AIDS epidemic. Geneva* 2008.
4. Global Fund to Fight AIDS TB and Malaria and Macro International: Global Fund Five Year Evaluation: Study Area 3. The Impact of Collective Efforts on the Reduction of the Disease Burden of AIDS, Tuberculosis and Malaria. *The Global Fund: Geneva* 2009.
5. Samb B, Evans T, Dybul M, Atun R, Moatti JP, Nishtar S, Wright A, Celletti F, Hsu J, Kim JY, Brugha R, Russell A, Etienne C: An assessment of interactions between global health initiatives and country health systems. *Lancet* 2009, **373**:2137-2169.
6. Brugha R, Donoghue M, Starling M, Ndubani P, Ssengooba F, Fernandes B, Walt G: The Global Fund: managing great expectations. *Lancet* 2004, **364**:95-100.
7. Stillman K, Bennett S: System-Wide Effects of the Global Fund: interim findings from three country studies. Abt Associates Inc: Bethesda 2005.
8. Wilkinson D, Brugha R, Hewitt S, Trap B, Eriksen J, Nielsen L, Weber W: Assessment of proposal development and review process of the Global Fund to Fight AIDS, Tuberculosis and Malaria: assessment report. *Euro Health Group* 2006.
9. The Global Fund to Fight AIDS TB and Malaria: Zambia Grant Portfolio. [http://portfolio.theglobalfund.org/Country/Index/ZAM?lang=en].
10. The United States President's Emergency Plan for AIDS Relief (PEPFAR) Zambia. [http://zambia.usembassy.gov/root/pdfs/pepfarinfobooklet.pdf].
11. Ministry of Health Malawi: Human Resources in the Health Sector. Towards a Solution. Government of Malawi: Lilongwe 2004.
12. Palmer D: Tackling Malawi's human resources crisis. *Reprod Health Matters* 2006, **14**:27-39.
13. World Health Organization, Global Health Workforce Alliance: Malawi's Emergency Human Resources Programme. 2007.
14. Ministry of Health Malawi: A Report of a Country-wide Survey of HIV/AIDS Services in Malawi for the year 2005. Government of Malawi: Lilongwe 2005.
15. Pope C, Ziebland S, Mays N: Qualitative research in health care. Analysing qualitative data. *BMJ* 2000, **320**:114-116.
16. Greenhalgh T, Taylor R: Papers that go beyond numbers (qualitative research). *BMJ* 1997, **315**:740-743.
17. Ministry of Health Zambia: Zambia Country Report. Multi-Sectoral AIDS Response Monitoring and Evaluation Biennial Report 2006-2007. Government of Zambia: Lusaka 2008.
18. Ministry of Health Zambia: Human Resources for Health Strategic Plan, 2006-2010. Government of Zambia: Lusaka 2005.
19. G8 Task Force on Global Action for Health Systems Strengthening: Global Action for Health Systems Strengthening. Policy Recommendations to the G8. *Tokyo* 2009.
20. Munthali C, Maleta K, Chitonya D, Ndawala J, Banda G, Chiocha M: Malawi Monitoring HIV and AIDS Evaluation Report 2007: follow up to the UN declaration of commitment on HIV and AIDS. *Lilongwe* 2008.
21. Kruse G, Chapula B, Ikeda S, Nkhoma M, Quiterio N, Pankratz D, Mataka K, Chi B, Bond V, Reid S: Burnout and use of HIV services among health care workers in Lusaka District, Zambia: a cross-sectional study. *Human Resources for Health* 2009, **7**:55.
22. Hanefeld J, Musheke M: What impact do Global Health Initiatives have on human resources for antiretroviral treatment roll-out? A qualitative policy analysis of implementation processes in Zambia. *Human Resources for Health* 2009, **7**:8.

23. Ministry of Health Zambia: **Joint Annual Review for 2007 Main Report.** Governemnt of Zambia: Lusaka 2008.

24. Herbst CH, Gijsbrechts D: **Comprehensive and Accurate Information on Health Worker Stock, Profiles and Distribution (SPD) in Zambia: Analysis of the JICA data in Human Resources.** *Health Research Conference, Mulungushi International Conference Centre: Lusaka* 2007.

25. Picazo OKS: **The State of Human Resources for Health in Zambia; Findings from the Public Expenditure Review Tracking and Quality of Service Delivery Survey 2005/2006.** *Lusaka* 2007.

26. World Health Organization: **The world health report 2006: working together for health.** World Health Organization: Geneva 2006.

27. Ministry of Health Malawi: **Malawi Health Sector Employee Census.** Government of Malawi: Lilongwe 2007.

28. UNAIDS: **Zambia Human Development Report 2007/2008 fact sheet.** [http://www.unaidsrstesa.org/countries/zambia].

29. UNAIDS: **Malawi Human Development Report 2007/2008 fact sheet.** [http://www.google.ie/search?client=firefox-a&rls=org.mozilla%3Aen-US%3Aofficial&channel=s&hl=en&source=hp&q=malawi+human+development+report+fact+sheet+urban+&meta=&btnG=Google+Search].

30. **Malawi. Water Aid International webpage.** [http://www.wateraid.org/international/what_we_do/where_we_work/malawi/].

31. Campbell J, Caffrey M: **Zambia: Taking forward action on Human Resources for Health with DFID/OGAC and other partners.** Capacity Project, ICS Integrare 2009.

32. Kinfu Y, Dal Poz M, Mercer H, Evans D: **The health worker shortage in Africa: are enough physicians and nurses being trained?** *Bulletin of the World Health Organization* 2009, **87**:205-230.

33. Dussault G, Franceschini MC: **Not enough there, too many here: understanding geographical imbalances in the distribution of the health workforce.** *Hum Resour Health* 2006, **4**:12.

34. Oomman N, Bernstein M, Rosenzweig S: **Seizing the Opportunity on AIDS and health systems: a comparison of donor interactions with national health systems in Mozambique, Uganda and Zambia, focusing on the US President's Emergency Plan for AIDS Relief, the Global Fund to Fight AIDS, TB and Malaria, and the World Bank's Africa Multi-Country AIDS Program.** Center for Global Development: Washington 2008.

35. Huddart J, Furth R, Lyons J: **The Zambia HIV/AIDS Wrokforce Study: Preparing for Scale-up.** *Quality Assurance Project* 2004.

36. World Health Organization: **Increasing access to health workers in remote and rural areas through improved retention. Global Policy Recommendations.** World Health Organization: Geneva 2010.

37. Willis-Shattuck M, Bidwell P, Thomas S, Wyness L, Blaauw D, Ditlopo P: **Motivation and retention of health workers in developing countries: a systematic review.** *BMC Health Serv Res* 2008, **8**:247.

38. Sanjana P, Torpey K, Schwarzwalder A, Simumba C, Kasonde P, Nyirenda L, Kapanda P, Kakungu-Simpungwe M, Kabaso M, Thompson C: **Task-shifting HIV counselling and testing services in Zambia: the role of lay counsellors.** *Human Resources for Health* 2009, **7**:44.

39. Philips M, Zachariah R, Venis S: **Task shifting for antiretroviral treatment delivery in sub-Saharan Africa: not a panacea.** *Lancet* 2008, **371**:682-684.

40. Lehmann U, Van Damme W, Barten F, Sanders D: **Task shifting: the answer to the human resources crisis in Africa?** *Human Resources for Health* 2009, **7**:49.

41. Anand S, Barnighausen T: **Human resources and health outcomes: cross-country econometric study.** *Lancet* 2004, **364**:1603-1609.

42. Government of the United States: **US Global Leadership Against HIV/AIDS TB and Malaria Reauthorisation Act of 2008. Public Law 110-290.** 2008.

43. Government of the United States: **Implementation of the Global Health Initiative: Consultation Document.** 2010.

44. Zwillich T: **Obama administration may flat-line funding for PEPFAR.** *Lancet* 2009, **373**:1325.

45. PEPFAR: **Making a Difference: Funding.**[http://www.pepfar.gov/press/80064.htm], Updated November 2009.

CH 2 | 5 | 6

Motivation, money and respect: A mixed-method study of Tanzanian non-physician clinicians☆

Clare I.R. Chandler [a,*], Semkini Chonya [b], Frank Mtei [b], Hugh Reyburn [a,b], Christopher J.M. Whitty [a]

[a] *London School of Hygiene & Tropical Medicine, Infectious & Tropical Diseases, Keppel Street, London WC1E 7HT, UK*
[b] *Joint Malaria Programme, Kilimanjaro Christian Medical Centre, Moshi, Tanzania*

ARTICLE INFO

ABSTRACT

Poor quality of care is a major concern in low-income countries, and is in part attributed to low motivation of healthcare workers. Non-physician clinicians (mid-level cadre healthworkers) are central to healthcare delivery in half of the countries in Africa, but while much is expected from these clinicians, little is known about their expectations and motivation to perform well. Understanding what motivates these healthworkers in their work is essential to provide an empirical base for policy decisions to improve quality of healthcare. In 2006–2007, we conducted a mixed-method study to evaluate factors affecting motivation, including reasons for varying levels of motivation, amongst these clinicians in Tanzania. Using a conceptual framework of 'internal' and 'environmental' domains known to influence healthworker motivation in low-income countries, developed from existing literature, we observed over 2000 hospital consultations, interviewed clinicians to evaluate job satisfaction and morale, then designed and implemented a survey instrument to measure work motivation in clinical settings. Thematic analysis (34 interviews, one focus group) identified social status expectations as fundamental to dissatisfaction with financial remuneration, working environments and relationships between different clinical cadres. The survey included all clinicians working in routine patient care at 13 hospitals in the area; 150 returned sufficiently complete data for psychometric analysis. In regression, higher salary was associated with 'internal' motivation; amongst higher earners, motivation was also associated with higher qualification and salary enhancements. Salary was thus a clear prerequisite for motivation. Our results are consistent with the hypothesis that non-salary motivators will only have an effect where salary requirements are satisfied. As well as improvements to organisational management, we put forward the case for the professionalisation of non-physician clinicians.

Human Resources for Health

RESEARCH   **Open Access**

CrossMark

Transformational leadership, empowerment, and job satisfaction: the mediating role of employee empowerment

Sang Long Choi[1], Chin Fei Goh[2*], Muhammad Badrull Hisyam Adam[3] and Owee Kowang Tan[2]

Abstract

Background: Recent studies have revealed that nursing staff turnover remains a major problem in emerging economies. In particular, nursing staff turnover in Malaysia remains high due to a lack of job satisfaction. Despite a shortage of healthcare staff, the Malaysian government plans to create 181 000 new healthcare jobs by 2020 through the Economic Transformation Programme (ETP). This study investigated the causal relationships among perceived transformational leadership, empowerment, and job satisfaction among nurses and medical assistants in two selected large private and public hospitals in Malaysia. This study also explored the mediating effect of empowerment between transformational leadership and job satisfaction.

Methods: This study used a survey to collect data from 200 nursing staff, i.e., nurses and medical assistants, employed by a large private hospital and a public hospital in Malaysia. Respondents were asked to answer 5-point Likert scale questions regarding transformational leadership, employee empowerment, and job satisfaction. Partial least squares-structural equation modeling (PLS-SEM) was used to analyze the measurement models and to estimate parameters in a path model. Statistical analysis was performed to examine whether empowerment mediated the relationship between transformational leadership and job satisfaction.

Results: This analysis showed that empowerment mediated the effect of transformational leadership on the job satisfaction in nursing staff. Employee empowerment not only is indispensable for enhancing job satisfaction but also mediates the relationship between transformational leadership and job satisfaction among nursing staff.

Conclusions: The results of this research contribute to the literature on job satisfaction in healthcare industries by enhancing the understanding of the influences of empowerment and transformational leadership on job satisfaction among nursing staff. This study offers important policy insight for healthcare managers who seek to increase job satisfaction among their nursing staff.

Keywords: Transformational leadership, Job satisfaction, Empowerment, Nurse, Healthcare management

Background

In September 2010, the Economic Transformation Programme (ETP) was launched by the Malaysian government as part of the National Transformation Programme to achieve a self-sufficient, developed nation by 2020 [1]. The ETP was established to develop 12 National Key Economic Areas (NKEAs) to elevate gross national income per capita to US$15 000. Healthcare is one of the 12 NKEAs covered by the ETP. Changing demographics, an aging population, increasingly health-conscious lifestyles, and an affluent society have strengthened the rapidly growing healthcare sector in Malaysia [1]. The Malaysian government plans to create 181 000 new healthcare jobs by 2020 through the ETP [2].

In general, the Ministry of Health Malaysia has overall responsibilities to formulate policies for human resources regarding health [3]. The Ministry of Health acknowledges that it is of upmost importance to address human capital development in the Malaysian healthcare sector [3, 4]. An adequate and competent workforce is vital to improving

* Correspondence: gcfei@utm.my
[2]Faculty of Management, Universiti Teknologi Malaysia, 81310 Johor Bahru, Johor, Malaysia
Full list of author information is available at the end of the article

Choi *et al. Human Resources for Health* (2016) 14:73

Page 2 of 14

the delivery of healthcare services by reducing the probability of medical errors and improving service quality, among other benefits. In this regard, the shortage of human resources is the main problem experienced by the healthcare sector in Malaysia [5, 6]. Specifically, the shortage of healthcare professionals who can provide skilled nursing services is a major challenge. In this study, we regard registered nurses and medical assistants as nursing staff [5]. In Malaysia, medical assistants are similar to nurse practitioners in other countries [7]. In addition to nursing services, medical assistants are also qualified to handle patients with simple acute conditions [8]. Nurses and medical assistants are required by law to undertake a different education program. Additionally, medical assistants and nurses are required to register under the respective statutory board before being eligible to practice. Owing to historical and cultural reasons, only females were eligible to become registered nurses, whereas males were only permitted to register as medical assistants until early 2000 [3, 5]. The first batch of male nurses and female medical assistants were registered under their corresponding boards in the years 2008 and 2009, respectively [3]. However, nurses and medical assistants who intend to specialize in various specialties are assessed through credentialing in four areas: (1) intensive care, (2) perioperative care, (3) ophthalmology, and (4) emergency medicine and trauma care.

Similar to other Islamic nations, nursing staff in Malaysia are dominated by women and have a lower status compared to their Western counterparts [9]. The current nursing and health system in Malaysia is still largely the same as with the old system that was introduced during the British colonial era [9]. A study in Malaysia has shown that the majority of nurses can be described as ignorant of their oppressed status, exhibiting "unquestioning acceptance of the role of nurses, the power of the system, and the dominance of physicians" [9]. Multiple traditional and cultural factors have adversely influenced the status of nursing in Malaysia [9, 10]. Among the primary reasons for the indigent status of nurses are the lack of public recognition, low educational entry requirements, and unfavorable employment conditions, including low salaries and poor working conditions. Such oppression adversely affects the job satisfaction of nursing staff in Malaysia [4, 9, 11]. Furthermore, nurses are often victimized as the root cause of declining nursing services in Malaysia while some important organizational factors, such as nursing shortage, lack of support, and poor working conditions, are overlooked [5]. The nursing shortage is evident from the 2010 report from the Malaysian Ministry of Health, which stated that the density of local nurses is 1.35 per 1000 people, which is 47.3% lower than the global density of nurses. Several reports have consistently noted that the high turnover of nurses is due to low job satisfaction in Malaysia [4, 12, 13].

Although no study to date has measured job satisfaction among medical assistants in Malaysia, we believe that they have low job satisfaction because of their job responsibilities in the nursing services. Therefore, job satisfaction among nursing staff is a main challenge for the Malaysian government in order to reform the healthcare sector through the ETP.

Traditional hierarchical structures in hospitals have resulted in medical dominance and suppressed nursing and other health professional in clinical environments [9]. Such problems are a major challenge in Islamic nations, including Malaysia. Recently, several scholars have suggested that a new form of healthcare leadership and empowerment is required to improve the job satisfaction of nursing staff in Malaysia [9, 11, 14]. The transactional style of leadership that pervades the healthcare institutions is believed to be a root cause of the nursing staff turnover rate [14]. Thus, transformational leadership can be adopted to complement the existing transactional leadership in healthcare institutions. Our review also shows that nursing management studies have offered preliminary evidence to support the aforementioned suggestions in the Malaysian context. First, several studies have found that transformational leadership is positively correlated with job satisfaction among nurses in Malaysia [15, 16]. Second, prior studies have shown that empowerment is positively related to job satisfaction among nurses in Malaysia and in several other countries [11, 17, 18]. Furthermore, qualitative analysis has shown that empowerment could be a promising solution to restructuring the work environment and to reduce the powerlessness senses among nursing staff in Malaysia [9, 11, 12]. Nevertheless, this empirical evidence is fragmented, owing to a lack of comprehensive studies that investigate transformational leadership, empowerment, and job satisfaction among nursing staff in Malaysia.

Therefore, this research is focused on nursing staff, i.e., medical assistants and nurses, in the selected large private and public hospitals in Malaysia and explores the relationship among transformational leadership, empowerment, and job satisfaction. The purposes of this study were to (1) examine the influence of transformational leadership on job satisfaction, (2) investigate the influence of transformational leadership on empowerment, (3) investigate the influence of empowerment on job satisfaction, and (4) explore the mediating effect of empowerment between transformational leadership and job satisfaction. The mediating analysis is useful in predicting how the causal effect of transformational leadership on job satisfaction is intervened by employee empowerment and thus has tangible policy implications [19].

The study is based on a standardized survey to identify perceived transformational leadership traits, empowerment, and job satisfaction among nursing staff in the two studied hospitals. Purposive sampling was used and 200

Choi *et al. Human Resources for Health* (2016) 14:73

Page 3 of 14

valid samples were obtained. We sought to offer new evidence to highlight the importance of transformational leadership and empowerment in human resource development in the nursing profession in Malaysia. Specifically, transformational leadership has the potential to become a key strategic consideration for the ETP to build and retain qualified and skilled nurses in the healthcare industry.

Transformational leadership

Transformational leadership was first conceptualized by Burns [20] and was then further developed by Bass [21]. In the current literature, the term tends to refer to Bass' transformational leadership theory. According to Bass [22], there are four characteristics of transformational leaders. The first characteristic, individualized consideration suggests that transformational leaders support the development of subordinates' skills and assist subordinates in achieving desired outcomes. Such leaders not only offer coaching and advices but also give employees attention and treat them as individuals. Second, transformational leadership includes intellectual stimulation, whereby leaders promote a culture in which employees will develop intelligence and rational thinking. Intellectual stimulation, in turn, fosters independent problem solving by employees. Inspiration is the third element of transformational leadership. In this regard, leaders communicate high expectations and encourage employees to focus their efforts on achieving established goals. To do this, transformational leaders tend to use effective communication techniques, such as symbols and simple language, to ensure that employees understand the main purposes of the assigned tasks. Finally, transformational leaders are regarded as charismatic leaders who offer a vision and a mission to employees. Such leaders will try to instill pride and gain respect and trust from employees so that the organization can achieve the required outcomes.

Many leadership scholars have agreed that transformational leadership plays a significant role in enhancing employee performance, trust, and commitment in organizations with a hierarchical authority structure [23–25]. The reason for this significance is that transformational leadership can be understood as a process of creating a vision and delivering a sense of belonging to employees [26]. Transformational leadership causes employees to perceive that the organization supports them and leads to attachments among the organization's members. Such leadership establishes a strong relationship between employees and the organization, which supports organizational purposes. In short, transformational leadership builds a mission-oriented culture within an organization through a social influence process among organizational members [27, 28].

Job satisfaction

Job satisfaction can be manifested as employee commitment that results from an increased sense of meaningfulness at work and improved accomplishments [29, 30]. Job satisfaction reflects employee perceptions of job performance. Employees with high levels of job satisfaction will feel that they are contributing positive value and outcomes to the organization. They also feel that they have a clear understanding of their job contribution. In addition, satisfied employees tend to perceive that they are treated fairly both inside and outside of an organization. In short, employees' positive perceptions of their jobs and their organization can be revealed through job satisfaction.

Job satisfaction is a valuable indicator that management can use to assess overall employee development within an organization. Most satisfied employees tend to have very high self-confidence, which boosts their performance [31, 32]. Job satisfaction is linked to the employees' willingness to develop work skills and personalities because they can sense whether the organization is concerned about their well-being. Job satisfaction cannot be ignored if improving job performance is a priority for management. Individual personalities are often unique, and thus, employees' expectations regarding their jobs differ across individuals. Individual consideration is therefore important for motivating employees to achieve better job performance. Likewise, Luthans [32] suggests that job satisfaction is closely related to employees' positive emotional state. The perceived state is often a result of whether employees sense that they will gain in terms of personal development through a job experience. A study by Stup [33] also suggests that employees who perceive that they are treated fairly by leaders tend to value the organizational structure. As a result, employees will have stronger trust in and attachment to the organization, as well as show higher job satisfaction.

Empowerment

Employee empowerment has been a topic of discussion for many years. Several scholars have cautioned that empowerment that may alter the power distribution structure in an organization is a double-edged sword [34, 35]. To a certain extent, employee empowerment may be counterproductive to an organization. The rationale for this concern is that the implementation of empowerment practices signifies that a certain amount of authority and autonomy is given to employees. Some employees may become overconfident, and this false confidence will lead to management losing control over certain employees. These employees may abuse their power owing to misjudgments in their work. A good example of the potential downside of empowerment practices is when employees do not abide by corporate information management procedures when they are given access to confidential information [36, 37], i.e., reduced

Choi *et al. Human Resources for Health* (2016) 14:73

Page 4 of 14

monitoring and supervision increase the possibility that information will be leaked to outsiders.

As stated above, management may lose control of employees if empowerment is not properly executed. However, scholars generally acknowledge that employee empowerment enhances job performance (e.g., [38, 39]). Empowerment is a strategic management option that can encourage employees to work beyond the norm and accomplish jobs in a flexible manner [38]. Such job flexibility is a precondition to instilling the decision-making ability of employees to respond swiftly to satisfy customer demands. More importantly, empowerment can stimulate employees' attachment to their jobs because employees perceive the grant of decision-making authority as in indication that the organization appreciates their job contributions [39]. In short, job attachment is formed when employees associate positive emotions and acceptance with the organization.

Relationship between transformational leadership and job satisfaction

Transformational leaders are generally described as leaders who transform the values, desires, aspirations, and priorities of their employees and motivate employees to outperform expectations [40]. The link between transformational leadership and job satisfaction is well established in the current literature [41]. The characteristics of transformational leadership conceptualized by Bass [22] provide theoretical foundation for explaining employees' job satisfaction.

Bogler [42] explains that transformational behaviors can affect job satisfaction through employees' perceptions of transformational leaders. Such leaders increase employees' expectations and recognition of their work and enhance employees' job satisfaction through transformational leadership behaviors such as individual attention, intellectual stimulation, and motivation. Additionally, the participative decision-making style practiced by transformational leaders gives employees a sense of involvement. Thus, employees are more committed to their jobs and have higher levels of job satisfaction. In the same vein, the study by Nemanich and Keller [43] suggests that job satisfaction occurs when employees are valued through transformational leadership behaviors, namely individual consideration and inspiration. This relationship can be understood as a reciprocal exchange because employees gain job satisfaction and become committed to producing better job outcomes when they are valued by organizations.

Individual and team perceptions of transformational leadership are also positively related to job satisfaction [44]. Transformational leaders not only consider their followers individually but also recognize the importance of the team. This dual consideration is evidenced through transformational behaviors, such as motivation and inspiration, that are tailored to both the individual and the entire team. For example, transformational leaders will communicate a vision and demonstrate considerate behavior to encourage all team members to work together to achieve organizational goals. Furthermore, interpersonal conflicts can be reduced when individuals work together as a team; the job satisfaction of both individuals and the entire team will be strengthened.

The relevance of transformational leadership to employees' job satisfaction is not restricted to a particular organizational setting. Prior studies have consistently found that transformational behaviors occur and enhance followers' job satisfaction in various organizational settings, including educational, industrial, military, and volunteer settings [44–48]. For instance, Yang et al. [47] found that followers' positive perceptions of transformational behaviors by leaders (or supervisors) lead to stronger identification with the organization, increased internalization of organizational goals, and improved job satisfaction.

As stated previously, the role of transformational leadership in enhancing employees' organizational commitment and job satisfaction cannot be denied. The effect of transformational leadership is important for individuals who work in rapidly changing environments (for example, R&D personnel in technology-based organizations) to strengthen their organizational commitment and job satisfaction [45]. Indeed, transformational leadership is important to any organization that experiences environmental changes, including public sector organizations, which are commonly perceived as undergoing minimal organizational change. In a similar vein, a study by Wright and Pandey [25] suggests that transformational leadership behaviors are not limited by procedural constraints and rules in organizations with hierarchical authority structures. Such organizations can opt to change leadership styles even if their hierarchical decision-making structures may constrain transformational leadership behaviors.

In particular, scholars have acknowledged the importance of transformational leadership in enhancing the job satisfaction of staff in healthcare industries [49–53]. Employees in the healthcare sector often work in high-pressure environments. Supervisors' transformational behaviors can establish a sense of self-control and competence among employees and thereby enhance job satisfaction [49]. Andrews and Dziegielewski [52] explain that nursing staff generally prefer supervisors with transformational behaviors that address employees' individual needs. Thus, transformational leadership can reduce nursing staff turnover owing to low job satisfaction. This reasoning leads to the following hypothesis:

H1: Transformational leadership has a positive impact on job satisfaction among medical assistants and nurses in Malaysia.

Choi *et al. Human Resources for Health* (2016) 14:73

Page 5 of 14

Relationship between transformational leadership and empowerment

Empowerment is one of the mechanisms used to promote employee development in an organization's long-term plan. Prior studies suggest that Bass' [22] four characteristics of transformational leaders serve as antecedents to employee empowerment in organizations (e.g., [54–59]). Transformational leaders are persuasive and able to instill positive organizational perceptions among employees [60].

The charisma characteristic is considered to be a determinant of empowerment. Previous works suggest that charismatic leaders can intensify employee empowerment initiatives by offering vision and a sense of job ownership, as well as creating synergy and a climate of trust that fosters team spirit [54, 60–62]. Additionally, charismatic leaders encourage employees to participate in the decision-making process, which will encourage employees to continuously develop skills and knowledge. Employees' sense of responsibility is thus intensified. Employees will gain self-confidence and job-specific technical skills, and a sense of psychological identification is created. In sum, charismatic leaders use empowerment to foster employees' sense of psychological identity with the organization.

Transformational leaders also use intellectual stimulation to empower employees. Sharing certain decision-making powers with employees is a precondition to promoting intellectual stimulation [55, 56]. Employees who are granted decision-making power tend to repay the trust given to them by leaders by achieving organizational goals [63]. The delegation of power gives employees the sense that they are valued by the organization. Employees who value their leaders' command will establish strong leader-employee relationships. A similar argument can be detected not only in the theoretical literature but also in empirical experiments. Prior studies have shown that transformational leadership has a positive impact on employee empowerment [24, 54, 55, 61].

Individual consideration is equally important to encourage employees to accept an empowerment initiative [57]. Employees tend to be motivated when transformational leaders give them individual attention and build a coaching system to individually develop employees' expertise. Such individual consideration can stimulate a productive working environment in an organization. Moreover, employees highly value their jobs when they are treated fairly and valued by leaders [60].

Notably, a recent study shows that transformational leaders tend to stimulate the acceptance of empowerment by employees [64]. All of the elements of transformational leadership conceptualized by Bass [22] are highly and positively correlated with empowerment success. In other words, these elements are valued as universal components of transformational behavior to empower employees in the workplace. The following hypothesis is thus proposed:

H2: Transformational leadership has a positive impact on employee empowerment among medical assistants and nurses in Malaysia.

Relationship between empowerment and job satisfaction

Employee empowerment is important for curbing workplace stress among employees [38]. The role of empowerment in enhancing job satisfaction is manifested by employees' perceived job attachments and thus their reduced stress [39]. For example, when employees are given decision-making power, positive emotions and employee acceptance of the organization intensify. Empowered employees develop a climate of trust with their leaders and become more creative and innovative. Empowerment may foster critical thinking, which leads to employees working at a higher level. Such empowerment positively shapes employees' perceptions of their jobs, reduces stress, and eventually leads to higher job satisfaction.

Those who work in healthcare industries largely view their working environment as stressful [49]. Work-related stress can lead to burnout and decreased job satisfaction. Empowerment can be viewed as an organizational initiative to give autonomy to employees for the purpose of diminishing feelings of powerlessness and removing formal barriers in the organizational environment [35]. It is believed that nursing staff must often respond to patient needs through rapid decision-making and thus the elimination of formal barriers is important. Organizations that embrace empowerment by sharing the decision-making process with their nursing staff will alleviate workplace-related stress [35, 65, 66]. This proposition leads to the next hypothesis:

H3: Employee empowerment has a positive impact on job satisfaction among medical assistants and nurses in Malaysia.

The conceptual framework has been constructed based on the hypotheses presented above regarding transformational leadership, empowerment, and job satisfaction (see Fig. 1). The framework indicates that empowerment is a mediator that exerts an intervening effect on the relationship between transformational leadership and job satisfaction.

Methods

Study design and sample selection

The population of interest was selected by sampling during several stages. Table 1 presents statistics regarding hospitals and nurses in Malaysia. In 2014, there were 326 hospitals, 92 681 nurses, and 12 773 medical assistants in 13 Malaysian states. We initially selected the state of Johor because it is a prominent health tourism hub in Malaysia [67, 68]. Johor is comprised of 10 districts, and we purposely selected Johor Bahru as the studied region. Johor Bahru is the second most populous state located in the southern part

Choi *et al. Human Resources for Health* (2016) 14:73

Page 6 of 14

Fig. 1 Research framework
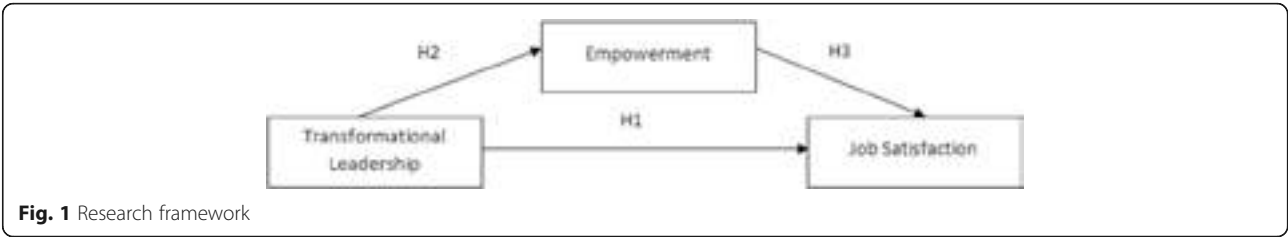
of Malaysia. Johor Bahru is known as the South Johor Economic Region and is a major corridor for economic development under the ETP [69]. There are three public and five private hospitals in Johor Bahru. A large private hospital and a large public hospital were chosen for this study. Both private and public hospitals are perceived as having stressful working conditions, but the nursing staff workload is heavier in public hospitals than in private hospitals, which is the result of the universal subsidization of public healthcare services in Malaysia [70].

The questionnaires were written in English. All questionnaires were administered face-to-face and were collected on site by one of the researchers within a 1-month period. During the data collection, the respondents were allowed to end the interview if they did not wish to answer certain questions. The researcher approached 350 nurses and medical assistants employed by the private and public hospitals selected for this study. However, 150 nurses and medical assistants either refused to answer the questionnaires or terminated their participation during the interview. For the latter case, we considered the incomplete surveys as invalid responses and that they were unwilling to participate in our study. In total, 101 and 99 valid responses (completed questionnaires) were obtained from the nursing staff of the public and private hospitals, respectively. The effective response rate was 57.14%.

This study was approved by the Commercialization & Technology Management Group (CTMG), a multidisciplinary research unit of the SmartDigital Community Research Alliance of Universiti Teknologi Malaysia, Malaysia. One of the researchers contacted the hospitals for permission to distribute the questionnaires. The names of the hospitals were not disclosed in accordance with the hospitals'

requests, and we believe that respondents prefer such information to be kept confidential. Furthermore, the questionnaires did not request the working position to be reported because it may reveal identifying information of medical assistants, as their proportion is significantly smaller than that of nurses. The respondents were aware of and willing to participate in this study. We assured the respondents of confidentiality before they completed the survey.

Survey instruments

A set of questionnaires was developed to measure the constructs in this conceptual model. The three constructs are transformational leadership (eight items), empowerment (five items), and job satisfaction (four items). Existing measurements for multi-item constructs that have been verified in the literature were used when possible. A 5-point Likert scale was used, ranging from 1 (strongly disagree) to 5 (strongly agree), to measure negative and positive assessments of the trait. Three survey instruments—transformational leadership, empowerment, and job satisfaction constructs—were used. The transformational leadership instrument was adapted from the Multifactor Leadership Questionnaire (MLQ) form developed by Bass and Avolio [71]. The transformational leadership instrument measures charisma, inspirational motivation, intellectual stimulation, and charisma exhibited by supervisors. The empowerment instrument was adapted from Matthews et al. [72], and the job satisfaction instrument was adapted from Warr et al. [73]. The empowerment instrument measures the perceived control of workplace decisions, the dynamic structural framework, and the fluidity in information sharing within the organization. The job satisfaction instrument measures the perceived

Table 1 Statistics regarding hospitals, nurses, and medical assistants in Malaysia

Year	Public hospital	Private hospital	Public hospital		Private hospital		Total number		Profession: population	
			Nurse	Medical assistant	Nurse	Medical assistant	Nurse	Medical assistant	Nurse	Medical assistant
2008	136	209	45 060	8 648	14 315	766	59 375	9 414	1:477	1:3 007
2009	137	217	47 992	9 556	21 118	794	69 110	10 350	1:410	1:2 738
2011	138	220	50 063	10 289	24 725	873	74 788	11 162	1:387	1:2 595
2012	140	209	56 089	10 902	28 879	944	84 968	11 846	1:345	1:2 477
2013	141	214	56 503	10 641	32 664	1 867	89 167	12 517	1:333	1:2 374
2014	142	184	59 364	11 305	33 317	1 468	92 681	12 773	1:325	1:2 356

Source: Ministry of Health Malaysia. The Ministry of Health Malaysia does not release the report on year 2010

Choi *et al. Human Resources for Health* (2016) 14:73

Page 7 of 14

compensation and the recognition dimensions among nursing staff. These instruments measure self-awareness of the nursing staff with respect to the transformational leadership, empowerment, and job satisfaction; thus, some discrepancies may exist if compared to external assessment.

All survey instruments were first reviewed by two experts to obtain feedback on their validity and clarity in the Malaysian context. The first expert, an academician whose research expertise is in human resource management, was asked to evaluate the content validity of the questionnaire. The second expert was a professional, a senior nurse, who evaluated the face validity of the questionnaire. The survey instruments were slightly modified based on feedback from the experts. The final questionnaire has four sections: the first section examines the demographic profiles of respondents; the second section investigates transformational leadership; the third section examines employee empowerment; and the final section investigates job satisfaction.

Statistical analysis

Data analysis was conducted using PASW Statistics 18.0 and SmartPLS 3.0. A descriptive analysis using PASW Statistics 18.0 was conducted to summarize the demographic backgrounds of the respondents. SmartPLS 3.0 was used to perform partial least squares-structural equation modeling (PLS-SEM) to validate the measurements and test the proposed hypotheses.

PLS-SEM is a second-generation regression technique for complex causal modeling, which is also known as variance-based structural equation modeling [74–77]. PLS-SEM is a causal modeling technique that is designed to maximize the explained variance of dependent variable(s). PLS-SEM is a preferred method when the research objective is prediction oriented. PLS-SEM also provides robust estimations of cause-and-effect-relationship models and/or when the collected data cannot meet certain assumptions (i.e., a small sample size and non-normal data). Compared to traditional regression techniques, PLS-SEM offers several significant advantages that suit our study [75, 78]. First, PLS-SEM is a causal modeling technique that simultaneously estimates the dual roles of the mediator: one as a causal variable in the outcome and the other as an intervening variable in the mediation model. Second, PLS-SEM is appropriate for this exploratory study, which entails developing new ideas to verify the mediating role of empowerment between transformational leadership and job satisfaction. Third, PLS-SEM allows the testing of higher-order models, which contain two layers of constructs. In this study, job satisfaction is conceptualized as a two-dimensional construct (or higher-order model) that can be explained by *recognition* and *pay*. Modeling job satisfaction as a higher-order model reduces the number of relationships between transformational leadership and

job satisfaction and between empowerment and job satisfaction. Otherwise, one would be required to estimate the relationship between transformational leadership and empowerment for each dimension of job satisfaction. The higher-order model approach allows the path model to be more parsimonious and easier to comprehend [75]. The reflective-reflective type of higher-order model was used to reflect the two dimensions of job satisfaction in this study. Following the suggestion of Hair et al. [75], a repeated indicator approach was used for the higher-order model (i.e., for job satisfaction).

Using the latest guidelines for PLS-SEM (e.g., [74, 75, 79]), we followed a two-step approach for assessing the measurement and structural models. In the first step, the assessment began with the measurement model. The assessment is to ensure sufficient construct reliability (i.e., indicator reliability and internal consistency) and validity (i.e., convergent validity and discriminant validity) are achieved. Additionally, Harman's single-factor test was used to investigate common method bias. The reason for conducting this test is that self-report surveys were used to collect data regarding job satisfaction and thus the data may be susceptible to common method variance. The perceptual measures of explanatory and dependent variables were derived from the same respondents at the same time and respondents may have a propensity to offer consistent or systematic answers to survey questions that are otherwise not related [80].

The second step is to assess the structural models. In this regard, a PLS algorithm was selected based on considerations regarding our research design. Path weighting scheme was selected as the PLS algorithm because it can be applied to virtually all kinds of path model specifications and estimations, including a path model with a higher-order model [75, 81]. A bootstrapping with 5000 samples was used to estimate the path coefficients' significance in the path analysis [75]. A path analysis was performed for the structural model following the specific suggestion by Hair et al. [75] to perform the mediational analysis with PLS-SEM. Assessment was performed to ensure predictive relevance and the absence of multicollinearity in the structural models.

Results
Descriptive statistics

Of the responses received, only 200 were found to be valid for analysis. Table 2 presents the demographics of the respondents in the two studied hospitals. Females represented 92.0% of the respondents, which is not surprising because nursing is a female-dominated profession in Malaysia [9]. The age group that was most represented in the survey was 26 to 30 years of age (59%). The largest educational background group was undergraduate diploma (95.5%). Approximately 60.5% of respondents indicated that they have 2–5 years of working experience. The findings in this

Choi *et al. Human Resources for Health* (2016) 14:73

Page 8 of 14

Table 2 Descriptive analysis for the demographic background

Demographic Characteristics	Items	Frequency	Percentage (%)
Gender	Male	16	8.0
	Female	184	92.0
Age	20–24	28	14.0
	25–30	118	59.0
	30–35	48	24.0
	36 and above	6	3.0
Educational background	Diploma	190	95.5
	Bachelor degree	10	4.5
Working experience	1–2 years	34	17.0
	2–5 years	121	60.5
	5 years and above	45	22.5
Types of hospital	Private	99	49.5
	Public	101	50.5

Table 3 Measurement models

Construct	Item	Loadings	Composite reliability	AVE
Transformational leadership (TL)	TL_1	0.68	0.892	0.508
	TL_2	0.65		
	TL_3	0.77		
	TL_4	0.74		
	TL_5	0.70		
	TL_6	0.70		
	TL_7	0.74		
	TL_8	0.72		
Empowerment (Emp)	Emp_1	0.64	0.876	0.542
	Emp_2	0.67		
	Emp_3	0.76		
	Emp_4	0.77		
	Emp_5	0.78		
Recognition	JS3	0.92	0.907	0.904
	JS4	0.90		
Pay	JS1	0.95	0.949	0.83
	JS2	0.95		
Job satisfaction (JS)[a]	JS_Reg	0.83	0.804	0.508
	JS_Pay	0.71		

[a]Higher-order construct

study can be generalized to the two studied hospitals but are not representative of total populations of nurses and medical assistants in Malaysia. Thus, results should be interpreted with caution.

Measurement model

We assessed the construct reliability (i.e., indicator reliability and internal consistency) and validity (i.e., convergent validity and discriminant validity) for the measurement model (see Table 3). According to Hair et al. [74], the indicator loadings should be greater than 0.70, whereas loadings between 0.40 and 0.70 should be removed only if their deletion can increase the composite reliability to its minimum threshold value. Four indicator loadings ranged from 0.64 to 0.68, whereas all other indicator loadings were above 0.70. An analysis of the indicators with loadings less than 0.7 by deletion was conducted. Because the deletion of these indicators would not increase the respective composite reliability, the indicators were retained for this study. In short, the indicator loadings had satisfactory indicator reliability levels.

The assessment of the composite reliability showed that all constructs had a value greater than 0.7, which indicates sufficient internal consistency reliability [74]. An examination of the convergent validity and the discriminant validity was conducted to assess the validity of the constructs. First, the average variance extracted (AVE) of all constructs was greater than the minimum threshold value of 0.50, which verifies the convergent validity. Then, the study used the Fornell-Lacker criterion, which is a more conservative approach than cross-loadings, to assess discriminant validity [75]. The findings show that the discriminant validity is verified because the square root of the AVE of each construct is higher than its correlation with all other constructs (see Table 4).

It is important to note that the same evaluation criteria were utilized to evaluate the measurement model of the higher-order model (i.e., job satisfaction). As discussed above, the indicator loadings, composite reliability, and AVE for the higher-order construct of job satisfaction have satisfactory reliability and validity. In short, the measurement model assessment confirmed that all constructs, including the higher-order model, are reliable and valid.

Finally, Harman's single-factor test was used to investigate common method bias. Four scaled constructs were loaded into a factor analysis. The results indicated that there are four factors present and that they account for 62.3% of the total explained variance. The highest load factor accounts for 37.4% of total variance explained. These results show that common method variance is not significant because no single factor emerges and no single factor accounts for the majority of the variances between measures [80, 82].

Table 4 Discriminant validity of constructs

	Empowerment	Job satisfaction	Transformational leadership
Empowerment	**0.736**		
Job satisfaction	0.419	**0.713**	
Transformational leadership	0.649	0.406	**0.713**

The bold and diagonal values represent the square root of AVE whereas the off diagonals represent the correlations of constructs

Choi *et al. Human Resources for Health* (2016) 14:73

Page 9 of 14

Structural model

A step-by-step analysis was conducted to offer a thorough analysis. In the first step, the focus was on the relationship between transformational leadership and job satisfaction. Subsequently, the mediator (i.e., empowerment) was introduced, and the full structural model was assessed.

Figure 2 and Table 5 show the results of step 1 in the mediational analysis. First, an assessment of collinearity was performed to examine whether the predictor constructs were closely correlated with endogenous constructs. The (unreported) variance inflation factor (VIF) of the predictor constructs was below 3.0, indicating the absence of collinearity. Additionally, the Q^2 value generated by a blindfolding procedure was larger than zero, indicating the predictive relevance of the structural model [74]. The path analysis indicates that transformational leadership is positively related to job satisfaction ($p < 0.01$).

Next, the full structural model was assessed by including the empowerment construct (see Fig. 3 and Table 6). The Q^2 of the full structural model was above zero, and the (unreported) VIF was less than 3 for all predictor constructs. The results show that the positive effect of transformational leadership on job satisfaction remains significant ($p < 0.05$). Similarly, transformational leadership exhibits a positive effect on empowerment ($p < 0.01$), and empowerment, in turn, positively affects job satisfaction ($p < 0.01$).

It is important to note that the relationship between transformational leadership and job satisfaction is significant in steps 1 and 2 but with a difference of 0.185. These results indicate that the mediator (i.e., empowerment) may absorb some effect of the relationship between transformational leadership and job satisfaction. Table 7 presents the mediating effect results, which show that the indirect effect is significant ($p = 0.001$, t value = 3.28). These results show that the variance accounted for (VAF) is 43.1%, which indicates that a partial mediating effect exists [75].

Table 5 Structural model assessment of model 1 (PLS path model without mediator)

Endogenous constructs	R^2	Q^2		
Job satisfaction	0.173	0.075		
Relation	Path coefficient	t value (bootstrap)	p value	Bias corrected 95% confidence intervals
Transformation leadership → job satisfaction	0.416	7.012	0.000	0.358　　0.597

Discussion

The Malaysian healthcare industry has experienced significant growth in recent years under the ETP, but human capital development in the healthcare sector remains a significant challenge. The purpose of this study is to investigate the causal relationships among perceived transformational leadership, empowerment, and job satisfaction amid nurses and medical assistants in the selected large private and public hospitals in Malaysia. This study also performed causal mediation analysis to identify the mediating effect of empowerment on the relationship between transformational leadership and job satisfaction.

First, we tested the hypothesis of whether transformational leadership has a positive impact on job satisfaction among medical assistants and nurses in two studied hospitals in Malaysia. The results show that transformational leadership positively affects job satisfaction and hypothesis H1 is accepted. Our results suggest that the perceived transformational leadership behaviors enhance job satisfaction among medical assistants and nurses. As such, our findings are consistent with correlation analyses from previous studies that investigated the relationship between transformational leadership and job satisfaction among nurses in Malaysia [15, 16]. However, our findings offer the first empirical evidence to validate the causal impact of transformational leadership on job satisfaction among medical assistants and nurses in two studied hospitals in Malaysia.

Fig. 2 Structural model without the mediator

Choi *et al. Human Resources for Health* (2016) 14:73

Page 10 of 14

Fig. 3 Full structural model with the mediator

The second hypothesis (H2) proposed that transformational leadership has a positive impact on employee empowerment among medical assistants and nurses in the two studied hospitals. The results indicate that the hypothesis is supported by the data. Our study presents empirical evidence that supports the shared view in workplace literature that transformational leadership can enhance employee empowerment within a hierarchical structure [15, 24, 45, 46, 54, 55, 83, 84]. In this study, transformational leaders are those who exhibit charisma and have abilities to inspire and intellectually stimulate subordinates, not only individually but also as a team. Based on our findings, it appears that transformational leadership led to medical assistants and nurses to establishing a stronger sense of self-determination and competency, which could, in turn, significantly impact their work and job satisfaction.

The third hypothesis (H3) proposed that employee empowerment has a positive impact on job satisfaction among medical assistants and nurses in the studied hospitals. The results show that empowerment has a positive and significant influence on job satisfaction. The findings are consistent with several studies that found positive influence of empowerment on job satisfaction among nurses in Malaysia and other countries [11, 17, 18]. Such findings could be attributed to the role of employee empowerment in restructuring work environment that reducing the powerlessness senses among nursing staff in this study [9, 11, 12, 17, 18].

We believe that the empowerment effect may be more evident among Malaysian nursing staff where nursing is regarded as a low status and oppressed profession [9]. Thus, empowerment through mechanisms such as shared decision-making processes and improved autonomy can reduce the sense of powerlessness among nursing staff in an oppressive work environment. When nursing staff perceive that they are empowered, powerlessness and job burnout are mitigated, which results in higher job satisfaction.

The final step in the analysis was the examination of the causal mediation analysis to identify whether empowerment mediates the relationship between transformational leadership and job satisfaction among medical assistants and nurses in the studied hospitals. The results suggest that the indirect effect is significant, and partial mediating occurs, i.e., the employee empowerment explained the relationship between transformational leadership and job satisfaction.

Limitations and delimitations

The findings of this study should be interpreted with caution due to empirical design considerations. First, this study only investigates medical assistants and nurses from two hospitals in Malaysia, and thus, results are not representative of the entire Malaysian nursing workforce. Second, our sample size was not sufficient to disaggregate the analysis in order to identify the masking discrepancies between male and female nursing staff. Finally, this study

Table 6 Structural model assessment of model 2 (PLS path model with mediator)

Endogenous constructs	R^2	Q^2		
Empowerment	0.522	0.225		
Job satisfaction	0.207	0.086		
Relation	Path coefficient	*t* value (bootstrap)	*p* value	Bias corrected 95% confidence intervals
Empowerment → job satisfaction	0.270	3.337	0.001	0.115 0.431
Transformation leadership → empowerment	0.649	16.401	0.000	0.589 0.741
Transformation leadership → job satisfaction	0.231	2.485	0.013	0.075 0.438

Choi *et al. Human Resources for Health* (2016) 14:73

Page 11 of 14

Table 7 Analysis of mediating effect

Relation	Direct effect	Indirect effect	Total effect	VAF
Transformation leadership → job satisfaction	0.231	0.175	0.406	43.1%

uses a cross-sectional design, which makes it difficult to determine temporal relationships.

It is important to note that the response rate of the current study was 57.14%. The rate was caused by the distinctive sampling procedure in this study, i.e., potential respondents who were approached in this study were notified of their rights to refuse to participate or terminate the interview if they did not wish to answer certain questions. The majority of nursing staff who refused to participate in our study stated that they were busy whereas others did not give any reason. During the interview, the researchers would ask whether the nursing staff would like to terminate their participation if they seemed reluctant or uncomfortable to answer questions. Such approach was to ensure that they were treated with dignity and respect. Based on the observation during the data collection, there were no specific characteristics of nursing staff who refused to participate or terminated their participation during the interview. Similarly, there were no specific characteristics of those respondents who completed the interview. Nevertheless, it is impossible to completely rule out sampling bias that may be stemmed from distinctive sampling procedure in this study.

Theoretical and practical implications

This study has several theoretical implications. Theoretically, this study is the first in the nursing management literature to develop and verify a theoretical framework for the relationships between the perceptions of transformational leadership, empowerment, and job satisfaction. This study offers a more thorough understanding of what drives the level of job satisfaction among nursing staff. Prior studies have clearly indicated the direct positive effect of transformational leadership on employees' job satisfaction in the healthcare industry [49–52] but lack a deeper understanding of the role of empowerment that underlies this relationship. The causal mediation analysis in this study confirms that empowerment mediates the relationship between transformational leadership and job satisfaction among medical assistants and nurses in two selected hospitals. In other words, employee empowerment cannot be detached when investigating transformational leadership and job satisfaction phenomena in nursing management. Second, this study developed and carried out field testing of an instrument for measuring three constructs, i.e., transformational leadership, empowerment, and job satisfaction, in nursing management literature. Third, this study achieved aforementioned

theoretical contributions in nursing management literature in an understudied Malaysian context [5, 12]. Finally, this study offers a baseline model for the role of transformational leadership in empowerment and job satisfaction in an institutional healthcare context. Because the oppression of nurses is a global phenomenon [9, 85], we hope that our research may trigger an examination of the use of transformational leadership and empowerment as possible practices in human resources to enhance job satisfaction and increase the retention of nursing staff, especially in countries with similar institutional contexts, such as developing and Islamic countries.

This study also offers important insights for healthcare managers to implement policies to enhance job satisfaction among medical assistants and nurses. The implications of our study are aligned with the call from the World Health Organization to enable evidence-based policy-making for human resources for health in Malaysia [3]. First, job satisfaction can be altered if hospital administrators promote transformational leadership practices. However, raising transformational leadership practices are insufficient because employee empowerment will mediate the positive effect of transformational leadership on job satisfaction. From the perspective of the nursing staff, empowerment can be an indicator of organizational intent to give them autonomy by removing formal organizational barriers [35]. The ability of nursing staff to offer more rapid responses through decision-making will alleviate the work-related stress that causes job burnout and will thus contribute to higher job satisfaction. Furthermore, from a managerial perspective, employee empowerment can be an effective mechanism to promote employee development that is aligned with organizational goals. In short, transformational leadership and empowerment are the two essential ingredients that have tangible policy implications to address low job satisfaction among medical assistants and nurses especially in the two studied hospitals.

Finally, our empirical evidence can be a useful input for Malaysian policymakers to revamp human resources' policies for healthcare under the ETP. The job satisfaction of healthcare workers ensures that the nursing profession will achieve its full potential, thereby safeguarding an effective health care delivery system [66, 86]. In particular, our study highlights the important role of transformational leadership and empowerment in enhancing job satisfaction among medical assistants and nurses, which should be a focus of the Malaysian healthcare system under the ETP.

Conclusions

This study was designed to address a knowledge gap in nursing management research regarding the causal relationships among perceived transformational leadership,

Choi *et al. Human Resources for Health* (2016) 14:73

Page 12 of 14

empowerment, and job satisfaction amid medical assistants and nurses in the selected hospitals in Malaysia. Additionally, causal mediation analysis was performed to examine whether empowerment mediates the relationship between transformational leadership and job satisfaction. The findings of this study suggest that transformational leadership positively influences job satisfaction among medical assistants and nurses in the studied hospitals. This study also shows that employee empowerment is indispensable for enhancing job satisfaction. Thus, the empowerment factor not only positively affects job satisfaction but also mediates the relationship between transformational leadership and job satisfaction. Overall, the findings suggest that policy intervention must cover both transformational leadership and empowerment to enhance job satisfaction among medical assistants and nurses.

Authors' contributions
SLC carried out the main conception design, questionnaires, and analysis of data and drafted the manuscript revised final manuscript draft based on reviewer comments. CFG contributed to the improvement of conception design, performed the PLS-SEM analysis, revised the final manuscript draft based on reviewer comments, and finalizes and approves the final version of the manuscript. MBHA carried out the acquisition of data, questionnaires, and measures design. OKT carried out the planning of data collection and interpretation of data and revised the initial manuscript and final manuscript based on reviewer comments. All authors read and approved the final manuscript.

Competing interests
The authors declare that they have no competing interests.

Consent for publication
Not applicable.

Ethics approval and consent to participate
The ethical approval for the study was obtained from the Commercialization & Technology Management Group (CTMG), Universiti Teknologi Malaysia. Informed consent to participate was obtained verbally from respondents before data collection. The respondents were aware of and willing to participate in this study. We assured the respondents of confidentiality before they completed the survey.

Author details
[1]Raffles University Iskandar, Menara Kotaraya, Jalan Trus, 80000 Johor Bahru, Johor, Malaysia. [2]Faculty of Management, Universiti Teknologi Malaysia, 81310 Johor Bahru, Johor, Malaysia. [3]International Business School, Universiti Teknologi Malaysia, 54100 Kuala Lumpur, Malaysia.

References
1. The Performance Management and Delivery Unit. Overview of ETP, http://etp.pemandu.gov.my/About_ETP-@-Overview_of_ETP.aspx, Accessed 6 May 2016.
2. The Performance Management and Delivery Unit. ETP Annual Report 2014, http://etp.pemandu.gov.my/annualreport2014/, Accessed 6 May 2016.
3. World Health Organization. Human Resources for Health Country Profiles—Malaysia. 2014.
4. Ministry of Health Malaysia. Country Health Plan (10th Malaysia Plan) 2011–2015, http://www.moh.gov.my/english.php/pages/view/196, Accessed 1 May 2014.
5. Barnett T, Namasivayam P, Narudin DAA. A critical review of the nursing shortage in Malaysia. Int Nurs Rev. 2010;57(1):32–9.
6. Ministry of Health Malaysia. Health Facts, http://www.moh.gov.my/index.php/pages/view/58, Accessed 1 Feb 2015.
7. Jaafar S, Noh KM, Muttalib KA, Othman NH, Healy J, authors: O, Maskon K, Abdullah AR, Zainuddin J, Bakar AA, et al. Malaysia Health System Review. Health Systems in Transition. 2012;3(1):1–102.
8. Khoo EM. The changing face of primary care: a cross sectional study in Malaysia. Sains Malaysiana. 2015;44(5):741–46.
9. Birks MJ, Chapman Y, Francis K. Women and nursing in Malaysia: unspoken status. J Transcult Nurs. 2009;20(1):116–23.
10. Bryant NH. Women in nursing in Islamic societies. Oxford: Oxford University Press; 2003.
11. Ahmad N, Oranye NO. Empowerment, job satisfaction and organizational commitment: a comparative analysis of nurses working in Malaysia and England. J Nurs Manag. 2010;18(5):582–91.
12. Lee SP, Chitpakdee B, Chontawan R. Factors predicting organizational commitment among nurses in state hospitals, Malaysia. Int Med J Malaysia. 2011;10(2):21–8.
13. Alam MM, Mohammad JF. Level of job satisfaction and intent to leave among Malaysian nurses. Business Intelligence J. 2010;3(1):123–37.
14. Thyer GL. Dare to be different: transformational leadership may hold the key to reducing the nursing shortage. J Nurs Manag. 2003;11(2):73–9.
15. Medley F, Larochelle DR. Transformational leadership and job satisfaction. Nurs Manag. 1995;26(9):64JJ–NN.
16. Ahmad AR, Adi MNM, Noor HM, Rahman AGA, Yushuang T. The influence of leadership style on job satisfaction among nurses. Asian Soc Sci. 2013;9(9):172–8.
17. Thorlakson AJH, Murray RP. An Empirical Study of Empowerment in the Workplace. Group Org Manag. 1996;21(1):67–83.
18. Yang J, Liu Y, Chen Y, Pan X. The effect of structural empowerment and organizational commitment on Chinese nurses' job satisfaction. Appl Nurs Res. 2014;27(3):186–91.
19. Pearl J. Interpretation and identification of causal mediation. Psychol Methods. 2014;19(4):459.
20. Burns JM. Leadership. New York: Harper & Row; 1978.
21. Bass BM. Leadership and performance beyond expectations. New York: Free Press; 1985.
22. Bass BM. From transactional to transformational leadership: learning to share the vision. Organ Dyn. 1990;18(3):19–31.
23. Podsakoff PM, MacKenzie SB, Moorman RH, Fetter R. Transformational leader behaviors and their effects on followers' trust in leader, satisfaction, and organizational citizenship behaviors. Leadersh Q. 1990;1(2):107–42.
24. Avolio BJ, Zhu W, Koh W, Bhatia P. Transformational leadership and organizational commitment: mediating role of psychological empowerment and moderating role of structural distance. J Organ Behav. 2004;25(8):951–68.
25. Wright BE, Pandey SK. Transformational leadership in the public sector: does structure matter? J Public Adm Res Theory. 2010;20(1):75–89.
26. Tse HH. Transformational leadership and turnover: the roles of LMX and organizational commitment. In Academy of Management Proceedings. Anaheim: Acad Manag; 2008. pp. 1–6.
27. Hofstede G. Cultural constraints in management theories. Executive. 1993;7(1):81–94.
28. Hofstede G. Culture's consequences: comparing values, behaviors, institutions and organizations across nations. London: Sage Publications; 2001.
29. Kanter RM. Change masters: corporate entrepreneurs at work. Boston: International Thomson Business Press; 1983.
30. Locke EA. The nature and causes of job satisfaction. In: Dunnette MD, editor. Handbook of industrial and organizational psychology. Chicago: Rand McNally; 1976.
31. Bogler R, Somech A. Influence of teacher empowerment on teachers' organizational commitment, professional commitment and organizational citizenship behavior in schools. Teach Teach Educ. 2004;20(3):277–89.

Choi *et al. Human Resources for Health* (2016) 14:73

Page 13 of 14

32. Luthans F. Organizational behavior. New York: McGraw-Hill; 2007.
33. Stup RE: Human resource management and dairy employee organizational commitment. In Journal of Dairy Science. Amer Dairy Science Assoc 1111 N Dunlap Ave, Savoy, IL 61874 USA; 2007: 329-329.
34. Appelbaum SH, Honeggar K. Empowerment: a contrasting overview of organizations in general and nursing in particular-an examination of organizational factors, managerial behaviors, job design, and structural power. Empower Organ. 1998;6(2):29–50.
35. Conger JA, Kanungo RN. The empowerment process: integrating theory and practice. Acad Manag Rev. 1988;13(3):471–82.
36. Cecez-Kecmanovic D, Janson M. The notion of lifeworld applied to information systems research. 2009.
37. Lawrence Öqvist K. The art of alchemy. Inf Secur Tech Rep. 2010;15(2):47–50.
38. Pearson LC, Moomaw W. The relationship between teacher autonomy and stress, work satisfaction, empowerment, and professionalism. Educ Res Q. 2005;29(1):38–54.
39. Zhang X, Bartol KM. Linking empowering leadership and employee creativity: the influence of psychological empowerment, intrinsic motivation, and creative process engagement. Acad Manag J. 2010;53(1):107–28.
40. Bass BM. Theory of transformational leadership redux. Leadersh Q. 1995;6(4):463–78.
41. Walumbwa FO, Wang P, Lawler JJ, Shi K. The role of collective efficacy in the relations between transformational leadership and work outcomes. J Occup Organ Psychol. 2004;77(4):515–30.
42. Bogler R. The influence of leadership style on teacher job satisfaction. Educ Adm Q. 2001;37(5):662–83.
43. Nemanich LA, Keller RT. Transformational leadership in an acquisition: a field study of employees. Leadersh Q. 2007;18(1):49–68.
44. Braun S, Peus C, Weisweiler S, Frey D. Transformational leadership, job satisfaction, and team performance: a multilevel mediation model of trust. Leadersh Q. 2013;24(1):270–83.
45. Griffith J. Relation of principal transformational leadership to school staff job satisfaction, staff turnover, and school performance. J Educ Adm. 2004;42(3):333–56.
46. Walumbwa FO, Orwa B, Wang P, Lawler JJ. Transformational leadership, organizational commitment, and job satisfaction: a comparative study of Kenyan and U.S. financial firms. Hum Resour Dev Q. 2005;16(2):235–56.
47. Yang F-H, Wu M, Chang C-C, Chien Y. Elucidating the relationships among transformational leadership, job satisfaction, commitment foci and commitment bases in the public sector. Public Personnel Manag. 2011;40(3):265–78.
48. Rowold J, Rohmann A. Transformational and transactional leadership styles, followers' positive and negative emotions, and performance in German nonprofit orchestras. Nonprofit Manag Leadersh. 2009;20(1):41–59.
49. Nielsen K, Yarker J, Randall R, Munir F. The mediating effects of team and self-efficacy on the relationship between transformational leadership, and job satisfaction and psychological well-being in healthcare professionals: a cross-sectional questionnaire survey. Int J Nurs Stud. 2009;46(9):1236–44.
50. Wang X, Chontawan R, Nantsupawat R. Transformational leadership: effect on the job satisfaction of registered nurses in a hospital in China. J Adv Nurs. 2012;68(2):444–51.
51. Fuller JB, Morrison R, Jones L, Bridger D, Brown V. The effects of psychological empowerment on transformational leadership and job satisfaction. J Soc Psychol. 1999;139(3):389–91.
52. Andrews DR, Dziegielewski SF. The nurse manager: job satisfaction, the nursing shortage and retention. J Nurs Manag. 2005;13(4):286–95.
53. Luo Z, Fang P, Fang Z. What is the job satisfaction and active participation of medical staff in public hospital reform: a study in Hubei province of China. Hum Resour Health. 2015;13(1):34.
54. Ashforth BE, Harrison SH, Corley KG. Identification in organizations: an examination of four fundamental questions. J Manag. 2008;34(3):325–74.
55. Vecchio RP, Justin JE, Pearce CL. Empowering leadership: an examination of mediating mechanisms within a hierarchical structure. Leadersh Q. 2010;21(3):530–42.
56. Men LR, Stacks DW. The impact of leadership styles and employee empowerment on perceived organizational reputation. J Commun Manag. 2013;17(2):171–92.
57. Jabnoun N, Juma AL, Rasasi A. Transformational leadership and service quality in UAE hospitals. Manag Serv Qual. 2005;15(1):70–81.
58. Sosik JJ, Cameron JC. Character and authentic transformational leadership behavior: expanding the ascetic self toward others. Consult Psychol J. 2010;62(4):251.
59. Mccann JAJ, Langford PH, Rawlings RM. Testing Behling and McFillen's syncretical model of charismatic transformational leadership. Group Org Manag. 2006;31(2):237–63.
60. Epitropaki O, Martin R. The moderating role of individual differences in the relation between transformational/transactional leadership perceptions and organizational identification. Leadersh Q. 2005;16(4):569–89.
61. Wang G, Lee PD. Psychological empowerment and job satisfaction: an analysis of interactive effects. Group Org Manag. 2009;34(3):271–96.
62. Barroso Castro C, Villegas Periñan MM, Casillas Bueno JC. Transformational leadership and followers' attitudes: the mediating role of psychological empowerment. Int J Hum Resour Manag. 2008;19(10):1842–63.
63. Ahearne M, Mathieu J, Rapp A. To empower or not to empower your sales force? An empirical examination of the influence of leadership empowerment behavior on customer satisfaction and performance. J Appl Psychol. 2005;90(5):945–55.
64. Givens RJ. The role of psychological empowerment and value congruence in mediating the impact of transformational leadership on follower commitment in American churches. Int J Leadersh Stud. 2011;6(2):188–214.
65. Okello DRO, Gilson L. Exploring the influence of trust relationships on motivation in the health sector: a systematic review. Hum Resour Health. 2015;13(1):1–18.
66. Taderera BH, Hendricks S, Pillay Y. Health personnel retention strategies in a peri-urban community: an exploratory study on Epworth, Zimbabwe. Hum Resour Health. 2016;14(1):1–14.
67. Ormond M, Mun WK, Khoon CC. Medical tourism in Malaysia: how can we better identify and manage its advantages and disadvantages? Global Health Action 2014, 7:10.3402/gha.v3407.25201.
68. Noor Hazilah Abd M, Husnayati H, Puteri Nemie Jahn K, Rokiah A, Zainurin D. Country perspective on medical tourism: the Malaysian experience. Leadersh Health Serv. 2015;28(1):43–56.
69. Rizzo A, Glasson J. Iskandar Malaysia. Cities. 2012;29(6):417–27.
70. Chee HL. Medical tourism and the state in Malaysia and Singapore. Global Social Policy. 2010;10(3):336–57.
71. Bass BM, Avolio BJ. MLQ: multifactor leadership questionnaire: technical report, leader form, rater and scoring key for MLQ (Form 5x-short). Redwood City: Mind Garden; 2000.
72. Matthews RA, Michelle Diaz W, Cole SG. The organizational empowerment scale. Pers Rev. 2003;32(3):297–318.
73. Warr P, Cook J, Wall T. Scales for the measurement of some work attitudes and aspects of psychological well-being. J Occup Psychol. 1979;52(2):129–48.
74. Hair JF, Ringle CM, Sarstedt M. PLS-SEM: indeed a silver bullet. J Mark Theory Pract. 2011;19(2):139–52.
75. Hair JF, Hult GTM, Ringle CM, Sarstedt M. A primer on partial least squares structural equation modeling (PLS-SEM). Thousand Oaks: Sage; 2013.
76. Henseler J, Dijkstra TK, Sarstedt M, Ringle CM, Diamantopoulos A, Straub DW, Ketchen DJ, Hair JF, Hult GTM, Calantone RJ. Common beliefs and reality about PLS: comments on Rönkkö and Evermann (2014). Organ Res Methods. 2014;17(2):182–209.
77. Wong KK-K. Partial least squares structural equation modeling (PLS-SEM) techniques using SmartPLS. Mark Bull. 2013;24(Technical Note 1):1–32.
78. Gunzler D, Chen T, Wu P, Zhang H. Introduction to mediation analysis with structural equation modeling. Shanghai Archives Psychiatry. 2013;25(6):390–4.
79. Chin WW: How to write up and report PLS analyses. In Handbook of Partial Least Squares. Edited by Esposito Vinzi V, Chin WW, Henseler J, Wang H. Heidelberg: Springer Berlin; 2010: 655-690: Springer Handbooks of Computational Statistics.
80. Chang S-J, Van Witteloostuijn A, Eden L. From the editors: common method variance in international business research. J Int Bus Stud. 2010;41(2):178–84.
81. Ringle CM, Wende S, Becker J-M. SmartPLS 3. Hamburg: SmartPLS; 2014.
82. Malhotra NK, Kim SS, Patil A. Common method variance in IS research: a comparison of alternative approaches and a reanalysis of past research. Manag Sci. 2006;52(12):1865–83.
83. Kark R, Shamir B, Chen G. The two faces of transformational leadership: empowerment and dependency. J Appl Psychol. 2003;88(2):246–55.
84. Top M, Tarcan M, Tekingündüz S, Hikmet N. An analysis of relationships among transformational leadership, job satisfaction, organizational commitment and organizational trust in two Turkish hospitals. Int J Health Plann Manag. 2013;28(3):e217–41.

Choi *et al. Human Resources for Health* (2016) 14:73

Page 14 of 14

85. McGibbon E, Mulaudzi FM, Didham P, Barton S, Sochan A. Toward decolonizing nursing: the colonization of nursing and strategies for increasing the counter-narrative. Nurs Inq. 2014;21(3):179–91.
86. Hotchkiss DR, Banteyerga H, Tharaney M. Job satisfaction and motivation among public sector health workers: evidence from Ethiopia. Hum Resour Health. 2015;13(1):1–12.

HUMAN RESOURCES
FOR HEALTH

RESEARCH   **Open Access**

How evidence-based workforce planning in Australia is informing policy development in the retention and distribution of the health workforce

Ian F Crettenden, Maureen V McCarty, Bethany J Fenech[*], Troy Heywood, Michelle C Taitz and Sam Tudman

Abstract

Background: Australia's health workforce is facing significant challenges now and into the future. Health Workforce Australia (HWA) was established by the Council of Australian Governments as the national agency to progress health workforce reform to address the challenges of providing a skilled, innovative and flexible health workforce in Australia. HWA developed Australia's first major, long-term national workforce projections for doctors, nurses and midwives over a planning horizon to 2025 (called Health Workforce 2025; HW 2025), which provided a national platform for developing policies to help ensure Australia's health workforce meets the community's needs.

Methods: A review of existing workforce planning methodologies, in concert with the project brief and an examination of data availability, identified that the best fit-for-purpose workforce planning methodology was the stock and flow model for estimating workforce supply and the utilisation method for estimating workforce demand. Scenario modelling was conducted to explore the implications of possible alternative futures, and to demonstrate the sensitivity of the model to various input parameters. Extensive consultation was conducted to test the methodology, data and assumptions used, and also influenced the scenarios selected for modelling. Additionally, a number of other key principles were adopted in developing HW 2025 to ensure the workforce projections were robust and able to be applied nationally.

Results: The findings from HW 2025 highlighted that a 'business as usual' approach to Australia's health workforce is not sustainable over the next 10 years, with a need for co-ordinated, long-term reforms by government, professions and the higher education and training sector for a sustainable and affordable health workforce. The main policy levers identified to achieve change were innovation and reform, immigration, training capacity and efficiency and workforce distribution.

Conclusion: While HW 2025 has provided a national platform for health workforce policy development, it is not a one-off project. It is an ongoing process where HWA will continue to develop and improve health workforce projections incorporating data and methodology improvements to support incremental health workforce changes.

Keywords: Workforce planning, Workforce projections

Background

Challenges facing Australia's health workforce

The following significant challenges are facing Australia's health workforce now and into the future.

The self-sufficiency challenge

Australia has a high level of dependence on internationally recruited health professionals relative to most other Organisation for Economic Co-operation and Development countries [1], particularly for doctors. A number of other developed countries are in the same situation as Australia, and it is likely that its reliance will come under challenge as international competition for health workers increases.

The demographic challenge

Australia's population is ageing. Impacts of this include fewer working age people available to support older Australians; increasing losses from the health workforce

* Correspondence: bethany.fenech@hwa.gov.au
Health Workforce Australia, 400 King William Street, Adelaide, Australia

as the current health workforce ages; a smaller pool of working age people from which we can draw our future health workforce; and a larger pool of older Australians who will consume more health care services. These challenges are compounded by the changing burden of disease in the community with an increasing prevalence of chronic conditions such as diabetes.

The cost challenge
Evidence suggests the health workforce accounts for approximately 70% of health care costs [2,3]. As demand for health services is expected to increase due to demographic changes, the cost of maintaining current levels of activity will increase - indicated by projections showing that Australian expenditure on health and residential aged care as a percentage of gross domestic product could rise from 9.3% in 2002/2003 to 12.4% by 2032/2033 [4].

The co-ordination challenge
Australia's health care system, in a federated country[a], is complex, with different levels of government responsible for funding, service provision and education and training, making it difficult to adopt a co-ordinated approach to planning for, and responding to, workforce issues.

The distribution challenge
Australia is geographically vast, and access to health professionals, particularly in rural and remote areas, is a significant issue that will likely be exacerbated as the demographic challenges outlined above take effect in the future.

The challenge of implementing workforce reform
Substantial barriers exist to implementing health workforce innovation or reform to improve workforce productivity, including the co-ordination challenge already highlighted, along with additional barriers such as legislation, organisation culture, resourcing, leadership and existing models of care and associated incentives.

National health workforce planning and Health Workforce Australia
Many of the outlined challenges have existed for a number of years and, in recognition of this, health workforce planning has existed in Australia for many years. In 1995 the Australian Medical Workforce Advisory Committee (AMWAC) was established, to "assist with the development of a more strategic focus on medical workforce planning in Australia" [5]. In 2000, the Australian Health Workforce Advisory Committee (AHWAC) was established to oversee national level, government initiated health workforce planning for the nursing, midwifery and allied health workforces. AMWAC and AHWAC ceased in June 2006; however, at the same time the Council of Australian Governments[b] (COAG) agreed to a significant national

health workforce reform package which included the establishment of the National Health Workforce Taskforce, which was a time-limited entity (ceasing on 30 June 2010). Each of these organisations carried out national health workforce planning. However the need to link higher education and workforce was recognised, and in 2008 COAG agreed to the National Partnership Agreement on Hospital and Health Reform. This acknowledged that a national, co-ordinated approach to health workforce reform was necessary with a particular focus on linking efforts of health and higher education sectors. Subsequently, Health Workforce Australia (HWA) was established as the national agency to progress health workforce reform and address the challenges of providing a skilled, innovative and flexible health workforce. HWA is an Australian Commonwealth statutory authority and reports to the Standing Council on Health[c] (SCoH).

SCoH commissioned HWA to undertake a workforce planning exercise for doctors, nurses and midwives over a planning horizon to 2025. The objective was to present and measure possible future health workforce outcomes under a range of workforce planning scenarios, and was titled Health Workforce 2025 (HW 2025).

Purpose of the Health Workforce 2025 project
The outlined challenges have substantial implications for the ability of Australia's health workforce to meet future health needs. The challenges are national in nature and so HW 2025 was primarily focussed at the national level. National planning allows a single, consistent approach to the management of the workforces. It is also only at the national level that questions of aggregate supply and demand can be separated from issues of allocation and distribution - the principal aim being to ensure an appropriate pool of professionals is available to meet aggregate demand.

By providing long-term, national workforce projections and presenting the best available planning information on Australia's future medical, nursing and midwifery workforces, the HW 2025 project provided a platform for nationwide discussions on future workforce policy and reform directions, to build a sustainable health workforce for Australia.

Purpose of this paper
This paper demonstrates how evidence-based workforce planning is being used in Australia to inform effective policy development. It presents the methodologies and underlying principles used by HWA in the HW 2025 project, summary results of the workforce planning projections, and the actions being taken to respond to the findings of the workforce projections.

Methods
Health workforce planning is conducted across many countries using different methodologies. Many workforce

planning models focus on using demographic trends to assess future supply and demand; others try to link health expenditure projections with health workforce projections; some take into account role extension and substitution; while others are trying to move beyond health service utilisation to needs-based models, as well as some examining multi-professional groups rather than professional groups in isolation [6,7].

A review of existing workforce planning methodologies, in concert with the project brief to HWA (to undertake a workforce planning exercise for doctors, nurses and midwives to present and measure possible future health workforce outcomes under a range of workforce planning scenarios), and an examination of data availability, identified the methodology outlined below as the best fit-for-purpose for the HW 2025 project.

Estimating workforce supply

HW 2025 used a dynamic stock and flow model to estimate future workforce supply at a national level in Australia. The four key inputs in the HW 2025 dynamic stock and flow model were: 1) workforce stock (in 5-year age and gender cohorts); 2) domestic new entrants; 3) migration (permanent and temporary); and 4) net exits, which included all permanent and temporary flows out of the workforce.

In the stock and flow method, the number and characteristics of the current workforce (stock) are identified, along with the sources and number of workforce inflows and outflows. Trends or influences impacting on the stock and flows are also identified.

To project future supply, the initial workforce stock is moved forward based on expected inflows and outflows,

allowing for the impact of identified trends and influences on the stock.

In the dynamic stock and flow model, the effect of people ageing is also accounted for. The workforce stock is broken down into age and gender cohorts, and each cohort receives inflows not just from graduates and migration (external flows), but also from people moving from one age cohort into the next. Similarly, each age and gender cohort has exits applied - from people leaving the workforce altogether, as well as exits as a person moves into the next age cohort. This is an iterative calculation for each year over the projection period, and provides for a more realistic representation of labour market dynamics.

The stock and flow process is represented in Figure 1, where people entering and exiting the workforce (the flows) periodically adjust the initial number in the workforce stock to project future supply.

Estimating workforce demand

HWA employed the utilisation method to develop workforce demand projections. This approach measures expressed demand, and is based on service utilisation patterns as they currently exist. It makes no assumptions about potential demand, or unmet demand.

Service utilisation data were matched against age and gender cohorts and, once mapped, were projected against future demographic structures. Mapping service utilisation to age and gender cohorts captures changes in service utilisation associated with changes in population composition. For example, if a particular set of services is associated with 35- to 39-year-old females and their share of the

Figure 1 Stock and flow process.
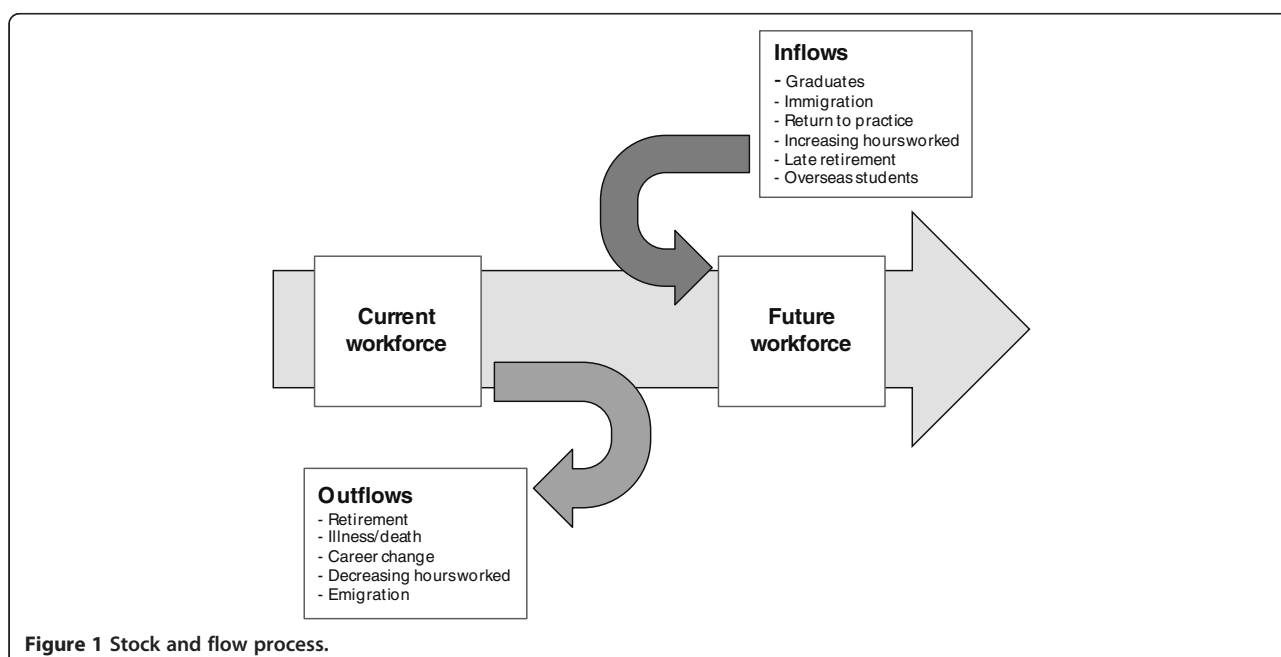
overall population increases, then demand for the workforces associated with the provision of those services will grow greater than the rate of the overall population.

In HW 2025, unique expressed demand growth rates were calculated for each medical specialty, nursing area of practice, and midwifery.

Key data sets used to generate the HW 2025 workforce supply and demand projections are presented in Table 1.

Scenario analysis

Scenario analysis was used to demonstrate the impact of potential policy options on future workforce supply and demand. The method used was to present a comparison scenario, where current trends in supply and expressed demand were assumed to continue into the future, and use this to compare with a range of alternative scenarios. Varying input parameters in the workforce projection

model generated the alternative scenarios. The flow through effect to the future workforce was then measured through the impact relative to the comparison scenario. The alternative planning scenarios were categorised according to the policy options they fit within, and included the following. (Not all scenarios that were modelled are listed in this article. Full details of all scenarios are contained in the HW 2025 suite of publications.)

Innovation and reform scenarios

Productivity scenario The demand for the workforce was reduced at a notional rate of 5% over the projection period, to illustrate productivity improvements through reforms including changed skill mix, changing models of care, technological change or other reforms.

Low demand scenario The demand for the workforce was reduced by a notional value of two percentage points.

Workforce retention scenario (nurses only) The supply of the nursing workforce was increased through improvements in the nursing retention rate.

Immigration scenarios

Medium and high self-sufficiency scenarios Immigration was progressively reduced to 50% and 95% of starting levels, respectively, to show the relative reliance of the workforce on international health professionals.

Other impact scenarios

High demand scenario The demand for the workforce was increased by a notional value of two percentage points.

Capped working hours scenario (doctors only) Capped the total number of hours worked by the total medical workforce at a notional value of 50 hours per week, to demonstrate the effect of a reduction of working hours for all doctors.

The scenarios were not used as predictions of the future, but were used to provide an estimate of a likely outcome given the set of conditions and assumptions upon which the scenario was based.

Principles underlying the methodology

In developing the HW 2025 project, HWA followed a number of key principles to ensure the workforce projections generated were robust and realistic [8], and able to be used as a framework for nationwide discussions on future workforce policy and reform directions.

Table 1 Key national data sets/sources

Variable	Data source
Doctors	
Workforce headcount/ demographics	AIHW medical labour force survey
Graduates	Medical Deans Australia and New Zealand
Fellows	Medical colleges
Immigration	Department of Immigration and Border Protection
Demand	Hospital separation statistics
	Medicare utilisation statistics
	Australia New Zealand Intensive Care Society
Nurses	
Workforce headcount/ demographics	AIHW nursing and midwifery labour force survey
Graduates	Department of Education (for registered nurses) and NCVER (for enrolled nurses)
Immigration	Department of Immigration and Border Protection
Demand	Hospital separation statistics
	Community care places
	Residential high care places
	Home and community care data
	Australia New Zealand Intensive Care Society
Midwives	
Workforce headcount/ demographics	AIHW nursing and midwifery labour force survey
Graduates	Department of Education
Immigration	Department of Immigration and Border Protection
Demand	ABS Australian population projections series B

ABS, Australian Bureau of Statistics; *AIHW*, Australian Institute of Health and Welfare; *NCVER*, National Centre for Vocational Education Research.

Methodological robustness and coherency

The selection of the workforce projection methodologies used involved consideration of a broad range of literature relating to health workforce planning and modelling [9-13]. The methodology chosen (described above) was determined to be the most fit-for-purpose, and was applied across the medical, nursing and midwifery workforces. This consistency and coherency in application allowed for meaningful comparisons and policy considerations at a national level.

Use of national data

All input data was sourced from nationally comparable data sets (Table 1). This meant the characteristics of the existing workforces and derived items such as exit rates were all developed on the same basis across Australia. The use of national data reinforced the coherence and consistency of applying the same methodology across workforces to allow for meaningful national comparisons.

Explicit assumptions

Workforce projections provide likely outcomes given the assumptions on which they are based. The assumptions underpinning HW 2025 were exposed for critical review through an extensive consultation process to ensure they were realistic and defensible. The underpinning assumptions were also published with the workforce projections to ensure the results could be interpreted accurately.

Consultation and review processes

The methodology, data and underpinning assumptions that created the HW 2025 workforce projections were consulted on extensively through the course of the project. In particular:

- A Technical Reference Group, composed of representatives from academia, government and the health sector, provided advice and expertise on issues including the appropriateness of the underpinning assumptions and best practice approaches to quantifying education and training capacity and modelling workload measures.
- The methodology paper was available for public comment.
- Structured workshops were conducted with workforce participants and organisations to expose the overall method and the assumptions underlying the baseline projections to critical review.
- Clinical leads (health professionals representing each of the fields of medicine, nursing and midwifery) provided clinical expertise and context to the workforce projections and the development of alternative scenarios.

Iterative process

Workforce projections become less accurate as the period of time over which they apply increases. The World Health Organization noted "It is therefore critical that plans include mechanisms for adjustment according to changing ongoing circumstances. Making projections is a policy-making necessity, but is also one that must be accompanied by regular re-evaluation and adjustment" [9]. HW 2025 projections will be updated as new data become available, and the methodology and assumptions will be periodically reviewed with the assistance of clinical experts to ensure the projections remain realistic and relevant.

Value of the Health Workforce 2025 methodology and principles

As outlined earlier, health workforce planning can be conducted using different methodologies. Many institutions in Australia, including state and territory governments, employers, professions and other planners, also conduct health workforce planning. Such workforce planning is often conducted for different purposes and has different scopes, data sources and assumptions. A national picture from such workforce planning cannot be obtained.

While previous national health workforce planning has also been conducted, this was in a siloed approach - examining individual specialty workforces (for example, anaesthesia specialists, radiology specialists, critical care nurses) in isolation and at different points in time.

Historically, there has also been no connection between the health and higher education sectors when conducting workforce planning, which is important given the vital role the education sector plays in generating the future health workforce.

HW 2025 addresses the above limitations. Using the methodology and principles outlined, HWA has developed a set of nationally authoritative, consistent and coherent health workforce projections to be used for health workforce planning. The national nature of the workforce projections is vital. National challenges are facing the health workforce, and the national planning conducted allows, for the first time, a single consistent approach to workforce management.

HW 2025 provides the evidence base from which student and training intakes can be aligned with projected health workforce requirements. As part of this, HWA has a responsibility to develop and implement programmes to increase the capacity and effectiveness of clinical training for health professions - providing a clear practical link between the health and education sectors.

Additionally, engagement with stakeholders through the extensive consultation and review processes ensured the workforce projections developed were relevant,

trusted and supported across the sector. This has meant HW 2025 results have been accepted as an evidence base upon which policy decisions are made.

Finally, the iterative nature of HW 2025 provides a means for the impact of incremental adjustments to the health workforce to be measured, taking into account significant changes in the health system or the underlying social and economic environment. This, along with the alignment of student and training intakes to projected health workforce requirements, is vital in avoiding previous boom and bust cycles of supply of the health workforce.

Results

Summary results from the HW 2025 project are presented for doctors, nurses and medical specialties. Additional results were generated for midwives, registered nurses and enrolled nurses, and registered nurses and enrolled nurses by area of practice[d]. These results are available in the HW 2025 suite of publications [14-16].

Doctors

Figures 2, 3 and 4 present the workforce supply and demand projections for the comparison and alternative scenarios for the medical workforce. The comparison scenario indicates that if current trends and conditions were to continue into the future, the medical workforce would largely be sustainable without changes to policy settings, with workforce demand exceeding supply by approximately 2,700 doctors in 2025.

Both innovation and reform scenarios (productivity and low demand) have a positive impact on the workforce gap relative to the comparison scenario (Figures 2 and 3). Under these scenarios, the medical workforce moves from a position of demand exceeding supply in 2025 under the comparison scenario to supply exceeding demand - by approximately 2,800 doctors in the productivity scenario, and 18,700 doctors in the low demand scenario. While both scenarios do not attribute their effects to particular measures, they demonstrate the potential aggregate effects of achieving specific improvements in productivity, or lowering demand for the medical workforce.

The self-sufficiency scenarios reduce workforce supply by reducing the number of migrants. Both self-sufficiency scenarios result in workforce demand substantially exceeding workforce supply in 2025, by approximately 9,300 doctors for medium self-sufficiency and 15,200 under high self-sufficiency (Figure 4). In both scenarios, demand exceeds supply earlier than the comparison scenario - in 2017 for medium self-sufficiency and 2019 for high self-sufficiency. These results demonstrate the significant role of international contributions to the medical workforce in meeting current and projected future demand.

Of all scenarios modelled, the high demand scenario has the greatest impact relative to comparison scenario - with demand exceeding supply by approximately 26,000 doctors (Figure 3). Reasons for increasing demand could include changing community expectations and increases beyond those predictable by effects such as aging and burden of disease. This highlights that any increases in
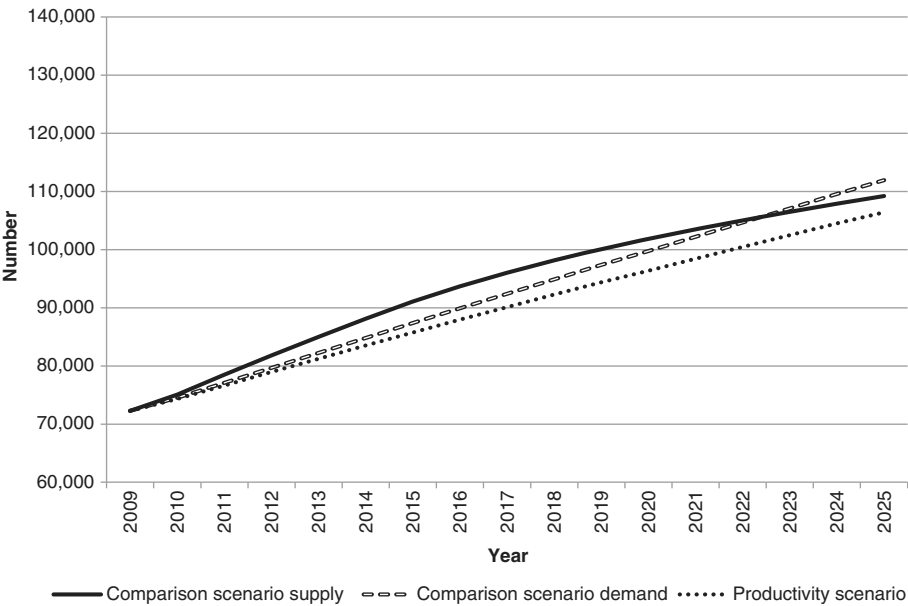
Figure 2 Medical workforce supply and demand projections: productivity scenario. This illustrates the potential impact of productivity improvements on medical workforce requirements relative to the comparison scenario. This was modelled by reducing workforce demand at a notional rate of 5% over the projection period.
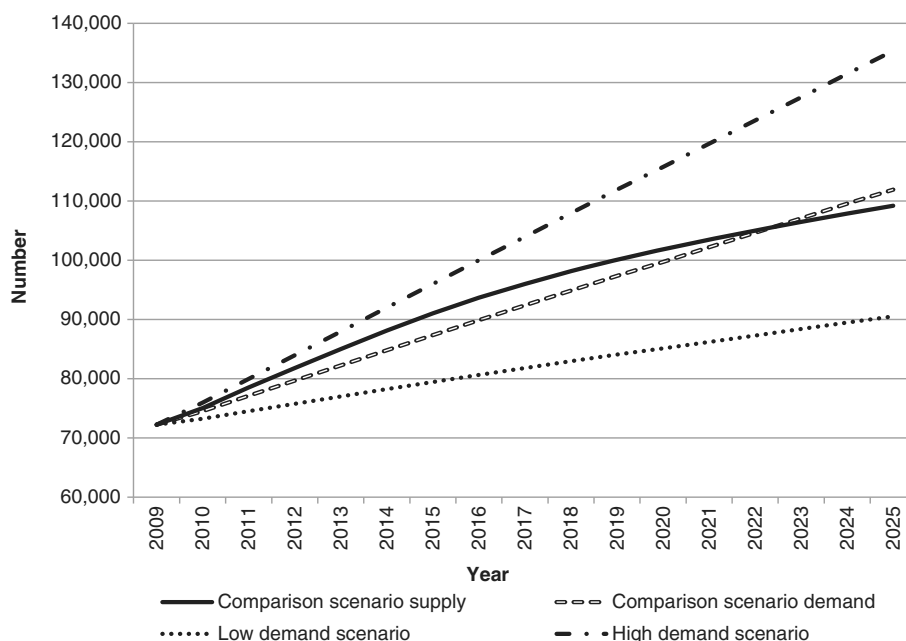
Figure 3 Medical workforce supply and demand projections: high and low demand scenarios. This illustrates the potential impact of changes in demand on future medical workforce requirements relative to the comparison scenario. In the low demand scenario, the demand for the workforce was reduced by a notional value of two percentage points. In the high demand scenario, the demand for the workforce was increased by a notional value of two percentage points.
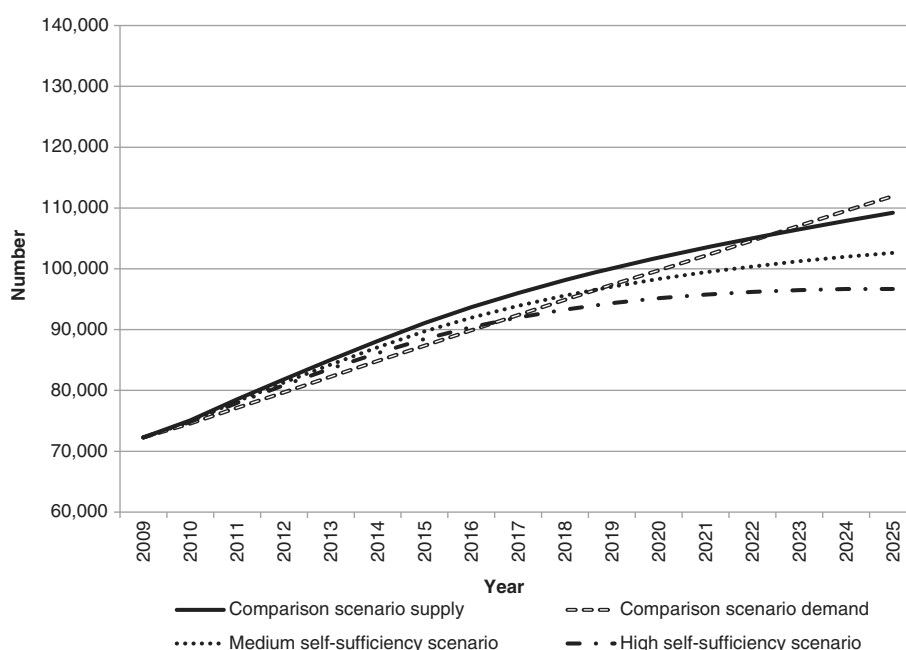
Figure 4 Medical workforce supply and demand projections: medium and high self-sufficiency scenarios. This illustrates the potential impact of changes in immigration levels on future medical workforce requirements relative to the comparison scenario. In the medium and high self-sufficiency scenarios, immigration was progressively reduced to 50% and 95% of starting levels, respectively.

demand (with other factors remaining the same) would have a substantial impact on the requirement for doctors.

Nurses

Figures 5, 6, 7 and 8 present the workforce supply and demand projections for the comparison and alternative scenarios for the nursing workforce.

In developing the nursing workforce projections, examination of recent trends showed nursing exit rates for the period 2007/2008 were markedly lower than those from 2001 to 2006 (likely a result of the impact of the tighter economic environment on superannuation savings). For the comparison scenario, where recent trends are assumed to continue into the future, an informed decision was made (using the consultation and review processes outlined earlier) to apply the 2007/2008 exit rates until 2012, after which they reverted in equal increments to the 2001 to 2006 levels, until from 2016 onwards the 2001 to 2006 exit rates applied fully.

In the comparison scenario, a significant nursing workforce gap is projected without change to policy settings, with the exit rates reverting to 2001 to 2006 levels from 2016. The comparison scenario estimates the demand for nurses will exceed supply from approximately 2014 onwards, with a shortfall of almost 110,000 nurses by 2025.

Each of the innovation and reform scenarios (productivity - Figure 5; workforce retention - Figure 6; and low demand - Figure 7) reduce the amount by which the demand for nurses exceeds supply relative to the comparison scenario in 2025. Of the three innovation and reform scenarios, the workforce retention scenario has the greatest impact in reducing the gap between nursing workforce demand and supply in 2025 (Figure 6). In this scenario, the nursing exit rates observed in 2007/2008 (which were substantially lower than historical levels) were retained across the projection period other than through normal ageing effects. This demonstrates the sensitivity of the model to the nursing exit rate, and provides insight into the effects of retention strategies on meeting the demand for nurses.

The self-sufficiency scenarios extend the amount by which workforce demand exceeds supply relative to the comparison scenario; however, the impact is not as significant when compared with the results for doctors (Figure 8). The impact of the self-sufficiency scenario for nurses is also not as substantial as the impact of the innovation and reform scenarios, indicating the nursing workforce is not overly sensitive to changes in immigration.

Medical specialties

Table 2 provides a summary of selected medical specialty workforce projections, showing the net difference between projected workforce supply and expressed demand in 2025 under each alternative scenario. Where the difference is positive, workforce supply increased relative to workforce demand; where negative, expressed demand increased relative to workforce supply. Workforce supply in 2009 is also shown to indicate the magnitude of the movement under each scenario.

In addition to the workforce projection results, Table 2 also shows the existing workforce position (EWP) assessment of selected medical specialties. (Results are not presented for all medical specialties that workforce
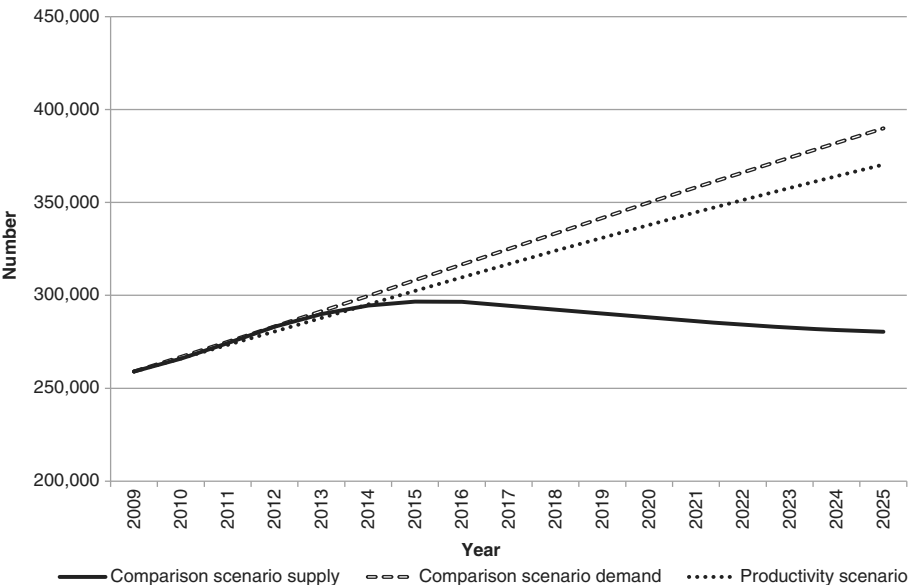
Figure 5 Nursing workforce supply and demand projections: productivity scenario. This illustrates the potential impact of productivity improvements on nursing workforce requirements relative to the comparison scenario. This was modelled by reducing workforce demand at a notional rate of 5% over the projection period.
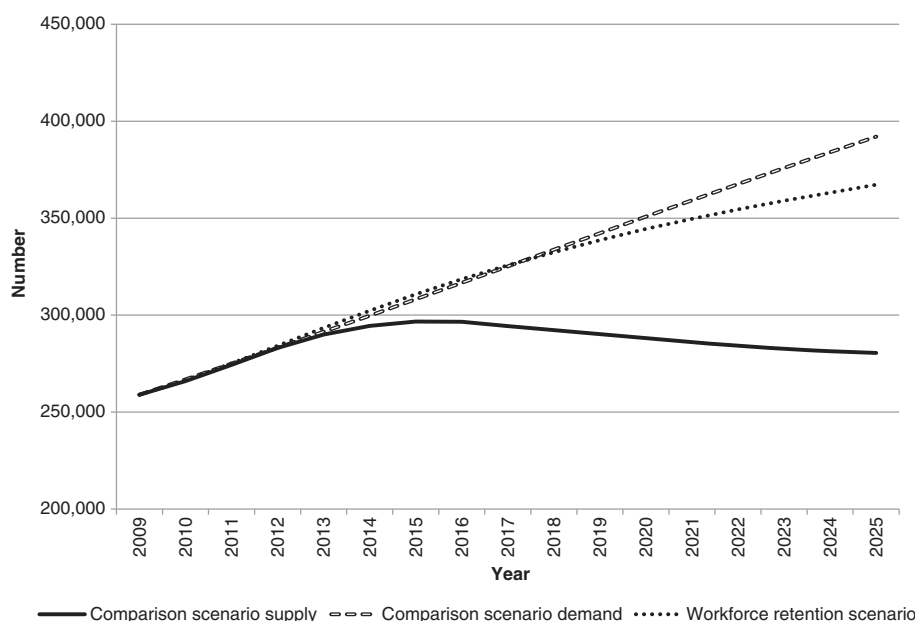
Figure 6 Nursing workforce supply and demand projections: workforce retention scenario. This illustrates the potential impact on nursing workforce supply of retaining nurses in the workforce. This was modelled by retaining 2007/2008 nursing exit rates (which were substantially lower than historical levels) across the projection period.
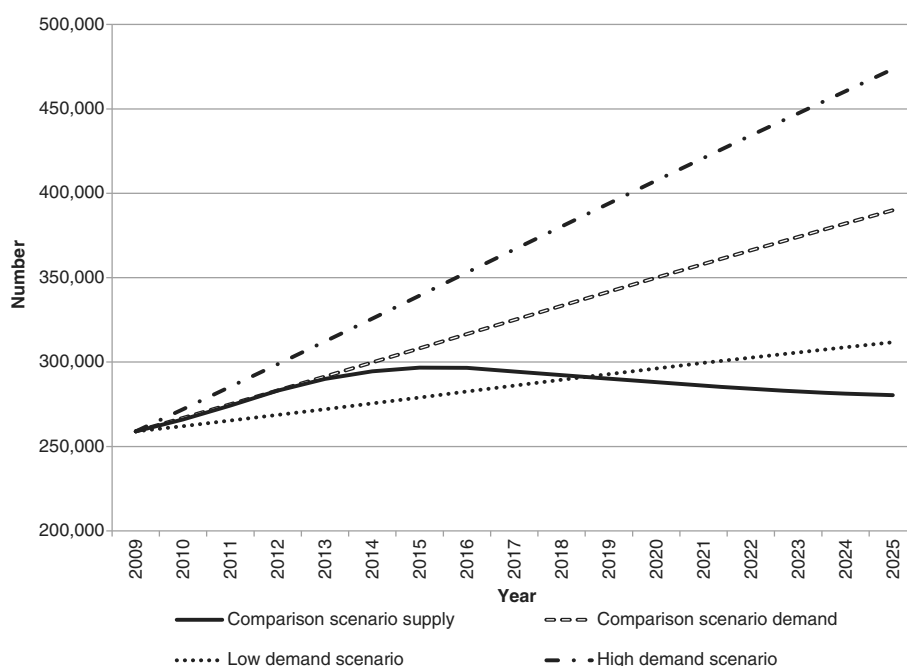
Figure 7 Nursing workforce supply and demand projections: high and low demand scenarios. This illustrates the potential impact of changes in demand on future nursing workforce requirements relative to the comparison scenario. In the low demand scenario, the demand for the workforce was reduced by a notional value of two percentage points. In the high demand scenario, the demand for the workforce was increased by a notional value of two percentage points.
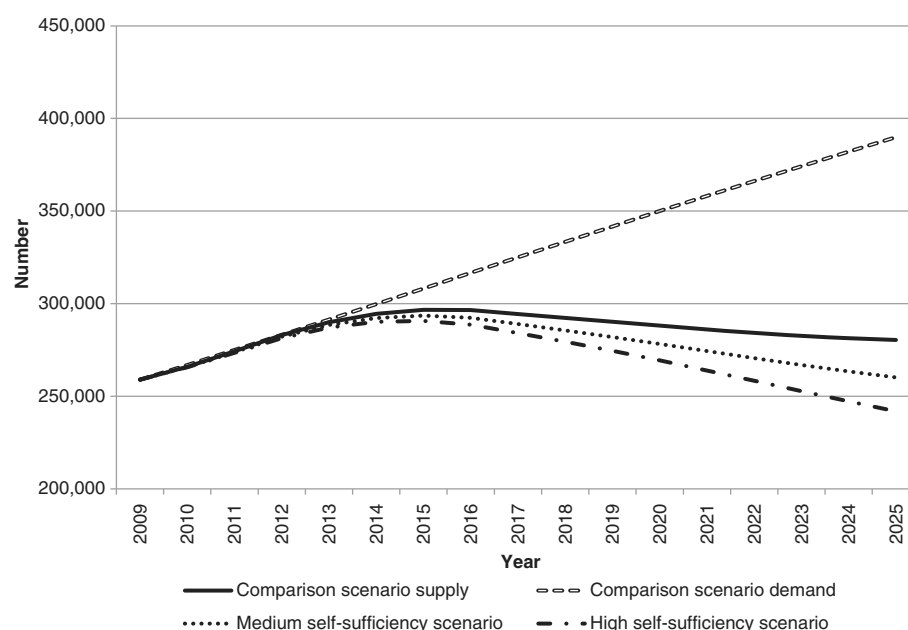
Figure 8 Nursing workforce supply and demand projections: medium and high self-sufficiency scenarios. This illustrates the potential impact of changes in immigration levels on future nursing workforce requirements relative to the comparison scenario. In the medium and high self-sufficiency scenarios, immigration was progressively reduced to 50% and 95% of starting levels, respectively.

projections were generated for. All medical specialty results are contained in [16].) For the medical and nursing workforce projections, it was assumed that the workforce was in balance at the beginning of the projection period. Feedback from stakeholders indicated this was not realistic, so prior to the development of the medical specialty workforce projections (which occurred after publication of the medical and nursing workforce projections), the EWP assessment was developed.

The EWP provides context for interpreting the workforce projection results, rather than assuming the workforce projections started from a position of balance. The EWP was determined from expert opinion from Australian state and territory government health departments, private employers and the profession, and an analysis of current vacancies and waiting times (where relevant and available). The EWP scale was:

Green: no current perceived shortage - sufficient workforce for existing expressed service demand, minimal number of vacancies, no difficulty filling positions, and short waiting times.

Table 2 Selected medical specialty results - net workforce movement (headcount), 2025

Medical specialty	Existing workforce position	2009 workforce supply	Net workforce movement in 2025 (difference between workforce supply and expressed demand)			
			Comparison scenario	Service and workforce reform scenario	Medium self-sufficiency scenario	Capped working hours scenario
Anaesthesia	Orange	3,476	130	861	−71	85
Emergency medicine	Orange	1,134	−40	221	−138	−80
General practice	Red	26,389	57	6,590	−3,831	8
Intensive care	Green	517	35	184	9	−96
Obstetrics and gynaecology	Orange	1,562	−142	221	−302	−265
Ophthalmology	Orange	843	−162	28	−204	−180
Psychiatry	Red	2,981	−452	321	−784	−498
Radiation oncology	Red	245	−57	25	−65	−91
General surgery	Orange	1,181	519	829	430	296
Orthopaedic surgery	Green	1,168	148	444	90	7

Orange: some level of expressed demand exceeding available workforce - either through mal-distribution or insufficient workforce numbers, some vacancies exist, with difficulty in filling positions.

Red: perceived current shortage - expressed service demand in excess of existing workforce, ongoing vacancies exist, difficult/unable to fill positions, and extended waiting times.

The EWP assessment identified that imbalances exist across the medical specialty workforces. While some medical specialties received an EWP assessment of green (no current perceived shortage), most were assessed as orange (perceived to have some level of expressed demand exceeding available workforce), and some were assessed as red (currently in shortage, with expressed service demand exceeding the existing workforce). Specialties perceived to be in shortage included general practice, general medicine, medical oncology, psychiatry, and radiation oncology [16].

For the medical specialties, the workforce projection results should be interpreted relative to the EWP assessment. Where workforce supply increases relative to demand (that is, the net workforce movement in Table 2 is positive), this does not necessarily imply a workforce will be in oversupply in 2025, particularly where the EWP assessment is red or orange. Key findings from the medical specialty workforce projections were: ongoing imbalances between medical specialties if current trends and conditions were to continue into the future; the service and workforce reform scenario (which incorporates a combination of reducing demand and increasing workforce productivity) had the greatest positive workforce impact relative to the comparison scenario of all the alternative scenarios; and the impact of the medium self-sufficiency scenario varied by medical specialty, demonstrating some workforces are more reliant on immigration.

Discussion

The findings from HW 2025 highlighted a 'business as usual' approach to Australia's health workforce is not sustainable over the next 10 years, with a need for co-ordinated, long-term reforms by government, professions and the higher education and training sector for a sustainable and affordable health workforce. The main policy levers identified to achieve change were innovation and reform, immigration, training capacity and efficiency and workforce distribution.

In particular, innovation and reform was highlighted as essential to a sustainable, affordable health workforce. In their 2005 report on Australia's health workforce, Australia's Productivity Commission[e] noted that "productivity-enhancing improvements to health workforce arrangements are critical to ensuring a sustainable health care system, particularly given the constraints on government

funding for health care" [17]. The innovation and reform scenarios in HW 2025 support this, demonstrating a substantial impact on projected workforce requirements. In Australia, recent workforce reforms have focussed on primary health care delivery, including support for new roles such as nurse practitioners by enabling access to Medicare (Australia's universal health insurance scheme which provides access to free or subsidised treatment by authorised practitioners). HWA's workforce innovation and reform programme is also supporting workforce reforms through expanded scopes of practice projects (such as expanding the use of physiotherapists in emergency departments and extending the role of paramedics) and building the role of rural medical generalists.

From the HW 2025 results, five policy proposals relating to the levers of innovation and reform, immigration, training capacity and efficiency and workforce distribution were approved by SCoH: 1) improved productivity through workforce innovation and reform; 2) improved mechanisms for the provision of efficient training; 3) addressing barriers and enablers to workforce reform; 4) streamlining clinical training funding; and 5) considerations for achieving national self-sufficiency.

From these five proposals, HWA is currently pursuing two work programmes specifically relevant to the retention and distribution of the health workforce. Under the first proposal (improved productivity through workforce innovation and reform), the Nursing Retention and Productivity Project is being progressed, and under the second proposal (improved mechanisms for the provision of efficient training) the National Medical Training Advisory Network (NMTAN) is being established.

Nursing Retention and Productivity Project

For nurses, the workforce retention scenario had the greatest impact on the nursing workforce, demonstrating that improving the retention rate and keeping nurses in the workforce is an effective option in minimising potential future workforce shortages.

This project will propose a set of recommendations for nationally co-ordinated action by government, industry, the higher education sector, and national nursing organisations to improve nurse workforce retention and productivity. The project and recommendations were informed by: individual meetings with key stakeholders including clinical, jurisdictional and non-government representatives in each Australian State and Territory; a consultation document which received 84 submissions from organisations and individuals; a key stakeholder workshop, with over 80 representatives; a call for stories from nursing students and recent graduates on their experiences and expectations; a literature scan identifying key national and international innovations and reforms in nursing retention and productivity; and a project advisory group.

The recommendations have been developed and are due to be presented to SCoH in April 2014.

If fully implemented, the recommendations will help to develop and maintain a sustainable, flexible, skilled nursing workforce to deliver safe, effective care within a multi-disciplinary team.

National Medical Training Advisory Network

Australia has no national co-ordinating mechanism linking vocational training availability for each medical specialty with the workforce needs of the community. Consequently, supply of each specialty group has been driven by factors not directly related to the community's requirement for health services, including: trainee career preferences; the service requirements for trainees - that is, the reliance on trainees rather than specialists to provide services within parts of the health system; and the remuneration opportunities of different specialties.

NMTAN is being designed to generate policy advice that improves co-ordination of medical training to meet Australia's workforce need. NMTAN will enhance planning, co-ordination and governance of medical training from profession entry through to vocational training by: aligning medical training effort with agreed national workforce requirements, focused on those areas where national effort adds value in addressing identified issues; progressing targeted medical training reforms, including those addressing geographic mal-distribution; forging stronger links between medical training activity, the health needs of the community and emerging models of care; and providing expert policy advice and guidance to the government, higher education, training and regulation sectors on national medical training issues.

The primary product from NMTAN is a series of rolling medical training plans with a focus on better co-ordination of medical education.

From these plans, NMTAN will identify annual target ranges for: medical student intakes; internships; basic and advanced trainee positions by specialty; and immigration requirements.

These targets will be reported to SCoH. Subject to the availability and robustness of data, these estimates will provide a level of geographic analysis to a state level (for smaller Australian states and territories) and at a regional level for larger Australian states.

NMTAN is in its establishment phase, and in 2013/2014 the concept of operations will be developed and implemented. The first national medical training plan is also due to be delivered to SCoH in the second quarter of 2014.

Conclusion

HW 2025 workforce projections provided Australia's first major, long-term national projections for the health workforce to 2025. The projections were developed using a principles and evidence-based approach, and demonstrated that a 'business as usual' approach to Australia's health workforce is not sustainable over the next 10 years.

The evidence basis upon which the workforce projections were developed enabled them to be used as a framework for a nationwide discussion on future directions for workforce policy and reform directions. From the policy proposals presented to SCoH, HWA is actively pursuing two work programmes that relate directly to key findings from the workforce projections. These work programmes will inform policy development relating to the productivity and retention of Australia's nursing workforce, and the distribution of the medical workforce across medical specialties, to best match community health needs.

HW 2025 is also not a one-off project. It is an ongoing process where HWA will continue to develop and improve health workforce projections incorporating data and methodology improvements to support incremental health workforce changes.

Endnotes

[a]Australia has a federal system of government, where powers are divided between a national government and state and territory governments.

[b]COAG is the peak intergovernmental forum in Australia. COAG promotes policy reforms that are of national significance, or which need co-ordinated action by all Australian Governments. COAG is supported by ongoing standing councils.

[c]SCoH is one of the standing councils supporting COAG. It is comprised of Australian Commonwealth, State, Territory and New Zealand Ministers with responsibility for health matters, and the Commonwealth Minister for Veteran's affairs.

[d]There are two levels of regulated nurses in Australia - Registered Nurses (RNs) and Enrolled Nurses (ENs). A RN is a person who has completed, as a minimum, a 3-year bachelor degree and is registered with the Nursing and Midwifery Board of Australia (NMBA). RNs practise independently and interdependently, assuming accountability and responsibility for their own actions and delegation of care to ENs and other health care workers. An EN usually works with RNs to provide patients with basic nursing care, doing less complex procedures than RNs. ENs must complete accredited training through a Vocational Education Training provider, and are also registered with the NMBA. In HW 2025, workforce projections were developed for RNs and ENs, as well as RNs and ENs categorised to the following areas of practice: acute care, critical care and emergency, aged care, mental health and all other areas.

[e]The Productivity Commission is the Australian Government's independent research and advisory body on a

range of economic, social and environmental issues affecting the welfare of Australians.

Abbreviations
AHWAC: Australian Health Workforce Advisory Committee;
AMWAC: Australian Medical Workforce Advisory Committee; COAG: Council of Australian Governments; EN: Enrolled Nurse; EWP: existing workforce position; NMBA: Nursing and Midwifery Board of Australia; HW 2025: Health Workforce 2025; HWA: Health Workforce Australia; NMTAN: National Medical Training Advisory Network; RN: Registered Nurse; SCoH: Standing Council on Health.

Competing interests
The authors declare that they have no competing interests.

Authors' contributions
IFC was the project lead and, in conjunction with MVM as project manager, designed the project and the alternative planning scenarios. MVM was responsible for conducting the workforce modelling. BJF designed and drafted the manuscript. TH and MCT assisted with conducting the workforce modelling and were involved in drafting of the manuscript. ST assisted with the workforce modelling. All authors read and approved the final manuscript.

Authors' information
All authors are employed by Health Workforce Australia, the organisation which conducted the workforce projections and is funding and managing the Nursing Productivity and Retention Project and the National Medical Training Network, and is the organisation that is financing the manuscript.

References
1. Buchan J, Naccarella L, Brooks P: Is health workforce sustainability in Australia and New Zealand a realistic policy goal? *Aust Health Rev* 2011, **35**:152–155.
2. Hernandez P, Dräger S, Evans DB, Tan-Torres Edejer T, Dal Poz MR: *Measuring Expenditure for the Health Workforce: Evidence and Challenges.* Geneva: WHO; 2006.
3. Australian Institute of Health and Welfare: *Australian Hospital Statistics 2009–10. Health services series no. 40. Cat. No. HSE 107.* Canberra: AIHW; 2011.
4. Goss J: *Projection of Australian Health Care Expenditure by Disease, 2003–2033. Cat. No. HWF 36.* Canberra: AIHW; 2008.
5. Australian Medical Workforce Advisory Committee: **Medical workforce planning in Australia.** *Aust Health Rev* 2000, **23**:8–26.
6. Ono T, Lafortune G, Schoenstein M: **Health workforce planning in OECD countries: a review of 26 projection models from 18 countries.** In *OECD Health Working Papers, No. 62.* France: OECD Publishing; 2013:8–11.
7. National Health Workforce Planning and Research Collaboration: *Alternative Approaches to Health Workforce Planning Final Report.* Adelaide: HWA; 2011.
8. McCarty MV, Fenech BJ: **Towards best practice in national health workforce planning.** *MJA* 2012, **1**(Suppl 3):10–13.
9. World Health Organization: *Models and Tools for Health Workforce Planning and Projections. Human Resources for Health Observer, 3.* Geneva: WHO; 2010.
10. Craig D, Byrick R, Carli F: **A physician workforce planning model applied to Canadian anesthesiology: planning the future supply of anesthesiologists.** *Can J Anesth* 2002, **49**:671–677.
11. Roberfroid D, Leonard C, Stordeur S: **Physician supply forecast: better than peering in a crystal ball?** *Hum Resour Health* 2009, **7**:10.
12. Schofield D, McRae I, Shrestha R: **Modelling demand for medical services in Australia.** In *International Medical Workforce Conference.* Edinburgh, Scotland; 2008:16–20. http://rcpsc.medical.org/publicpolicy/imwc/demand_modelling.pdf.
13. Segal L, Bolton T: **Issues facing future health care workforce: the importance of demand modelling.** *Aust New Zeal Health Pol* 2009, **6**:12.
14. Health Workforce Australia: *Health Workforce. Australia: Doctors, Nurses and Midwives – Volume 1.* Adelaide: HWA; 2012.
15. Health Workforce Australia: *Health Workforce 2025 – Doctors. Australia: Nurses and Midwives – Volume 2.* Adelaide: HWA; 2012.
16. Health Workforce Australia: *Health Workforce 2025. Australia: Medical Specialties – Volume 3.* Adelaide: HWA; 2012.
17. Productivity Commission: *Australia's Health Workforce Research Report.* Canberra: Productivity Commission; 2005.

A HEALTH POLICY AND SYSTEMS RESEARCH READER ON HUMAN RESOURCES FOR HEALTH

HEALTH RESEARCH POLICY
AND SYSTEMS

CH 7

RESEARCH   **Open Access**

The making of nursing practice Law in Lebanon: a policy analysis case study

Fadi El-Jardali[1,2,3,4,5*], Rawan Hammoud[1,2], Lina Younan[6,7], Helen Samaha Nuwayhid[7], Nadine Abdallah[1], Mohammad Alameddine[1], Lama Bou-Karroum[1,3] and Lana Salman[8]

Abstract

Background: Evidence-informed decisions can strengthen health systems, improve health, and reduce health inequities. Despite the Beijing, Montreux, and Bamako calls for action, literature shows that research evidence is underemployed in policymaking, especially in the East Mediterranean region (EMR). Selecting the draft nursing practice law as a case study, this policy analysis exercise aims at generating in-depth insights on the public policymaking process, identifying the factors that influence policymaking and assessing to what extent evidence is used in this process.

Methods: This study utilized a qualitative research design using a case study approach and was conducted in two phases: data collection and analysis, and validation. In the first phase, data was collected through key informant interviews that covered 17 stakeholders. In the second phase, a panel discussion was organized to validate the findings, identify any gaps, and gain insights and feedback of the panelists. Thematic analysis was conducted and guided by the Walt & Gilson's "Policy Triangle Framework" as themes were categorized into content, actors, process, and context.

Results: Findings shed light on the complex nature of health policymaking and the unstructured approach of decision making. This study uncovered the barriers that hindered the progress of the draft nursing law and the main barriers against the use of evidence in policymaking. Findings also uncovered the risk involved in the use of international recommendations without the involvement of stakeholders and without accounting for contextual factors and implementation barriers. Findings were interpreted within the context of the Lebanese political environment and the power play between stakeholders, taking into account equity considerations.

Conclusions: This policy analysis exercise presents findings that are helpful for policymakers and all other stakeholders and can feed into revising the draft nursing law to reach an effective alternative that is feasible in Lebanon. Our findings are relevant in local and regional context as policymakers and other stakeholders can benefit from this experience when drafting laws and at the global context, as international organizations can consider this case study when developing global guidance and recommendations.

Keywords: Evidence-informed policymaking, Lebanon, Nursing law, Policy analysis

Background

Evidence-informed decisions can strengthen health systems, improve health, and reduce health inequities [1]. The Beijing, Montreux, and Bamako calls for action have emphasized the need for national governments to promote and finance Knowledge Translation towards the application of evidence-informed policymaking by developing trust between researchers, practitioners, and policymakers [2,3]. Despite these calls, literature shows that research evidence is underemployed in policymaking, especially in the East Mediterranean region (EMR) [4-6].

In line with the World Health Organization (WHO) recommendations, a recent priority setting exercise in the EMR revealed that one of the key health systems priority concerns is related to shortages in human resources for health (HRH) particularly in the nursing workforce [7,8]. Nursing shortages occur at multiple levels and include quantity (adequate numbers) and

* Correspondence: fe08@aub.edu.lb
[1]Department of Health Management and Policy, American University of Beirut, Riad El Solh, PO Box 11-0236, Beirut 1107 2020, Lebanon
[2]Knowledge to Policy (K2P) Center, Faculty of Health Sciences, American University of Beirut, Riad El Solh, Beirut 1107 2020, Lebanon
Full list of author information is available at the end of the article

quality (good qualifications and clear scope of practice) [9]. The mounting complexities in patient care and acuity have increased the need for a qualified nursing workforce with consistent and coherent educational standards and policies [10-12].

The WHO, the International Council of Nurses (ICN), and the EMR Advisory Panel on Nursing have outlined recommendations for global nursing educational standards and competencies to standardize and enhance the quality of nursing care [13]. However, complying with these standards in Lebanon would require changes in legislation concerning nursing scope of practice, entry requirements, and education. These international reports triggered the initiation of the draft nursing practice law in Lebanon. This draft law has been under study by legislative authorities in Lebanon for over 12 years, and has yet to be passed.

To gain insight into the policymaking process, including the use of evidence, we have selected the draft nursing practice law in Lebanon as a case study for a policy analysis exercise. The draft nursing law was selected due to its national and regional importance and relevance, its recognition as a policy challenge, and the presence of an opportunity for change [14-16]. This case study is an example of a stagnated policy development process that aims to demystify the process of policymaking in a developing country like Lebanon and to demonstrate the complex interaction of local and international stakeholders. This policy analysis exercise aims at generating in-depth insights on the public policymaking process, identifying the factors that influence policymaking, and assessing to what extent evidence is used in this process. Selecting the draft nursing practice law as a case study, this policy analysis explores how and why this policy was developed, draws on lessons learned for informing future public policymaking, and provides insights for structuring the decision making process and integrating the systematic use of evidence [17].

Case study background
Lebanese political system
The Lebanese political system is a parliamentary democratic system consisting of three powers: legislative power (represented by the Parliament elected from the people), executive power, and judicial power. Public policies can take the form of laws stemming from the legislative or decrees that implement the laws developed by executive authorities [18]. The political system in Lebanon institutionalizes the deeply rooted political sectarianism, as top government positions and seats of the parliament are earmarked by sect [19-21]. Since 2005, there has been an increased polarization in the Lebanese community. Instability in Lebanon has intensified due to political strife, security threats, and most

recently, due to the impact of the Syrian crisis and the constant influx of refugees. This has led to the paralysis of the work of the government, the parliament, and, as a consequence, the policy development process in Lebanon.

Lebanese healthcare system
The Lebanese healthcare system is characterized as pluralistic and fragmented due to the heavy involvement of the private sector in the delivery and financing of care [22]. The Ministry of Public Health (MOPH) finances the coverage of 43% of the Lebanese population who do not benefit from another insurance plan through budgetary allocation [23]. The rest of the population are covered by various financial schemes including six different publicly managed employment-based social insurance funds, the largest of which is the National Social Security Fund that covers 23% of the population and is mandatory for the formal (public and private) sector. Other schemes include private insurance and mutual funds [23]. Despite these various financial schemes, out of pocket expenditure on healthcare remains alarmingly high at 44% [23]. Provision of healthcare services is highly privatized. Regarding primary healthcare, out of 800 facilities in Lebanon, 186 primary healthcare centers belong to the primary healthcare network which is supported by the MOPH and delivers a basic package of health services to the population across Lebanon [23]. Over half of the primary healthcare centers are owned by non-governmental organizations (51%), while the rest are owned by the MOPH, the Ministry of Social Affairs, and the municipalities [23]. As for hospitalization, 80% of hospitals are owned by the private sector and the MOPH contracts out services from these hospitals to cover its patients [23].

Human Resources for Health
Regarding HRH, in Lebanon there is an oversupply of physicians and an undersupply of nurses. The ratio of physicians to population is 248 per 100,000, which is the highest in the EMR and close to figures reported in the United States and Organization for Economic Co-operation and Development countries [24]. The opposite case is found with nurses as the nurse density in Lebanon is 1.18 per 1,000 individuals compared with a global average of 4.06 per 1,000 [25]. Lebanon has the 8th lowest nursing density in the EMR [26]. The physician density in Lebanon is twice the nurse density [8]. Furthermore, there is a geographical maldistribution of nurses as the majority work in urban areas like Mount Lebanon (34%) and Beirut (27%), making the shortage more pronounced in smaller villages and towns particularly in rural areas [27,28]. According to the records of the Order of Nurses in Lebanon (ONL), there are approximately 11,621 registered in the ONL [29]. However, those

numbers might increase as a result of the recent work that the ONL is conducting to update their database for registered nurses. Rough estimates imply that, in order to satisfy the current need for nurses in Lebanon, the nursing workforce would need a three-fold increase [29]. Other issues affecting the nursing workforce includes high migration rates (particularly for registered nurses), low retention rates, and tough working conditions [30,31].

As for nursing education, there are many obstacles, including different levels of entry into the career, lack of a clear-cut scope of practice, and various authorities regulating education and practice [10]. In Lebanon, nursing is taught in universities allowing students to attain a Bachelor's degree (BS) in nursing, and in technical vocational schools, allowing students to attain a vocational degree in nursing (Baccalaureate Technique (BT), a three year program) and a higher vocational degree (Technique Superior (TS), a three year program after the BT). At the moment, less than half (47%) of the nurses in Lebanon have university BS degrees whereas the rest (53%) are vocational school graduates (33% having a TS and 20% having a BT) [25]. Currently, there are 106 vocational schools and 19 universities that teach nursing in Lebanon (excluding the number of branches) [27]. Most universities are located in urban regions (68%), while most vocational schools are located in rural regions (82%) [32]. To this day, Lebanon lacks an integrated national system responsible for the monitoring, certification, and accreditation of nursing education [29].

The historical progress of the draft nursing practice law in Lebanon

The first nursing law in Lebanon was introduced in 1962 (Decree 9829) and the regulation of the nursing profession was within the jurisdiction of the MOPH. In 1979, the MOPH updated the law governing the nursing profession (Decree 1655) to classify and define the role and scope of nursing professionals at different levels and in 1982 it was slightly amended to become as follows [33]: professional nurse (with a BS or TS), nurse (with a BT), and assistant nurse (with a 1- to 2-year training program BP). Since 1999, there have been efforts to improve the laws governing the nursing profession in Lebanon in hopes of reorganizing and modernizing it. This resulted in a draft law called "Nursing Profession Practice Law", which sought to replace the current law governing the nursing profession in Lebanon, Decree 1655, which was adopted in 1979. This draft law aimed to organize and enhance the nursing profession by upgrading and standardizing the entry requirements into the nursing profession and changing the nursing levels. These changes would then render the nursing workforce in Lebanon compliant with WHO and ICN standards. This draft has been under development and study for

around 13 years, and to this day, these issues remain unresolved and the draft nursing law has yet to be passed. Figure 1 presents the chronological progress of the draft nursing practice law.

This policy analysis exercise aims at generating in-depth insights on the public policymaking process, identifying the factors that influence policymaking, and assessing to what extent evidence is used in this process.

Methods

This study utilized a qualitative research design using a case study approach and was conducted in two phases: data collection and analysis, and validation. The study took place from March 2011 until June 2013. This study was both retrospective and concurrent as it evaluated the policy development process over a long period of time (13 years). At the same time, this study sought to support future policymaking and changes through this policy analysis as the draft law has yet to be passed [34].

In the first phase, data was collected through key informant interviews that covered 17 stakeholders, including two members of the parliament, two ministers, four deans of schools of nursing across Lebanon, order and syndicate representatives, and other key policymakers. Interview questions aimed at providing insight into the policymaking process of the draft nursing practice law concerning the role of stakeholders and policymakers, the context in which this draft law was developed, and to which extent evidence was utilized in the policymaking process. Key informants were purposively selected and a snowballing technique was employed to ensure that other stakeholders involved in the policy were also included. Face-to-face semi-structured interviews were conducted, lasting between 45 to 60 minutes. Interviews were digitally recorded after obtaining signed informed consent from interviewees; only four interviewees refused to be audiotaped, and their responses were then recorded by extensive note taking. The semi-structured interview tool was developed based on literature reviews and pilot tested before initiating the study. The recorded interviews were transcribed verbatim. Arabic interviews were translated into English and then back-translated to Arabic to ensure accuracy of translation. Interview transcripts were reviewed independently by two members of the research team and consequently coded. Disagreements were resolved either by consensus or discussions with the principal investigator until consensus was reached.

In the second phase, a panel discussion was organized at the ONL to validate the findings, identify any gaps and gain insights and feedback of the panelists. The panel discussion involved 12 participants including representatives from the ONL and experts in nursing administration and academia. Some of these participants had been involved in the interview phase of the study.

Figure 1 Historical progress of the draft nursing practice law in Lebanon.

Findings were presented to participants for discussion. Panelists shared their experience on the development of the draft nursing practice law, proposed possible next steps regarding its development, and discussed the main challenges in the policymaking process in Lebanon. Participants validated the information regarding the policymaking process that this draft law had undergone and highlighted specific barriers for its development. The panel discussion, which lasted for two hours, was recorded by note taking.

Thematic analysis was conducted. The Walt & Gilson's "Policy Triangle Framework" provided guidance as themes were categorized into content, context, actors, and process. This framework facilitates the analysis of the content of the policy, the actors involved in the decision-making, the process by which the policy was initiated, formulated, and communicated, and the contextual factors that influenced the policy. This framework is the only framework grounded in political science, which is the science most directly focused on examining influences on the policymaking process [35]. This analytical framework can be used retrospectively allowing a comprehensive understanding of the policymaking process and prospectively supporting effective planning and implementation of

future policies. Another framework that provided guidance is the stakeholder analysis proposed by Roberts et al. [36], which builds on others such as interest group analysis by Lindblom [37] and an examination of the bureaucratic process and competition between stakeholders by Downs [38]. This framework helped identify relevant groups and individuals, assess their power, resources, and positions on the policy, and their perception and framing of the policy problem [36]. The stakeholder analysis framework was used in combination with the policy triangle framework particularly in the section on actors and the interpretation of results.

The study protocol, interview guide, and consent form for this study were reviewed and approved by the Institutional Review Board at the American University of Beirut prior to data collection.

Results

Our findings are presented according to the policy triangle framework (Content, Context, Actors, and Process) [35].

Content

The draft nursing practice law's exact changes required upgrades in each of the educational requirements for

nurses and a reorganization of the nursing levels (Figure 2). The draft nursing law classifies the nursing profession into three new categories: i) specialized nurse: a nurse with a Master Degree (MS) in nursing; ii) regular nurse: a nurse with a Bachelor's degree (BS) in nursing; and iii) assistant nurse: a nurse with a vocational degree in nursing (BT).

Accordingly, the draft law would eliminate the nursing level of students with only 1 to 2 years' worth of training. It would also stop considering higher vocational degree (TS) graduates as professional nurses and limit regular nurses to those who have a bachelor's university degree BS. Participants suggested that the draft nursing practice law did not account for the future of the higher vocational degree (TS) as determined by its implementation. Participants also highlighted how the draft law failed to consider the impact of this law on current and future higher vocational degree (TS) nurses though they comprise nearly one third of (33%) the nursing workforce in Lebanon [27] and in some rural underserved areas, they are the only types of nurses available.

Opinions varied on how this law would be implemented; some participants called for the elimination of vocational degrees and others suggested a bridging program from higher vocational degree (TS) to university degree (BS).

"*We cannot abolish TS and BT, we can train them instead*" – A Policymaker

Context

The proposed draft nursing practice law aimed to modernize a 40-year-old existing law. The analysis of the context revealed various themes, which were categorized under two major themes: promoting factors and barriers.

Promoting factors

Situation of nursing profession in Lebanon Participants believed the general situation of the nursing profession in Lebanon to be lacking in many areas. Low salaries, poor working conditions, and unappealing image in Lebanese society were some of the factors plaguing the nursing profession in Lebanon and pushing them towards migration. In fact, studies have demonstrated that nurses choose to migrate out of Lebanon to enjoy a more supportive work environment, autonomy in decision making, career development and promotion, better salary levels, and greater commitment to nursing excellence

Figure 2 Nursing levels according to the current and draft nursing practice law.
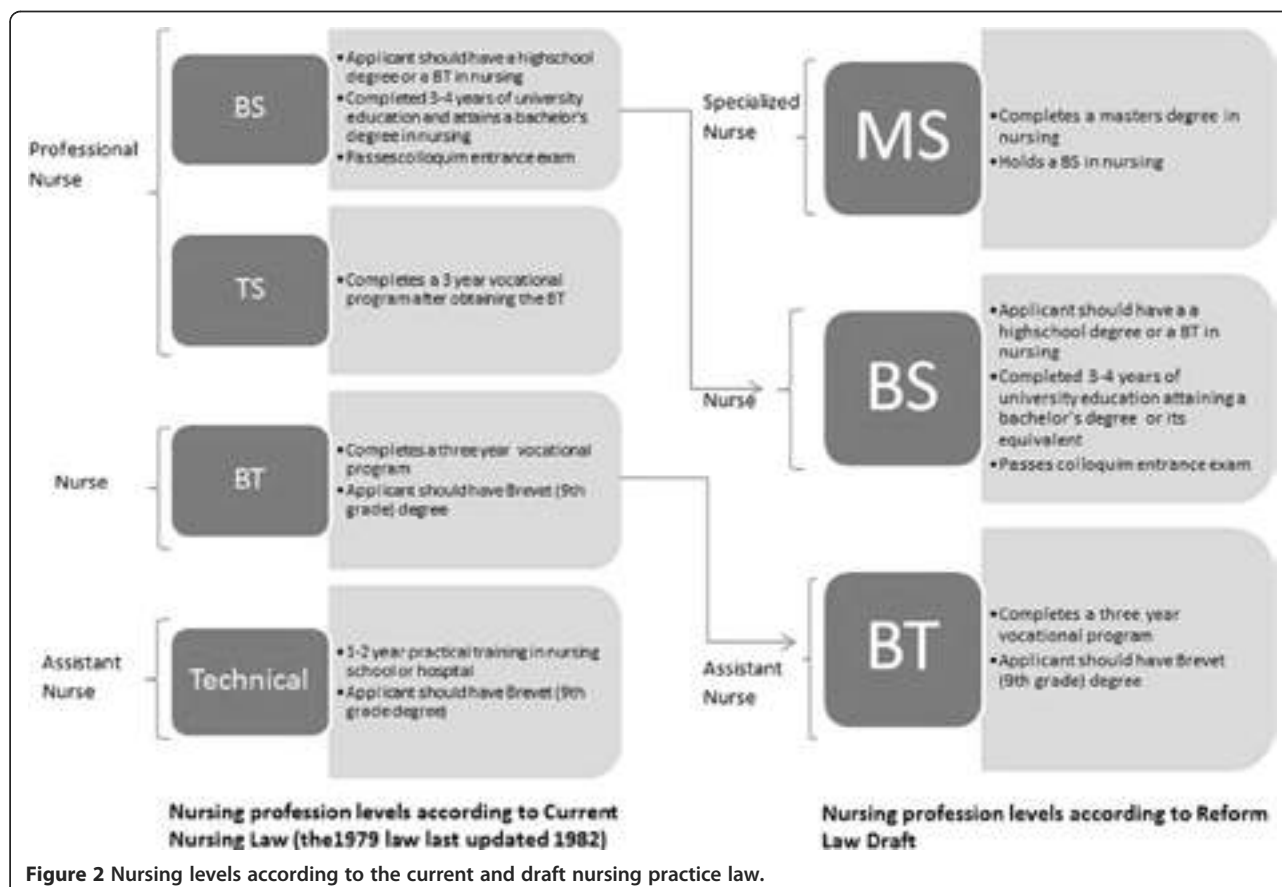
[31]. Another more recent study among healthcare providers in primary healthcare centers across Lebanon revealed that the top three reasons for quitting are poor salary, better job opportunities outside the country, and lack of professional development [39]. These conditions have led to a shortage in nursing which was considered by most participants to be one of the biggest and most complex problems in Lebanon.

Push for incorporation of international standards Findings revealed that international reports, recommendations, and standards played a significant role in triggering the development of the draft nursing practice law. The formulation of this draft law was prompted by the nursing standards of the WHO and ICN, and the desire to achieve the millennium development goals by 2015 in respect to upgrading nursing education from technical to university level.

Disparity in education among nursing schools An additional factor that demonstrated the need for modifying the nursing practice law is the status of nursing education in Lebanon. All participants acknowledged the need to improve the quality of nursing education by strengthening curricula and encouraging accreditation. Very few nursing schools are accredited by the Ministry of Education which contributes to a discrepancy among various nursing schools. Student admissions into nursing schools are low, yielding an insufficient number of nursing degree holders to satisfy market demands. University hospitals usually employ their graduates (BS holders), leaving technical graduates to public institutions where they are paid less.

Disparity in performance of different nursing levels Participants provided different perspectives as some expressed that there are variations among university degrees and technical degrees in nursing. These differences in performance, compounded by a lack of coordination among educational institutions, led to a perceived decline in the quality of nursing services in the country.

> "*It's a mess between private technical schools, public technical schools, and universities.*" – A Stakeholder

However, few participants perceived vocational graduates as more practical and interactive with patients while considering university graduates more academic. Another mentioned that even though the quality of education may be different, vocational graduates are still delivering quality services, and that vocational and university graduates are delivering the same performance. Some participants stated that even if the higher vocational TS degree education has the same duration as the university, the quality and recognition differs. It was also emphasized that the current system is unfair to vocational graduates as they are paid almost 50% less than university graduates.

Barriers
Financial hardship of hospitals One of the factors that impeded the progress of this draft law was the financial situation and hardship that the hospitals were experiencing. The low salaries given to nurses were attributed by the participants to the financial situation especially given the low tariffs and delayed reimbursement by insurers. It was observed that patients usually pay for a doctor's time, laboratory testing services, bed and medical costs, and prescriptions, but there is no cost of nursing care. This is turn prevents nurses from obtaining their financial rights and makes them feel devalued.

> "*The day where patients will begin directly paying for nursing costs on their bills, you will see a radical change in the profession because nurses will become more valued.*" – A Researcher

Participants indicated that this financial situation, in addition to the poor reimbursement for nursing care, made it even more difficult for hospitals to be able to afford the higher salaries of the university level nurses as per the proposed draft nursing law.

Disparity in access of students to nursing programs Participants mentioned that many rural areas in Lebanon lack universities, and technical institutes are the only option they have. This is exacerbated by the fact that technical institutes are more affordable than private universities. There was also a perceived discrepancy in the academic programs and competencies between urban and rural areas in Lebanon. As such, a nursing law that limited the nursing practice to university level graduates would aggravate the shortage and mal-distribution of nurses in Lebanon.

Political context
Participants reported that the political environment influenced the policymaking process and added to the delay in the development of this draft. Some participants pointed out that the draft nursing practice law was not high enough on the priority list of the Lebanese government, as it was concerned with other more pressing issues. Also, participants indicated that the poor coordination between the ministries and the unstable political situation in the country hindered the policy process related to this draft law. This may partially explain why 12 years have passed since the introduction of this draft nursing law to Parliament, with no solution as of yet.

In addition, it was mentioned how personal interests influenced policy making process such as favoritism.

"*Under* [the former Minister of Health], *our efforts were successful due to circumstances: his advisor was married to a nurse... I went to him directly and talked to him... and finally the advisor convinced the minister.*" – A Researcher

Sectarianism, political interests and pressures were also considered to impact policymaking and compromise the transparency of the decision making process.

"*...in Lebanon everything is subject to political and sectarian issues and no one thinks of the health and safety of the citizens and of the harm this can bring to them.*" – A Policymaker

"*Some members of parliament (MP)s agreed on it in the joint committees but those same MPs refused it when it arrived to the general board. They refused because of the favoritism and personal interests.*" – A Policymaker

Though sectarianism did not appear to play a key role in the unfolding of events regarding this particular draft law, participants did mention that some stakeholders (like the vocational schools), were mostly predominated by specific sects (like Shiite sect), which added another layer of political pressure.

Participants explained how economic interests translated into political positions as a result of underlying vested interests policymakers had regarding this law. For example, some participants felt that one of the reasons for the opposition to this law is that some hospitals are owned by politicians and influential people, and many vocational schools are owned by religious associations with their own agendas. Neither group would be willing to pass a law that would require them to relinquish their influence or financial gain. However, few participants showed no concern for political problems in the draft nursing law. They indicated that even though there may be issues among political parties, it is more of a financial problem and less of a political one.

"*You can always blame politics but I'm not sure it's the right reason. People don't know how slow the process is.*" – A Stakeholder

Power gradient in the medical field
Another aspect of the formulation of the draft nursing practice law that could have played a role in delaying it was the balance of power and authority among physicians and nurses. Literature indicates that in most Arab countries the medical profession is dominated by males, whereas women dominate the nursing and midwifery professions, which are perceived as "female oriented" and require little or no education, thus falsely creating the poor image of nurses in Lebanon and the region [40]. This gender/power gradient also manifested itself in the legislative authorities as the majority of parliamentarians in the health parliamentary committee that studied the draft nursing practice law, including its president, were male physicians. As for the impact of this draft nursing law on the balance of authority among health professionals, participants had different points of view. Interestingly, though the syndicate of physicians was one of the supporters of this draft law, a few participants predicted that the implementation of this law would make doctors perceive an impingement on their authority and income generation. However, other participants saw the implementation of this law as an opportunity for growth and synergy between the two professions leading to a better use of the physician's time. Also, some participants believed that it was the responsibility of the Order of Physicians to make sure these two professions do not overlap.

Actors
With respect to this draft nursing law, the position of the participants in this study ranged from support to opposition (Figure 3). As such, two clusters of actors emerged (supporters and opponents) and they formed issue networks where different individuals and groups are brought together by a common purpose or goal [34]. Taking these networks into account in the analysis would reflect the phenomenon of shared decision making and use of resources to achieve goals [34]. Perception refers to how a problem is characterized, choices are described, and an issue is framed [36]. To this end, stakeholder analysis provided guidance to the analysis of the actors, with a focus on perception as themes relating to the points of controversy of the two clusters or networks of actors were categorized.

The argument for the draft law revolved mainly around three factors: positive impact on nursing profession, enhanced quality of care at the hospital level, and feasibility of switching to the BS degree only.

Impact of draft law on nursing profession
Regarding impact on nursing profession, supporters expressed that upgrading the nursing degree to university level would give more value to the nursing profession, which is a main contributor to patients' health and wellbeing. This would then enhance the image of the nursing profession in Lebanon and lower the rate of migration of nurses thus decreasing the nursing shortage. Supporters criticized the current nursing education system

Figure 3 Stakeholders and their positions regarding the draft nursing practice law.
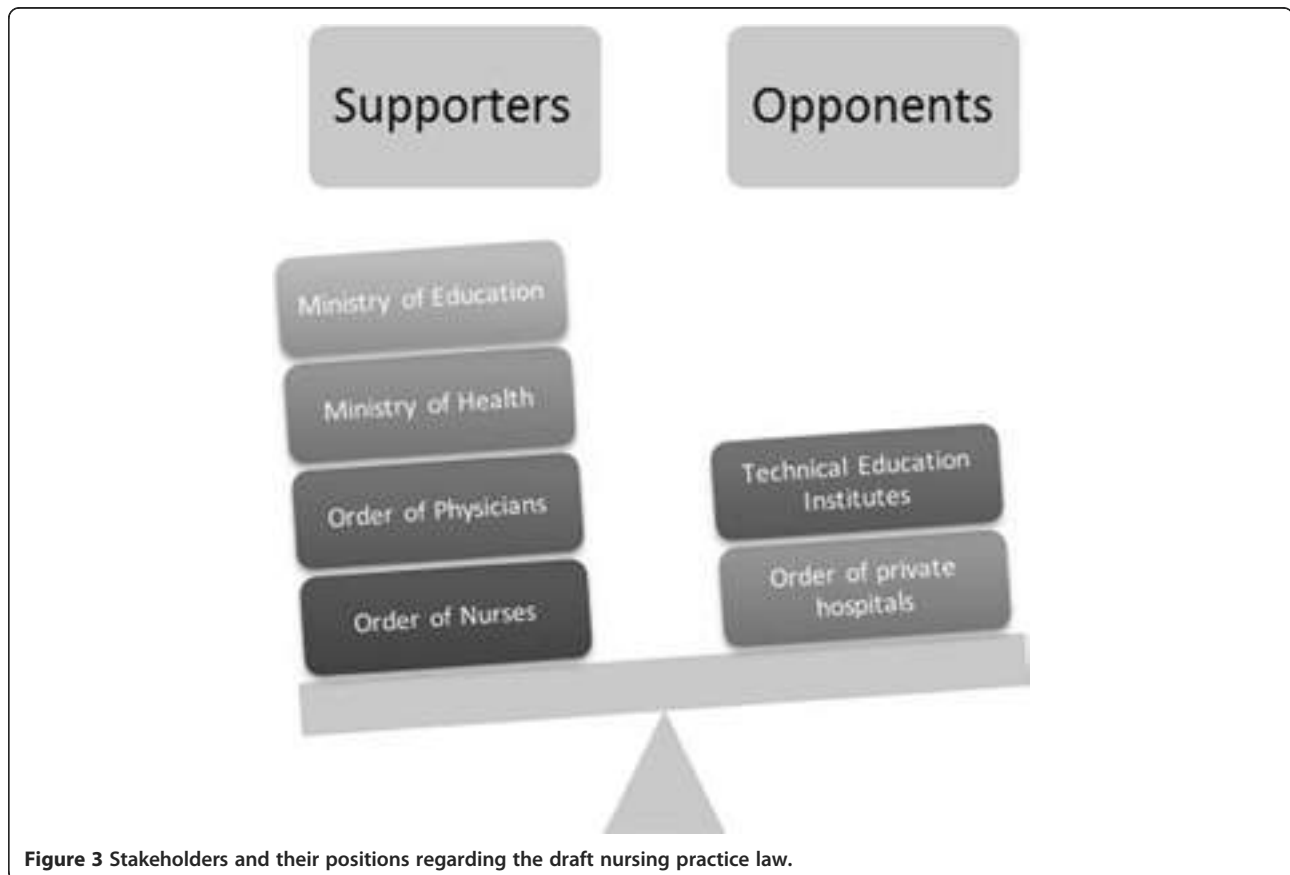
in Lebanon by citing discrepancies in competencies between vocational and university education and ineffectiveness of government examinations in technical schools. All this in their opinion made it necessary to standardize competencies and evaluations. Supporters also claimed that upgrading nursing degrees would lead to improvement in patient health by having better educated nurses and higher quality of services.

On the contrary, opponents expected the nursing shortage to be aggravated due to increased migration rates. Lebanese BS level nurses are sought after by recruitment agencies, and nearly 65% of migrant nurses have a BS degree [8]. Opponents also saw that the law would decrease the stature and scope of practice of vocational graduates, which would lead to decreased enrollment in their programs.

> *"We have a shortage of nurses and this new law will increase it. No one will go to a vocational school to become an 'assistant' nurse."* – A Stakeholder

Other participants felt that this draft law was not addressing the real problem, which is the nursing shortage, and that there is a need for more policy-relevant research on the nursing shortage.

> *"The study that is needed is the one that informs us on how to increase the number of nurses (how to overcome the shortage) regardless of converting TS to BS. When we have enough BS we can abolish TS and convert them but we are not at this stage yet."* – A Policymaker

Other options according to the opponents included, enhancing the curricula of technical programs, training vocational students, and establishing accreditation of universities and technical institutions to achieve standardization of nursing education.

Feasibility of implementing the Nursing Practice Law

When it came to the implementation of this draft law, some supporters felt that it was feasible through creating bridging programs between the vocational (TS) degree and the BS degree as a transition phase, and the reliance on the Lebanese University (free public university) as a venue where educational programs are offered in addition to offering financial aid to students enrolled in private universities.

However, opponents mentioned several implementation barriers like the unaffordability of the education in private institutions, the poor access of students in rural

areas to the Lebanese University, and the weak capacity of this university to host enough nursing students to respond to market needs. As such, they predicted that the draft law would decrease enrollment rates and exacerbate the nursing shortage. Meanwhile, technical institutes are available in many areas in Lebanon and provide affordable and accessible nursing education.

> "…technical institutes shouldn't be closed but instead the quality of their education should be enhanced since the presence of these technical institutes is crucial especially in rural areas where there are no universities and where there is a great need for nurses." – A Researcher

Regarding cost considerations, supporters believed that higher education would benefit hospitals by helping them conform to accreditation standards. Better healthcare quality was indicated by some to improve efficiency, enhance patient outcomes, and reduce costs. The syndicate of hospitals countered this argument by claiming that they could not afford to increase the salaries of nurses to the levels required by higher degrees due to the current financial difficulties already observed in trying to pay salaries today. Even though enhancing levels of education would enhance quality of care, thus increasing wages and the cost on patients as well.

Supporters criticized the opponents by claiming that most technical institutes were open for political reasons and are not needs-based, and that their opposition to the draft law was rooted in financial reasons, as they did not want their degrees abolished and to suffer the resultant loss in revenue.

Process

This section presents the process of the development of the draft nursing practice law and findings are categorized into subthemes including: problem identification, formulation, negotiation, and use of evidence in policy.

Problem identification

The draft nursing law was presented to the parliament in 2000 and has been pending for around 13 years. Work on the draft nursing law restarted with the establishment of the ONL in 2002, which was established in response to the need for nurses to have an organized body that enhanced their image and gave them a voice. Hence, the ONL decided to take the lead on re-examining the regulations governing the nursing practice in Lebanon.

Findings revealed that the draft nursing practice law in Lebanon was prompted by the ICN international standards and WHO recommendations concerning organizing the nursing profession. The shortage of nurses in Lebanon and the perceived poor quality of nursing care also played a role in recognizing this issue as a problem and initiating the draft nursing law. One factor that helped get this draft law on the policymaker's agenda was the fact that the minister of health's wife was a nurse and the ONL was able to persuade him to champion this draft nursing law.

Formulation

One of the participants involved in the development phase of the draft nursing law mentioned that the ONL invited representatives of schools of nursing of the major universities in Lebanon to help in preparing the draft Nursing practice Law. A WHO representative was also present to make sure that the new draft law was in line with and up to the WHO standards of care. Different groups within the ONL were established to work on the competencies, code of ethics and bridging program in the draft nursing law. With respect to the role of research in the development of the content of this draft nursing law, participants cited sources including international reports (WHO, ICN, and World Bank) and information from the ONL. Despite the fact that many said there was poor use of evidence, few participants insisted that this draft nursing law was evidence based, particularly since it was initiated by professionals who understand the importance of research in policymaking processes.

However, local evidence was generally limited to numbers and basic statistical information, and some participants indicated particular types of data that are missing.

> "We have data on the number of nurses graduated but we don't have information and studies on their career path and their performance" – A Policymaker

Some participants mentioned utilizing personal contacts midst the absence of reliable sources for obtaining the needed information while questioning its validity.

Even though rigorous local research was limited, some stated that international reports should not be considered as sufficient evidence as they were not specific to the context of Lebanon. Opponents of this draft nursing law believed that, although international standards for nursing are important, examining this profession within the local context should be given equal consideration.

Negotiation

After the final draft was prepared, it was submitted to the MOPH for revision and approval. A meeting was held in the MOPH where key pertinent stakeholders were invited to get detailed information and explanations about the draft law and consequently provide their feedback. The majority of the feedback was positive, but representatives

of the Order of Private Hospitals and the Vocational and Technical Education expressed various reservations concerning the law. In this meeting, implementation barriers were voiced but not addressed. With respect to the circulation of documents and information pertaining to the draft, some participants indicated that it was not passed to all those concerned.

The dearth of research evidence to support the draft nursing law was mentioned as one of the reasons the committee of justice stopped working on it.

> "*There was no evidence presented by the Order of Nurses or Ministry of Health. They only replied verbally to what was presented by the directorate of the technical and vocational education*" – A Policymaker

These conflicts continued on to be reflected in the meetings of the parliamentary committees, and eventually paralyzed their work and halted the progress of this law.

Use of evidence in policy

As for the role of research in informing policymaking in Lebanon, some participants said that evidence has a minimal influence due to the overwhelming power of personal and political interest.

> "*It depends on a window of opportunity.*" – A Researcher

> "*Here, politics impedes the use of science*" – A Policymaker

Many participants considered that policy-relevant research in Lebanon is needed in addition to dialogue between policymakers and stakeholders to deliberate about problems and potential solutions.

> "*We cannot keep on taking decisions haphazardly.*" – A Stakeholder

Other factors that hinder the use of evidence as mentioned by the participants include the high turnover rate of ministers and policymakers which yields poor commitment to long term strategic planning, and limited research funding by the government, leading to dependence on international financial support. Figure 4 details the content, actors, process and context in regard to the formulation of the Draft Nursing Practice Law.

Discussion

Study findings shed light on the complexity of the policymaking process and its influencing factors. This policy analysis exercise revealed that successful policy development should take into consideration implementation barriers in the formulation stage. Findings show that the formulation of the draft nursing practice law was hindered by a lack of clarity on the problem, its underlying factors. However, addressing a health systems and policy problem requires working through the underlying problem, options for actions, and implementation issues [41]. The uncertainty that shrouded the problem and relevant solutions in the draft nursing practice law was a result of gaps in knowledge. Such gaps in knowledge included local data on current and future demand and supply of nurses, access to nursing education, and many others. This highlights the need for context-specific evidence.

The study also revealed an absence of a structured decision making approach that utilizes research evidence. Interestingly, despite the availability of some local studies on nurses in Lebanon that could have informed the development of this draft, they were not used in policy development and were disregarded. This implies weakness in translation of knowledge and absence of effective communication between researchers and policymakers. It was observed that policymakers rarely access evidence generated from academic institutions, research centers, or think tanks to address their knowledge needs. Findings suggest the need to establish institutional linkages between policymakers and researchers. Findings also showed that the barriers against the use of evidence in policymaking in Lebanon include political influence, personal interests, lack of research funding, and poor commitment to long-term strategic planning.

Several barriers impeded the progress of the proposed draft nursing law including financial hardships of hospitals, disparity of access of students to nursing programs, and authority gradient in the medical field, in addition to the characteristics of the policy environment (political issues, favoritism, sectarianism, and vested interests). This led to the resistance of various stakeholders involved in this draft nursing law. Stakeholders were given an opportunity to weigh in and voice their concerns but the implementation barriers that they suggested (like the inability to afford higher nursing salaries, or absence of enough universities to generate the required nursing workforce) were never addressed.

Regarding the stakeholders, each had their own sources of power and influence. The main supporters of the nursing practice law were the ONL, MOPH, the Ministry of Education, and the Order of Physicians, who formed a network of actors representing the "State" and medical associations. The power of these groups within the network stemmed from tangible and intangible political resources [36]. Tangible resources included the financial power of the MOPH as an insurer of half the Lebanese population, and the people (HRH) that the two orders represented (nurses and physicians) [36]. Intangible resources included the legitimacy and visibility of these groups

Figure 4 Content, actors, process, and context in the formulation of the Draft Nursing Practice Law [35].
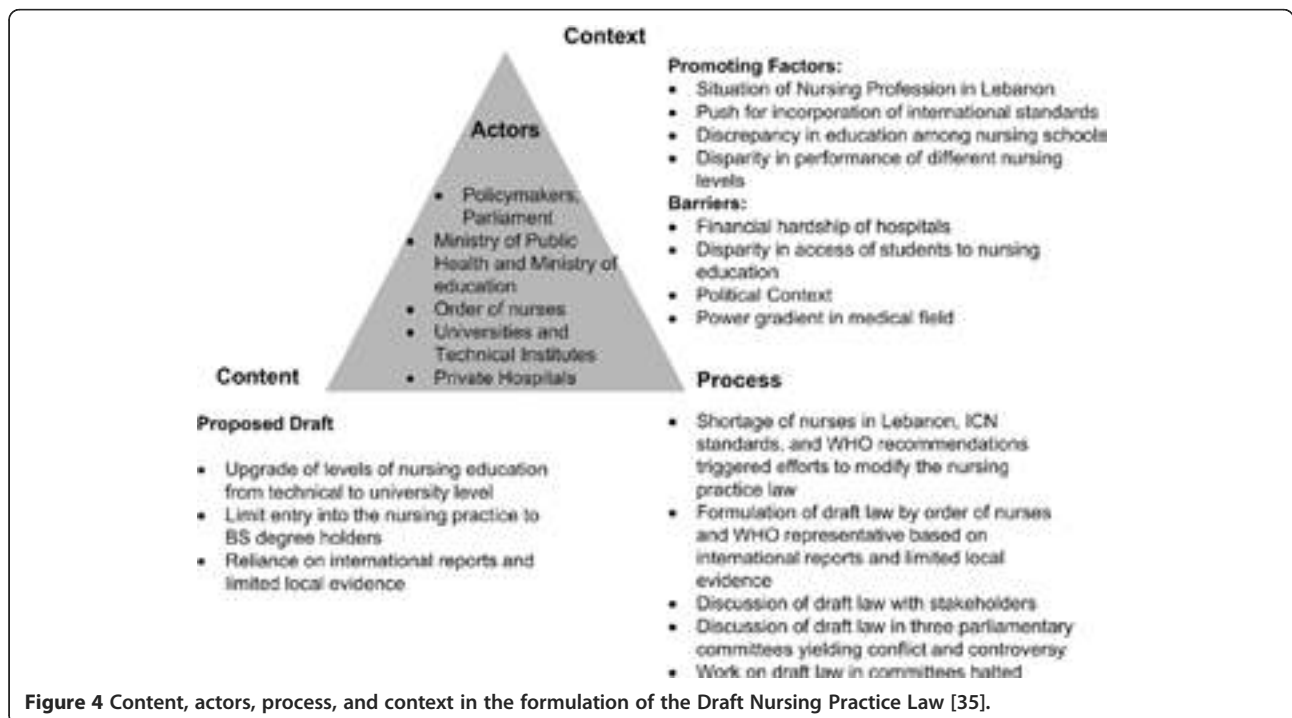
[36]. They played the role of stewardship (ministries and orders) and were regarded by other stakeholders and the Lebanese public as a credible source of power and information [36].

As for opponents, the major players were the Order of Private Hospitals and the technical education institutes. As such, this group represented the non-state, private sector and in particular "economic groups" which were industries affected by the health policy [36]. The tangible sources of power of these groups were their ownership of major organizations (hospitals and vocational schools) mobilizing thousands of people and millions of dollars in equity [36]. Private hospitals in Lebanon were almost mainly responsible for secondary healthcare delivery in Lebanon, and vocational schools were responsible for graduating over half of the nursing workforce [26,28]. As for the intangible sources of political power, these groups had valuable information and knowledge on the problem and options as they were on the implementing end of this policy which gave them legitimacy [36]. Also, they had access to key decision makers and power holders as participants stated some politicians owned hospitals or are close to hospital/vocational school owners [36]. Accordingly, there was no particular interest group powerful and organized enough to push its point of view into formal approval.

In addition, the particularities of the Lebanese political system played a role in delaying this draft law. In Lebanon, a law cannot pass until the majority of the parliament, or members of the parliamentary committee vote for it. Members of Parliament and committee members represent majorities and minorities in the Lebanese political scene. This dispersal of power and mode of decision making gave more attention to smaller interest groups than in legislatures with winner-take-all single member constituencies [36]. Accordingly, a majority was not achieved due to constant conflicts and power struggles. Although all actors agreed on the need to improve the nursing profession in Lebanon, there were many differences as to how it should be done.

Moreover, equity played a major role in the implementation considerations of this draft law. Although equitable and sustainable development had long been a goal of the international and local community, little has trickled down into actions. Disparity in quality of education between nursing schools, disparity in performance of nursing levels, disparity of working conditions across regions and nursing levels, and disparity in geographical and financial access to nursing education are only a few equity problems plaguing the nursing workforce in Lebanon. As such, although equity is well recognized as a focal point for action, it is not being implemented, which highlights the role of other factors specific to Lebanon such as favoritism, sectarianism, and corruption in directing decision making.

This case study also demonstrated the difficulty in the use of global evidence and international recommendations in a local setting without accounting for local applicability.

In the development of the draft nursing law, recommendations from international reports were applied as is, with little or no regard to contextual factors and implementations considerations. This resulted in major conflict, delay, and eventual failure to pass the draft nursing practice law. However, health systems guidance should assist decision making [41], not replace it. Contextual factors, in addition to the pros and cons of the options, should be taken into account before adopting specific health systems guidance [41].

Policy making processes and their influence on health care reform and practice – specifically nursing practice – in Lebanon and the EMR are severely understudied. However, this study confirms what has been revealed by other international and regional research on the barriers to policy making. For example, the review by Innvaer et al. [42] reported that some of the most common barriers to evidence-informed policymaking included the lack of timeliness and relevance of research, power and budget struggles, and political instability or high turnover of policymaking staff. Also, a regional study exploring researchers' views on the use of health systems and policy research evidence revealed that practical constraints to implementation, political interests and sensitivities, and a general non-receptive policy environment hindered the use of evidence and therefore the effectiveness of policy making in Lebanon [6]. The unstructured process for decision making was also revealed by other regional studies [43]. Another policy analysis exercise conducted in Lebanon on the voluntary health insurance policy also revealed the absence of a structured process for policymaking as the policy was formulated and implemented without the use of evidence [44]. Another 2012 study looking at the views of policymakers from 10 countries (Algeria, Bahrain, Jordan, Lebanon Oman, Pakistan, Palestine, Sudan, Tunisia, and Yemen) on the use of health systems evidence, also revealed how political forces are seen as barriers to health policy making processes in general, in addition to the lack of funding and investment in the field of health care and health care research [45].

Strengths and limitations

Our study has five main strengths. First, to our knowledge, it is one of the very first country case studies conducted in the EMR to closely investigate the policymaking process of a policy that has not yet been ratified. Second, the policy triangle framework, in combination with the stakeholder analysis framework that was used for analysis, helped build a comprehensive understanding of the draft nursing law by identifying its content and objectives, the actors involved in this draft nursing law, the process of policy initiation and formulation, and the context within which the draft law was developed. Third, we interviewed all the key people who were involved in the development of the draft nursing law. This is particularly important in light of the limited documentation. Fourth, the data analysis was conducted through triangulation of data by having two independent reviewers (RH and NA). Fifth, following the interviews, a panel discussion was conducted to validate the results and cross-check the information thereby enhancing the credibility of the study.

Several limitations are also acknowledged, the first of which is temporality and recall bias. Participants might not have been able to correctly recall the events that occurred during the formulation and communication phase of the draft nursing law which spanned over a decade. Some of the information as to the history and process of the draft nursing law was contradicting among several participants, creating difficulties in determining the most accurate and precise information. However, the panel discussion helped in the validation of the process and the accuracy of the information collected. Second, dealing with such a sensitive issue was challenging and effectively engaging the participants was difficult. However, to overcome this obstacle, the team carefully explained to the participants the importance of the case study/research, the neutrality of the researchers, the absence of preconceived judgments, and the confidentiality in the way the data was to be dealt with. Further, the research team heavily engaged the ONL in order to garner their support and to ensure that the results of the study would be picked up and fed into the next policy cycle.

A third limitation was the positionality of the researchers. The lead researcher was heavily involved within this field (health policy, knowledge translation, health human resources) and had contributed substantially to the literature on this topic as evident by the relatively large number of references attributed to him. This meant the researcher was an insider in the policy environment which could have biased the research [34]. However, the fact that the lead researcher had enough expertise meant he had access to key information and stakeholders to appropriately understand the culture of the study and ask suitable questions [34]. Further, the research team was multidisciplinary as the study was jointly led by researchers from both a public policy and public health track (not exclusively in the nursing or policy field). This meant the team included outsiders who were able to offer a sense of objectivity in their inherent curiosity and unfamiliarity with the field and its stakeholders [34]. The combination of insiders and outsiders in this team allowed for a rich and comprehensive understanding of the policy process [34].

Fourth, another limitation may have been the agenda of the researchers and their focus on the role of evidence in policymaking as a key tenet in the analysis, which could have biased the interpretation of the data. However, the choice of research question and design of the study was

not made based on the researchers' personal agenda, but in response to policymakers, international calls (Beijing, Montreux and Bamako), and well-acknowledged gaps in knowledge translation and health policy analysis [2-6].

Fifth, as for the application of the two policy frameworks in this policy analysis case study, which is a first in the region, they provided guidance as to how to breakdown the policy development process, identify relevant contextual factors and analyze the stakeholders regarding distribution of power and influence, and problem framing. However, these frameworks (policy triangle, stakeholder analysis) come from the developed/western countries and have not been adapted to suit the political environment in the EMR. As such, interpreting our findings within the dimensions of these frameworks required a degree of adaptation and contextualization. Further, this particular policy analysis deals with a policy that was never passed but stagnated at the phase of development and, as such, the implementation phase in process category was not addressed.

Sixth, from the time of the initial drafting of this case study there might be additional updates regarding the policymaking process. Thus, the information in this study is limited to the date of the end of data collection, which is June 2013.

Implications for policy and research

Study findings suggest that there are certain steps to be taken before moving on to changing the law governing nursing practice. These steps include standardizing the nursing education programs (university and vocational) and examinations to reflect the competencies required and conducting studies on the best context-specific alternative to the current nursing care model. Accordingly, this study triggers multiple research questions that need to be answered before reaching a best-fit policy change at the level of the nursing education and practice: i) What is the current and projected demand and supply for HRH and nursing workforce in Lebanon? ii) How does the quality of care and performance differ between different nursing levels? iii) What are the different nursing care delivery models followed within the Lebanese hospitals? And what are the educational competencies needed for every model? iv) What would be the optimal nursing care model that can raise the quality of nursing care within the context and resources available while decreasing the nursing shortage? v) What would a collaborative nursing education system look like in Lebanon and how can it be regulated and governed?

Further, it is worth noting that the draft nursing practice law only addressed one aspect of the nursing profession, namely education and competencies, without touching upon other issues. For example, despite the presence of local evidence on the issue, the draft nursing law did not tackle the working conditions of nurses. This indicates the need for a comprehensive nursing law that governs the profession.

Despite the stagnation of the draft law, a recent decision was taken to reduce the years of study of the higher vocational degree (TS) from 3 to 2 years. This caused problems in providing nursing practice licenses and currently the ONL is trying to mitigate this issue using temporary solutions through providing a proposal to the Ministry of Justice. This decision has only increased the discrepancies in the nursing workforce and makes it even more critical to work on advancing a comprehensive draft law.

In addition to grounding the draft law with evidence and answering information gaps, the formulation and negotiation strategies of the law should be changed. The law, its purpose, and implications should be drafted and framed during negotiations in "win-win" terms rather than "win-lose" terms [36]. Moreover, there are some areas where achieving consensus is not possible, and the other party will always look out for their own interests. Some value-dividing conflicts are inevitable [36]. For example, hospitals would have difficulty in increasing nursing salaries and technical institutions would never support an option that will make them lose business. In such cases, a legislative authority can intervene and enforce the decision if it is well grounded in evidence and suitable to the local context. To get through these conflicts, parties should first acknowledge the implementation barriers, express openness to addressing them, and agree to "principle-based negotiations" where a set of principles/values are established at the start of discussions to guide action and resolve disagreements [36]. Interestingly, and based on the experience of the draft nursing practice law, the ONL is revisiting the content of this draft law including the framing of the problem and the proposed solution. For instance, current efforts led by the ONL are focused on retaining the TS program to ensure a good representation in the nursing workforce taking into consideration socioeconomic and geographic factors.

Findings revealed the risk involved in relying blindly on international recommendations and using them without accounting for implementation barriers, contextual factors, and local applicability. When selecting a policy option, an assessment of the key features of a health system that can influence decision making, including governance, financial and delivery arrangements should be conducted [41]. One way to achieve this is to draw on global guidance and context-specific data to develop a policy brief that contextualizes the problem, solutions, and implementation considerations [41]. Needs, availability of resources, costs, modifying factors, and values should be assessed locally with international support to

make guidelines applicable [46]. The local adaptation process should be transparent and systematic, involve stakeholders, report influencing factors, and modify guidelines accordingly [46]. Findings suggest the need for capacity building on how to use evidence and apply global guidance within a local context. The study also demonstrates the need for establishing a structured decision making approach that integrates the systematic use of evidence and includes the effective involvement of stakeholders throughout the decision making process from problem identification to policy formulation and implementation. Despite the presence of multiple venues for stakeholders to express their points of view, their feedback did not play a role in shaping the content of the draft nursing practice law.

The significance of the use of evidence in policymaking should be communicated to the public through raising awareness, dissemination of research results, and the media. Public awareness would enhance accountability of policymakers and encourage evidence-informed policymaking. Moreover, the gaps in knowledge revealed by this study, and which hindered informed decision making, suggest the need for better communication between researchers and policymakers.

Conclusions

Findings shed light on the complex nature of health policymaking, its influencing factors, and the unstructured approach of decision making. This policy analysis case study revealed the barriers to the development and adoption of the draft nursing practice law and to the use of evidence in policymaking. Findings also uncovered the risk involved in the use of international recommendations without the involvement of stakeholders and without accounting for contextual factors, implementation barriers, and local applicability. This exercise presents findings that are useful to legislative bodies and all other stakeholders for strengthening and revising the existing draft nursing law in order to develop an effective alternative that is applicable in Lebanon. This is particularly important since the ONL, under new leadership, is currently making significant efforts in building its capacity in policymaking, in terms of accessing and using evidence, influencing policymaking and legislations, and promoting evidence-based advocacy. In addition, the ONL is engaging and deliberating with other ministries, including the MOPH, Ministry of Education, and Ministry of Labor, about the nursing workforce and other health policy-related matters. Our findings are relevant in the context of Lebanon and the region as policymakers and other stakeholders can learn from this experience when drafting laws. Findings are also relevant at the global level as international organizations can take this case study into account when developing global guidance and recommendations.

Author details

[1]Department of Health Management and Policy, American University of Beirut, Riad El Solh, PO Box 11-0236, Beirut 1107 2020, Lebanon. [2]Knowledge to Policy (K2P) Center, Faculty of Health Sciences, American University of Beirut, Riad El Solh, Beirut 1107 2020, Lebanon. [3]Center for Systematic Reviews of Health Policy and Systems Research (SPARK), American University of Beirut, PO Box 11-0236, Riad El Solh, Beirut 1107 2020, Lebanon. [4]Research, Advocacy and Public Policy-making, Issam Fares Institute for Public Policy and International Affairs, American University of Beirut, Riad El Solh, PO Box 11-0236, Beirut 1107 2020, Lebanon. [5]Department of Clinical Epidemiology and Biostatistics, McMaster University, CRL-209, 1280 Main St. West, Hamilton L8S 4 K1, ON, Canada. [6]Rafic Hariri School of Nursing, American University of Beirut, Riad El Solh, Beirut 1107 2020, Lebanon. [7]Order of Nurses in Lebanon, Sin El-Fil, Beirut Hall Street, Chaoul Center, PO Box 55311, Beirut, Lebanon. [8]University of California, Berkeley, 228 Wurster Hall #1850, Berkeley, CA 94720-1850, USA.

References

1. Hanney SR, Gonzalez-Block MA, Buxton MJ, Kogan M: **The utilization of health research in policy-making: concepts, examples and methods of assessment.** *Health Res Policy Syst* 2005, **1**(1):2.
2. **The Bamako Call to Action on Research for Health.** In *Proceedings of the Global Ministerial Forum on Research for Health.* Bamako: 2008 [http://www.who.int/rpc/news/BAMAKOCALLTOACTIONFinalNov24.pdf]
3. Executive Committee of the Second Global Symposium on Health Systems Research: **Beijing Statement from the Second Global Symposium on Health Systems Research.** In *Proceedings of the Second Global Symposium on Health Systems Research.* Beijing: 2012 [http://healthsystemsresearch.org/hsr2012/images/stories/downloads/beijing%20_statement.pdf]
4. Hyder AA, Corluka A, Winch PJ, El-Shinnawy A, Ghassany H, Malekafzali H, Lim MK, Mfusto-Bengo J, Segura E, Ghaffar A: **National policy-makers speak out: are researchers giving them what they need?** *Health Policy Plan* 2011, **26**:73–82.
5. El-Jardali F, Alameddine M, Dumit N, Dimassi H, Jamal D, Maalouf S: **Nurses' work environment and intent to leave in Lebanese hospitals: implications for policy and practice.** *Int J Nurs Stud* 2011, **48**:204–214.
6. El-Jardali F, Lavis JN, Ataya N, Jamal D: **Use of health systems and policy research evidence in the health policymaking in eastern Mediterranean countries: views and practices.** *Implementation Sci* 2012, **7**:2.
7. El-Jardali F, Makhoul J, Jamal D, Ranson MK, Kronfol NM, Tchaghchagian V: **Eliciting policymakers' and stakeholders' opinions to help shape health**

system research priorities in the Middle East and North Africa region. *Health Policy Plan* 2010, **25**:15–27.

8. El-Jardali F, Jamal D, Abdallah A, Kassak K: **Human resources for health planning and management in the Eastern Mediterranean region: facts, gaps and forward thinking for research and policy.** *Human Resour Health* 2007, **5**:9.

9. Donelan K, Buerhaus PL, DesRoches C, Burke SP: **Health policy thoughtleaders' views of the health workforce in an era of health reform.** *Nurs Outlook* 2010, **58**:175–180.

10. Huijer HA: **Developing the nursing workforce: challenges and opportunities in Lebanon.** In *Fulbright Academy Workshop.* Doha: 2007 [http://www.fulbrightacademy.org/file_depot/0-10000000/20000-30000/21647/folder/70366/Developing+the+Nursing+Workforce-Lebanon+-+Abu-Saad+Huijer.pdf]

11. Aiken LH: **Nurses for the future.** *N Engl J Med* 2011, **364**:196–198.

12. McMaster Health Forum: *Addressing the Integration of Nurse Practitioners in Primary Healthcare Settings in Canada.* Ontario, Canada: 2011; 2011 [https://macsphere.mcmaster.ca/bitstream/11375/14916/1/fulltext.pdf]

13. Girardet E, World Health Organization, Department of Human Resources for Health: *Global Standards for the Initial Education of Professional Nurses and Midwives.* 2010 [http://www.who.int/hrh/nursing_midwifery/en/]

14. Oortwijn WJ: *First Things First. Priority Setting for Health Technology Assessment, PhD thesis.* Leiden: The Netherlands Organisation for Applied Scientific Research (TNO) Prevention and Health; 2000.

15. Oxman AD, Schunemann HJ, Fretheim A: **Improving the use of research evidence in guideline development: 2. priority setting.** *Health Res Policy Syst* 2006, **4**:14.

16. Lavis JN, Oxman AD, Lewin S, Fretheim A: **SUPPORT Tools for evidence-informed health Policymaking (STP) 3: setting priorities for supporting evidence-informed policymaking.** *Health Res Policy Syst* 2009, **7**(Suppl 1):S3.

17. Buse K, Dickinson C, Gilson L, Murray SF: *How can the Analysis of Process and Power Improve Health Outcomes? Moving the Agenda Forward.* London: Overseas Development Institute Briefing paper; 2007.

18. *Overview on the Lebanese Political System.* [www.presidency.gov.lb]

19. Cammett MC: **Partisan activism and access to welfare in Lebanon.** *Stud Comp Int Dev* 2011, **46**:70–97.

20. El-Khazen F: **The Communal Pact of National Identities: the making and politics of the 1943 National Pact.** In *Papers on Lebanon # 12.* Oxford: Center for Lebanese Studies; 1991 [http://lebanesestudies.com/wp-content/uploads/2012/03/8b844d712.-The-Communal-Pact-of-National-Identities-The-Making-and-Politics-of-the-1943-National-Pact-Farid-el-Khazen-1991.pdf]

21. El-Khazen F: **Political parties in postwar Lebanon: parties in search of partisans.** *Middle East J* 2003, **57**:605–624.

22. Chen B, Cammett M: **Informal politics and inequity of access to health care in Lebanon.** *Int J Equity health* 2012, **11**:1–8.

23. Ammar W: *Health Beyond Politics,* World Health Organization Eastern Mediterranean Regional Office. Lebanon: Ministry of Public Health; 2009.

24. Kassak K, Ghomrawi H, Osseiran A, Kobeissi H: **The providers of health services in Lebanon: a survey of physicians.** *Human Resour Health* 2006, **4**:4.

25. World Health Organization: *Working Together for Health: The World Health Report.* Geneva: World Health Organization; 2006.

26. El-Jardali F, Dimassi H, Dumit N, Jamal D, Mouro G: **A national cross-sectional study on nurses' intent to leave and job satisfaction in Lebanon: implications for policy and practice.** *BMC Nursing* 2009, **8**:3.

27. Order of Nurses in Lebanon: *Order of Nurses in Lebanon Statistics Issues on 8/3/2013.* 2013 [http://www.orderofnurses.org.lb/Modules/FastLinks/UploadPDF/5689_19,03,YYsstat%20ang%20.pdf]

28. Kronfol NM: **Rebuilding of the Lebanese health care system: health sector reforms.** *East Mediterr Health J* 2006, **12**:32–39.

29. Badr L, Rizk U, Farha R: **The divergent opinions of nurses, nurse managers and nurse directors: the case in Lebanon.** *J Nurs Manag* 2010, **18**:182–193.

30. El-Jardali F, Merhi M, Jamal D, Dumit N, Mouro G: **Assessment of nurse retention challenges and strategies in Lebanese hospitals: the perspective of nursing directors.** *J Nurs Manag* 2009, **17**:453–462.

31. El-Jardali F, Dumit N, Jamal D, Mouro G: **Migration out of Lebanese nurses: a questionnaire survey and secondary data analysis.** *Int J Nurs Stud* 2008, **45**:1490–1500.

32. Order of Nurses in Lebanon: *Statistics Nursing School-Students.* Beirut: Order of Nurses in Lebanon; 2013.

33. Huijer HA, Noureddine S: **Nursing in Lebanon.** *Appl Nurs Res* 2005, **18**:63–64.

34. Walt G, Shiffman J, Schneider H, Murray SF, Brugha R, Gilson L: **'Doing' health policy analysis: methodological and conceptual reflections and challenges.** *Health Policy Plan* 2008, **23**:308–317.

35. Walt G, Gilson L: **Reforming the health sector in developing countries: the central role of policy analysis.** *Health Policy Plan* 1994, **9**:353–370.

36. Roberts MJ, Hsiao W, Berman P, Reich M: *Getting Health Reform Right: A Guide to Improving Performance and Equity.* New York: Oxford University Press; 2004.

37. Lindblom CE: *The Intelligence of Democracy: Decision Making Through Mutual Adjustment.* New York: Free Press; 1965.

38. Downs A: *Inside Bureaucracy.* Little, Brown: Boston, MA; 1967.

39. Alameddine M, Saleh S, El-Jardali F, Dimassi H, Mourad Y: **The retention of health human resources in primary healthcare centers in Lebanon: a national survey.** *BMC Health Serv Res* 2012, **12**:419.

40. El-Jardali F, Longuenesse E, Jamal D, Kronfol NM: **The public health workforce and human distributions for health.** In *Public Health in the Arab World.* 1st edition. Edited by Jabbour S, Giacaman R, Khawaja M. New York: Cambridge University Press; 2012:385–396.

41. Lavis JN, Røttingen JA, Bosch-Capblanch X, Atun R, El-Jardali F, Gilson L, Lewin S, Oliver S, Ongolo-Zogo P, Haines A: **Guidance for evidence-informed policies about health systems: linking guidance development to policy development.** *PLoS Med* 2012, **9**(3):e1001186.

42. Innvaer S, Vist G, Trommald M, Oxman A: **A Health policy-makers' perceptions of their use of evidence: a systematic review.** *J Health Serv Res Policy* 2002, **7**:239–244.

43. El-Jardali F, Ataya N, Jamal D, Jaafar M: **A multi-faceted approach to promote knowledge translation platforms in eastern Mediterranean countries: climate for evidence-informed policy.** *Health Res Policy Syst* 2012, **10**:15.

44. El-Jardali F, Bou-Karroum L, El-Ghali H, Hammoud R: *A Retrospective Health Policy Analysis of the Development and Implementation of the Voluntary Health Insurance System in Lebanon: Learning from Failure,* Poster presentation at the Global Symposium on Health Systems Research (HSR), 31 October – 3 November 2012, Beijing, China.

45. El-Jardali F, Lavis JN, Ataya N, Jamal D, Ammar W: **Use of health systems evidence by policymakers in Eastern Mediterranean countries: views, practices, and contextual influences.** *BMC Health Serv Res* 2012, **12**:200.

46. Schünemann H, Fretheim A, Oxman AD: **Improving the use of research evidence in guideline development: 10. Integrating values and consumer involvement.** *Health Res Policy Syst* 2006, **4**:22.

A HEALTH POLICY AND SYSTEMS RESEARCH READER ON HUMAN RESOURCES FOR HEALTH

CH 3|4

Does supervision improve health worker productivity? Evidence from the Upper East Region of Ghana

Jemima A. Frimpong[1,4], Stéphane Helleringer[1,4], John Koku Awoonor-Williams[2], Francis Yeji[3] and James F. Phillips[1,4]

1 Mailman School of Public Health, Columbia University, New York, NY, USA
2 Ghana Health Service, Upper East Regional Directorate, Bolgatanga, Ghana
3 Ghana Health Service, Navrongo Health Research Centre, Navrongo, Ghana
4 Columbia Population Research Center (CPRC), Columbia University, New York, NY, USA

Summary

OBJECTIVES To assess whether supervision of primary health care workers improves their productivity in four districts of Northern Ghana.

METHODS We conducted a time-use study during which the activities of health workers were repeatedly observed and classified. Classification included four categories: direct patient care; documentation and reporting; staff development and facility operations; and personal time. These data were supplemented by a survey of health workers during which patterns of supervision were assessed. We used logistic regression models with health facility fixed effects to test the hypothesis that supervision increases the amount of time spent providing direct patient care (productivity). We further investigated whether these effects depend on whether or not supervision is supportive.

RESULTS Direct patient care accounted for <25% of observations. In bivariate analyses, productivity was higher among midwives and in facilities with a high volume of care. Supervisory visits were frequent in those four districts, but only a minority of health workers felt supported by their supervisors. Having been supervised within the last month was associated with a significantly higher proportion of time spent on direct patient care (OR = 1.57). The effects of supervision on productivity further depended on whether the health workers felt supported by their supervisors.

CONCLUSION Supportive supervision was associated with increased productivity. Investments in supervision could help maximize the output of scarce human resources in primary health care facilities. Time-use studies represent an objective approach in monitoring the productivity of health workers and evaluating the impact of health-system interventions on human resources.

keywords productivity, supervision, time-use, health workers, Ghana, work sampling

Trust and health worker performance: exploring a conceptual framework using South African evidence

Lucy Gilson[a,b,*], Natasha Palmer[b], Helen Schneider[a]

[a]Centre for Health Policy, University of Witwatersrand, PO Box 1038, Johannesburg 2000, South Africa
[b]Health Policy Unit, London School of Hygiene and Tropical Medicine, UK

Abstract

Two relationships of particular importance to health care provision are those between patient and provider, and health worker and employer. This paper presents an analytical framework that establishes the key dimensions of trust within these relationships, and suggests how they may combine in influencing health system responsiveness. The paper then explores the relevance of the framework by using it to analyse case studies of primary care providers in South Africa.

The analysis suggests that respectful treatment is the central demand of primary care service users, in terms of positive attitudes/behaviours, thoroughness, and technical competence, as well as institutions that support fair treatment. It is argued that such treatment is necessary for, and integral to, patient–provider trust. The findings also suggest that the notion of workplace trust (combining trust in colleagues, supervisor and employing organisation) has relevance to provider experiences of their workplaces, and so can provide important insights for strengthening management. Nonetheless, given the limitations of this preliminary analysis, further research is needed to develop the notion of workplace trust and to test what role it has, along with that of provider–community relations, in influencing health worker performance.
© 2005 Elsevier Ltd. All rights reserved.

Keywords: Trust; Health workers; Motivation; Responsiveness; Primary care; South Africa

CH 4|6

Rejection of an innovation: health information management training materials in east Africa

J GLADWIN,[1] RA DIXON[2] AND TD WILSON[3]

[1]*Health Services Research Unit, London School of Hygiene and Tropical Medicine, London,* [2]*Community Health Sheffield NHS Trust and* [3]*University of Sheffield, Sheffield, UK*

A shift towards decentralization in many low-income countries has meant more skills are demanded of primary health care managers, including data and information handling at all levels of the health care system. Ministries of Health are changing their central reporting health information systems to health management information systems with emphasis on managers utilizing information at the point of collection.

This paper reports on a research study to investigate the introduction of new information management strategies intended to promote an informational approach to management at the operational health service level in low-income countries. It aims to understand the process taking place when externally developed training materials (PHC MAP), which are intended to strengthen health management information systems, are introduced to potential users in an east African country.

A case study has been undertaken and this research has demonstrated that the dynamic equilibrium approach to organizational change is applicable to the introduction of new information management strategies and management approaches in low-income countries. Although PHC MAP developers envisaged a technical innovation needing implementation, potential users saw the situation as one of organizational change.

Contributions to theory have been made and many implications for introducing new information systems or the informational approach to management are identified. This theoretical framework could also facilitate the introduction of future information management innovations and would allow practitioners to perceive the introduction of information management innovations as one of organizational change that needs to be managed. Consequently, issues that may facilitate or inhibit adoption could be identified in advance.

Key words: health information system development, low-income countries, PHC MAP, decentralization, management, organizational change

5

Juggling with the norms: Informal payment and everyday governance of health care facilities in Niger

Eric Hahonou

Corruption in the health sector constitutes a major concern for policy makers in most parts of the world including the transition economies in Central and Eastern Europe, the former Soviet Union (Lewis 2000, 2007; Ensor 2004) as well as most Asian and African countries (McPake et al. 1999; Blundo and Olivier de Sardan 2006; Gaal et al. 2006; Onwujekwe et al. 2010). Corruption and related illegal or informal practices in healthcare as well as in other 'interface bureaucracies' in Africa and other developing countries have attracted the growing interest of policy makers and scholars. In the health sector, much of the literature addresses the issue under the umbrella concept of 'informal payments' while the term 'corruption' more often seems to be cautiously avoided[1]. A range of related notions such as 'out-of-pocket' expenditure, 'under-the-table' payments for services, 'unofficial payments', are also employed to refer to users-providers of health services' exchanges of money (or other resources) beyond the fees officially or legally determined by public authorities. The diversity of terms does not only reflect a multiplicity of practices but also disagreements among scholars about the definition of the phenomena under study (Gaal et al. 2006).

Economically oriented and mostly based on surveys, this informal payment literature distinguishes two types of such payments: donations and fee-for-service. A donation is given by grateful patients to doctors after the service has been provided. This type of ex-post payment is generally seen as a benign form of unofficial payment. Most authors give socio-cultural explanations for such 'voluntary' behavior which is said to be related to an endemic culture of gifts in Asia, in Central, Southern and Eastern European countries (Ensor 2004, p.238; Gaal and McKee 2005, p.1446). Importantly, this kind of payment is often legal and seen as legitimate. Gifts are not thought to generate inequalities among patients or to affect the distribution of health services (Liaropoulos et al. 2008). Authorities, physicians unions and the media justify this tolerance as a right of patients to express their satisfaction and a manifestation of respect and gratitude toward those who cured someone or saved a relative's life. Such practices are presented as compatible with social norms and legislation.

The second kind of informal payment which this literature discusses is the fee-for-service form. It is described as an ex ante unofficial payment received by health workers prior to the delivery of the service. This form is perceived as being unethical and is morally condemned. Economic explanations for fees-for-service emphasize inadequate salaries and the survival strategies of civil servants. They also insist on contexts of economic crisis and declines in government health sector funding. These explanations somehow justify these practices and some scholars even underline their positive effects such as a better quality of care for the paying patients as a result of the incentive provided by under-the-table payments and a

greasing of the health system that allows it to function (Orosz 1992; Balázs 1991 quoted by Gaal & McKee 2005, p.1449). Yet less attention is paid to the negative impacts of these practices (see *infra*). Another type of economic explanation focuses on the distortions for health care markets implied by monopolistic and quasi-monopolistic situations. According to this explanation, health personnel act as service providers who exploit their (quasi)monopolistic position on the market to extract a payment from patients (Ensor 2004, p.239-240). This perspective is interesting because it introduces a power dimension into the practitioner-patient relationship which appears to be asymmetrical and detrimental to patients.

In Asian contexts, some authors particularly insist on cultural explanations for the practice of informal payment given by patients to doctors (*renqing* culture). For example in Taiwan, *red envelopes* (containing money) were seen as an expression of gratitude for successful treatment or were associated with traditions and the building of a relationship with doctors in order to receive better care. In this case, the distinction between ex post and ex ante payments is not seen as valid. Interestingly, Chiu et al. (2007) explore the changing meanings and legitimacy of informal payments through print media. Until the introduction of a national health reform, anticipatory and post-treatment practices were depicted by newspapers as legitimate, normal and appropriate. Newspapers even encouraged such practices (Chiu et al. 2007, p.524-525). After the reform outlawed informal payments, newspapers started to describe the practice in terms of power asymmetries and pursuit of doctors' self-interest who were abusing their control over scarce medical resources (ibid., p.526). In the absence of an ideal health care system, bribes were portrayed by the media as 'necessary evils' in the context of poor salaries paid to doctors and a dysfunctional system in which both doctors and patients were victimized.

African countries are no exception to informal payments in health facilities (Jewkes et al. 1998; Foley 2010; Onwujekwe et al. 2010; Jaffré and Olivier de Sardan 2003; Blundo and Olivier de Sardan 2006). Bribery in order to access a better service has become a common practice in the African public health sector. In Niger, the corruption of health workers and bureaucrats is well known to all. A case of the mismanagement of 1.8 billion CFA francs (false billing) in the health sector was discovered in August 2011[2]. The case involved high level bureaucrats (the Payeur Général du Trésor National, the Budget Director, the Financial Controller of the Ministry of Finance) appointed during the Military Transition (February 2010-April 2011). Corruption affects the highest levels of the administration as well as the lowest. In its 1998 country report, the UNDP described access to health in Niger as highly problematic because of informal payments imposed upon clients: 'Poor and badly dressed people without money are roughly treated by medical staff and patients are often forced to pay informal fees to get access to services' (UNDP 1998, p.41-42).

The same distinction between legitimate ex-post and illegitimate and illegal ex-ante gifts is generally made by health workers in Benin and Niger. Yet Olivier de Sardan et al. (2005, p.7) notice that the frontiers between illegality and illegitimacy are blurred as health workers often ask patients for gifts in contexts where small presents are also thought socially acceptable.

Moreover these authors insist on the social embeddedness of corruption and favoritism (*op. cit.*).

Thus corruption in the health sector has become a major concern in public debates in Niger. It is discussed by ordinary people on street corners, by the print media and among civil servants and policy makers. Corruption is not restricted to the health sector but pervades the functioning of all kinds of public authority from the local chieftaincy providing justice in rural areas to the highest level of the administration (see Olivier de Sardan 1999; Blundo and Olivier de Sardan 2006). Corruption has, as it were, become a social institution. It is recognized as endemic to all areas of Nigerien society. However, as a number of studies point out, the consequences of these practices in the health sector are particularly damaging. Corruption increases the price of health service without a guarantee for service improvement for the consumers, introduces a price barrier to service, reinforces structural inequalities between the rich and the poor, affects the quality and performance of healthcare, and affects the implementation and efficiency of health reforms and so on (Ensor and San 1996; Souley 2001).

The public health service in Niger is a world of paradox and contradiction marked by 'inhospitable hospitals' and dispensaries that do not dispense medical care, a lack of incentives to attract the suffering population, practices of confinement of patients against their will, ambulances playing the role of private taxis for doctors and hearses for dying patients and dead bodies, and where unconnected patients[3] are lining up to receive uncertain treatments and inevitable expense (Masquelier 2001; Hahonou 2001; Jaffré and Olivier de Sardan 2003; Souley 2003; Olivier de Sardan et al. 2005;). Despite the anxiety, the sometimes exorbitant expense, and their resentment towards medical institutions, most people do use public health structures. As I will argue, this paradox can be explained precisely because corruption and other methods or strategies are available to access health services. Despite the asymmetric power relations, the customers of public health services are not only the victims of the system. They also participate in it and sometimes benefit from it.

This chapter, based on five months of participant observation conducted at the emergency service of the National Hospital of Niamey (NHN) in 1999, offers a brief description of the overall context of health care in Niger and the place of the NHN and the emergency service in the Nigerien Health system. I then describe the daily functioning of the emergency service with its erratic rhythm and routine. I focus on two characteristics of the daily governance of the service.

The first is the role played by users in the functioning of the service. I shed light particularly on the role played by the patient's attendant. I argue that in acute conditions, the patient's well-being or even life does not only depend on the quality and efficiency of the services provided by the medical staff; it also depends on the qualifications of the individuals (relatives, friends) accompanying the patient. The patient's attendant is a crucial component of the organisation and effectiveness of the emergency service. After a few interactions with

the staff, the attendant should be able to understand the pragmatic behavior to adopt if his/her patient is to survive.

The second characteristic is the recurrent shortages of medicine and equipment. These shortages largely result from the strategies of medical staff and affect the quality of the service delivered. Although everyone knows the negative consequences of such practices, everyone is involved in them, including customers who are willing to pay for stolen drugs. Breaking the official rules by stealing public goods and selling them for their own benefit is a practice that allows the staff to earn additional revenue while customers who can afford extra costs enjoy a rapid and hopefully efficient service. I explore how medical staff deal with official, social and practical norms, juggling with legality, medical ethics, informality, legitimacy and their own feelings. To a large extent, users in asymmetric power relations with health providers have to adapt to existing practical norms but they also have room for maneuver to transform these norms. Their behavior contributes either to reinforcement of the practical norms or to their erosion and transformation when they interact with health workers.

Public health care in Niger

Health care in Niger has long been characterized by a heavily centralized system, a weak geographic coverage resulting in difficult access to health centers (especially in rural areas) and a strong dependence on international aid. After 1987, cost recovery policies were introduced and progressively implemented in the health sector in Niger[4]. In 1995, the government of Niger decided to generalize the so-called Bamako Initiative which entailed user fees, community participation and the utilization of essential drugs. This policy has constrained access to health for the poorest and increased inequalities in the context of growing poverty, eroding family solidarity and political instability (Weaver 1995; Hahonou 2001; Ridde and Diarra 2009). Niger today hosts 14 million inhabitants of which 61% live below the poverty line. While less than 10% of the Nigerien population live in Niamey, 50 per cent of medical staff stay and work in the capital city or in its surroundings. Despite this unequal distribution of health resources to the detriment of the rural population, only a small percentage of urban dwellers really enjoy the benefits of living close to health centers (Raynaut 1990). This point underlines the problem of social access to health in Niger.

Nigerien hospitals and dispensaries are both widely perceived as places of death and suffering (Masquelier 2001, p.268). There is no doubt that such a description reflects popular representations of the public healthcare system. Despite evidence of the low efficiency of health services (Gay-Andrieu et al. 2005), I would argue that health facilities are also spaces for hope and cure for users who recognize the competence of the staff (see also Jaffre and Prual 1994, p.1069-1070). Although it is not the focus of this article to grasp popular representations of health care in Niger, it is important to underline this paradoxical picture if we want to understand the interactions between patients and hospital employees.

As Masquelier correctly noted, hospitals have long been negatively perceived. Early studies in the mid-1970s already mentioned how a departmental hospital was associated with a place of

death in popular discourses (Sabbou 1974, p.35). In her 2001 article Masquelier explores the popular imaginations of the state through discourses and rumors on the inefficiency and coerciveness of rural health institutions in Niger. As she argues, since the economic crisis of the mid-1980s rural dispensaries do not dispense medical care, only prescriptions and discipline. She depicts the general disenchantment and distrust of the population facing a decaying and helpless medical system characterized by inhospitable infrastructures where corrupt medical staff exploit poor and ordinary patients. Health institutions are better described as places where people die rather than places where patients are cured (Masquelier 2001, p.268-270, p.286-287). Moreover the introduction of user fees tends to discourage poor people from using public health facilities[5].

Whereas the picture Masquelier describes and denounces largely reflects what has been observed elsewhere (in both rural and urban centers), it would be exaggerated to reduce public health centers to empty shells hollowed out by greedy and corrupt staff. Firstly, all hospitals and dispensaries are not the same. Some are rarely used or used only reluctantly because of a particular medical worker's bad reputation, while other structures are very well known for the quality of their service and the kindness of their staff. People may even adopt strategies where specific days are chosen in order to avoid being treated by civil servants with a bad reputation[6]. Secondly, if people continue to use public health institutions, it is most probably because they do provide services and save lives. The lack of alternatives is certainly not what motivates people to use the services offered by hospitals. In Niger, there is no shortage of alternatives from self-medication based on cheap drugs provided by street-vendors ('pharmacie-par-terre')[7], official pharmacies or local healers (*zimmey* and *bori* healers) to visiting private or confessional clinics or hospitals. Patients in search of better health may eventually use various health providers successively and the hospital is not necessarily the last resort[8]. If people use public health facilities it is because they recognize their competence. It is nonetheless important to note that for specific diseases (such as severe malaria attacks) public health services facilities occupy a quasi-monopolistic position which gives little room for maneuver to poor and unconnected users. They have to pay what they are asked to pay. The hospital is an unfamiliar place for most users. Its specific structure, size, and functional and organisational logics make the hospital a very particular and uncertain institution for first time users, most of them from rural areas. Therefore, health users most often go to the hospital with anxiety and distrust.

As we shall see, the situation in urban settings is similar to what Sabbou, Masquelier and others described about rural Niger. When solutions cannot be found at local level ('cases de santé', dispensaries, departemental hospitals), patients are referred to the Hospital of Niamey. This hospital was created under colonial rule in 1922 and was progressively constituted as the main health center of the colony of Niger. When it became the National Hospital of Niamey in 1965, it was composed of surgery, medicine, psychiatry services and a section for contagious diseases. It has been progressively equipped with a full range of services from radiology and pediatrics to neurosurgery and cardiology. The legal status of the NHN was transformed in 1992 in order to partially integrate the cost recovery policy a few years before the health sector policy was formulated (in 1995). The NHN constitutes a crucial element of

the Nigerien Health System as it is situated at the very end of the health chain. The NHN is the main referral hospital. Patients who cannot be cured at lower levels (local primary healthcare centers) are referred to higher levels starting from integrated health centers at district level and hospitals at regional level, ending up at the level of national hospitals (Hahonou 2001, p.9-12). Since the implementation of the reform in 1995, user fees have been charged with the official exception for government employees, students, and indigent patients[9]. As Weaver (1995) demonstrated, the introduction of user fees has affected patient behavior. Patients on low incomes wait longer before seeking care and are more likely to be referred than exempted patients. Because the latter do not pay, they wait less time before seeking care (Weaver 1995). Consequently a number of referred patients arrive at the emergency service of the NHN directly.

The NHN is a complex organisation that receives more than 20,000 patients each year[10]. The hospital employed more than 500 agents in 2000. Yet highly qualified human resources are scarce at the hospital. 32 expatriated doctors with various medical or surgical specialties have been recruited to supplement 35 doctors working under local contracts. Doctors are also supplemented by medical students and junior residents completing their training. Together with a number of skilled nurses, medical students play a crucial role in the daily functioning of the NHN's multiple services. The lack of a sufficient number of trained doctors is compensated by a downward process of delegation of tasks and competences from highly qualified staff to less qualified workers. This is a common practice in most health institutions in the world (Véga 1997). Yet in Niger, this practical organisation of the division of labour does not only entail a delegation of tasks that reaches the less qualified health workers (cleaner staff) but also, as we shall see below, the users of health facilities[11].

This is also observable at the NHN's emergency service, which is a full-service medical and surgical facility, open 24 hours a day, seven days a week. This service is situated close to the main entrance. The emergency service was created in 1996 as a distinct service from the 'concierge service' (or *triage*) which assists patients and guests in finding locations. Patients who suffer from severe injuries or illnesses that pose an immediate risk to their lives will normally be directed to the emergency service after having paid an admission fee of 1,600 F CFA at the official cash window. The service is divided into two blocks separated by a corridor and a door. The first block is a consultancy service where flows of patients are received creating an intense activity. Emergency-service staff (most often a nurse, a medical student or a junior resident) should normally make a diagnosis and recommend an immediate treatment or a re-orientation of the patient. Re-oriented patients may be sent to a different department or to the second block of the emergency service where patients who need particular medical attention are treated and stay for two to three days[12]. The most common causes for using the emergency service of HNN are severe malaria crises, heart attack and diabetes crises, and broken legs or arms resulting from an accident. According to the statistics, one out of every eight patients dies at the emergency service of the HNN.

The fundamental function of an emergency service is to offer patients timely assistance provided by qualified personnel. As I argue below, the issue of the patient's health does not

only rest on the shoulders of the staff since users (and more especially patients' attendants) play a crucial role in the practical division of labour. Before I examine this role in the following section it is useful to immerse ourselves in the daily routine of this facility by taking a look at an excerpt of my field notes.

August 1999, Night at the hospitalisation block of the emergency services.

20.40 A nurse from the surgical block of the service comes to ask us for a drip. My nurse colleague answers: 'There is no drip! Apparently frustrated, the first one says 'That's just incredible! Two days ago there were no syringes!'. My colleague stands up and takes the keys to the pharmacy and goes out to check if he can find a drip. When he comes back empty handed, the other nurse has left. While we are chatting, a continuous flow of attendants is arriving. They will spend the night at the NHN. The time for visits has passed but the guards still let them enter.

20.55 A female attendant comes to inform the nurse that her patient's serum is finished.

21.15 The nurse leaves to place a new serum. I follow him. He shows me that he isn't using medical gloves to do it. 'There are no gloves!' he says. He washes his hands when we go back to our room. A few minutes later a janitor (manoeuvre in French) asks for a syringe for his sister-in-law.

22.20 A nurse from the Pediatric Department succeeds in obtaining a valium dose for a suffering patient in her service.

22.50 A male attendant comes to alert the nurse that the serum of his patient in room 2 bed 3 should be replaced. The nurse leaves and comes back somewhat later.

22.55 A nurse from the other block comes looking for sparadrap.

23.07 The same male attendant from R2B3 comes to us and says his patient is complaining of pain. The nurse goes to the pharmacy to pick up some drugs. He comes back at 23.20.

23.40 The same attendant comes again to indicate that his patient is having a crisis. The nurse goes out to get help from a colleague. When he comes back the patient has passed away. He simulates reanimation techniques and asks the attendant to cover the body with a sheet. Back in the office the nurse writes a piece of paper which is given to the janitor who will transport the body to the mortuary. He then presents his condolences to the attendant who answers 'That's life! Everyone takes his turn'.

This is followed by a period of calm and inactivity.

03.00 A medical student brings us a patient suffering from asthma. The patient is a civil servant but there seems to be a problem regarding the institution that will cover the cost of his treatment. It is said this will be sorted out tomorrow. The attendant runs to the pharmacy outside the NHN to pay for the drugs mentioned on the list written by the medical student. He comes back after 20 minutes and provides the drugs. The nurse treats the patient.

04.00 The service is totally calm and quiet. Nothing is happening and everybody is sleeping well despite mosquito bites.

08.00 Just before the shift ends, the nurse examines the files of the patients and adds a treatment he didn't provide to the guy who passed away during the night.

(Excerpt from field notes, NHN, August 1999)

The role of the patient's attendant in the division of labour and the manufacture of practical norms

As the previous excerpt suggests, the patient's attendant plays a key role in the treatment of his/her patient. Patients together with their attendants generally arrive on their own at the emergency service. Only a few are transported by the police or by taxi drivers. Emergency patients generally rely heavily on their attendants to reach the office and often remain highly dependent on them during their treatment within the institution. These attendants are relatives or friends who attend to the needs of the patient and often perform tasks that should normally be carried out by the institution. Being a patient's attendant is a full-time job with high moral responsibilities. Attendants take care of their patient all along his/her trajectory at the hospital. Consequently attendants and visitors often reside at the hospital for several days or sometimes longer until the patient is released although a sign at the main entrance of the hospital clearly indicates a very brief time schedule for visits[13]. Although attendants are 'recruited' by patients for a short period of time, the continuous flow of patients accompanied by their attendant and the role played by the latter in the division of labour at the hospital give the impression of permanence.

Beyond moral support, attendants are in charge of many activities on which the well-being of the patient depends. In particular, they perform the 'dirty work' that does not require technical qualifications such as cleaning the patient, clearing out his/her human waste, providing food and possibly feeding a weak patient, helping the patient to change position in bed, staying awake during the night to ensure that he/she does not need acute medical help, etc. On the walls of the surgical room, a notice states '*Only one attendant per patient*'. This attests recognition of the crucial role played by these individuals in the daily functioning of the service. On the other hand, the flyer also indicates that a distinction needs to be made between visitors and attendants and that order and discipline need to be maintained within the emergency service. Indeed, a large number of visitors and attendants would hamper the circulation of physicians and nurses around the patients and create obstructions to the provision of rapid and efficient care.

Occasionally, attendants also perform tasks that require the qualification and training of a nurse such as replacing a drip when nurses are too busy or unwilling to do the work or when inexperienced students do things the wrong way as in the following case:

Abdelrahamane's brother was admitted to the second block of the emergency service for observation and further treatment after a first treatment was delivered at the surgical block. He called a nurse when his brother's drip needed to be replaced. A nursing student came and replaced the drip. Yet Abdelrahamane started to contest the way the drip had been replaced by the student. He explains: 'you know, I observed how they do it in the surgical room. That's the real right way! First you need to cut the sparadrap into two pieces. You apply this one like that (miming it with his hands) and the other one is creased like that. And then you place it. Well, the student didn't place it this way. And we had a harsh dispute…"
(Interview with Abdelrahamane, Niamey, 23rd October 1999)

As this case illustrates, patients' attendants – just as inexperienced nursing students or medical students (or any newcomer in the service) – have to learn how they should behave by observing 'best' practices. These practices differ from the official rules and set of techniques (and the ethics) learnt by health students during their education in health training schools and universities. This is part of the learning-by-doing process (*'apprentissage sur le tas'*) and an important aspect in the manufacture of practical norms. In hospital settings, learning the right way is a constant process although most of this know-how is learnt during the very first days or weeks. Just as health students learn the practical rules that define each specific service in which they do their internship, patient attendants have to (quickly) discover and acquire the prevailing norms in order to behave in an appropriate manner.

If the role of attendant does not require specific technical knowledge, it is in the best interest of the patient to recruit someone who has a sense of improvisation and resourcefulness (*'débrouillardise'*). In most cases, the treatment of patients at the emergency service requires drugs and medical equipment that are not provided by the hospital (as we shall see below). Therefore the ability to read and to communicate with medical staff is particularly important. A patient accompanied by an attendant who could not speak French, Hausa or Zarma (the most commonly used languages in Niamey) would likely be neglected by medical staff, especially if he looks poor.

This poses the question of the 'recruitment' of the patient's attendant. Diseases generally surprise patients in their daily life. All of a sudden, the case looks critical and it is time to make a decision about how to transport the suffering patient to a health facility. In Niger, this kind of decision is most often taken by the patriarch (husband, father) who will cover all the costs related to the treatment. For a child, the attendant will typically be designated among the parents or other relatives depending on the availability of various potential attendants. Sometimes a neighbor can temporarily play this role. But being a patient's attendant is a full time occupation which is very expensive and which does not allow many breaks until the patient is out of danger. As the following example reveals, being a good attendant requires a number of qualities.

> Roger is a young father of a 6-year-old boy suffering from a severe malaria crisis[14]. He explains his son's successful journey. "Well, the doctor said to me 'If you really want to save your child, here is the list of drugs you need to buy!'. He made a long list… more than seven kinds of drug. 'These two are especially important' he said.' You should do all you can do to bring back these two drugs. And quickly!' he added. He said he will cure my child. I went into town and brought back all seven items. Quickly he started his work. Then he wrote a prescription again but I had no money anymore! I was obliged to 'faire la course' (buy various things and go here and there to ask for loans and gifts from friends and family, and so on). Finally I was able to buy all the necessary drugs and my child was saved!" (Interview with Roger, father of a child suffering from a malaria crisis, Niamey, 10th November 1999).

Indeed Roger largely contributed to saving his son because he was able to promptly provide the necessary drugs (quinine, serum) and basic equipment (syringe, drip, sparadrap…) to the physician. Thanks to his social network in town, Roger was also able to find additional financial resources to supplement the first treatment. A simple malaria crisis can rapidly develop into cerebral malaria or into resistant forms of malaria if the treatment is discontinuous[15]. Therefore, an attendant must be committed to his patient, be able to act and react promptly, invent solutions to face new obstacles and constraints, mobilize his or her social network and have a sense of anticipation.

Not all attendants are equally qualified to attend a patient. A lack of competence, social network, financial resources, endurance and moral resources may critically affect the patient's health. The lack of an attendant is most likely to result in the death of the patient, as is illustrated by the following case taken from field notes two weeks after my arrival at the emergency service in 1999.

> When I arrived at my service this morning, an old man was blocking the access to the room which medical students use to take a break by lying on the floor in the corridor. The drop-by-drop intravenous solution in his arm seemed totally inefficient and useless since it was lying on the floor at the same level as the body. The patient was conscious but couldn't speak. He was ostensibly pushing his body on his legs while moaning weakly. All medical staff passed by the patient to access the rest room. I did the same. I then asked a student 'Why is this patient there? What's his problem?'. 'Don't worry, don't ask!' answered the student who was accompanying me. The patient was still in the corridor when I left the emergency service in the late afternoon. Next morning I learnt that the patient passed away during the night. A nurse colleague told me 'Nobody wanted him. Neither the medical department nor the emergency service… This is because he doesn't have an attendant!' (Excerpt from field notes, NHN, 17th August 1999).

This case is not an extreme case but rather a common feature of the daily routine of the emergency service. I learned the practical norms of the service by way of observation. Attendants play a vital role in the medical trajectory of the patient and the issue of the disease and treatment. Patients without attendants are neglected by medical staff. The moral evaluation and selection of patients result in discrimination, inequalities, contradictions and even the death of patients. Patients who are most likely to follow such a path are typically poor people coming from the countryside with very little social capital in town, ending up at the emergency service in a bad shape after having eventually been referred from various levels of the Health chain. As Masquelier argues, medical staff invent their own rules instead of following official ones (2001, p.285). They may arbitrarily define who might deserve a treatment and who might not as this case has illustrated. Neglecting patients without attendant is the practical norm. Although this obviously contradicts the law, medical ethics and social norms, daily practices most often follow this regulating principle[16]. It seems important to uncover the reasons for such behaviour among health practitioners.

The governance of emotions and the discourses about corruption

> 'It's disgusting. You see this guy passed away and nobody cares. The doctors are sleeping, nurses are discouraged. We can't even answer the claims of our patients. It hurts. Patients have nothing. And neither does the hospital?!' (Excerpt of a conversation with a medical student, NHN, 2nd September 1999).
> 'We can't do anything, we are powerless. We use the pencil and the prescription paper!' (Excerpt of a conversation with a nurse, NHN, 29th August 1999).

The daily governance of a health care facility is also a matter of governing emotions. It would be misleading to believe that nobody cares. But caring for patients is a heavy burden that is placed on the shoulders of the attendants. As these quotations indicate, medical staff feel powerless but are sensitive to the situation faced by patients even when they seem not to care for them. As I experienced, caring for all the suffering patients is individually unsustainable. This dimension of the daily governance of health facilities is often overlooked by scholars. That is where ethnographic participant observation offers invaluable insights. After I saw that therapeutic negligence could result in the unintended but foreseeable death of people, my first (naïve but fruitful) reaction was to play the role of attendant for patients lacking a social network and a protector in this inhospitable institution. I spent days and nights at the hospital, even during weekends, at the cost of my own private life trying to save anonymous patients. Having no technical competence my main task was to use my social relations among the medical staff to beg for favors: 'Please, help me to cure that guy!' It worked! But at one point I had to stop. Being an attendant is a fulltime exhausting job repaid with frustration, feelings of powerlessness, sweat and tiredness, with very little satisfaction. Being too sensitive was hard to manage. At that point I began to understand that medical staff cannot let themselves be governed by their feelings. Instead, feelings must be governed according to the principle that you cannot help everybody, but some people at least. How can one distinguish people you should care for from others? What does such a practical norm imply in practice?

This practical norm implies that users are basically divided into two categories: connected users and unconnected users. On the one hand, connected users are people (patients or attendants) who have connections with health staff and who will consequently receive a privileged service (free service, no queuing, speed and efficiency). Such connections are generally known in Niger under the expression '*parents, amis et connaissances*' which means 'relatives, friends and acquaintances'. On the hand, unconnected people are treated anonymously which concretely means that people will go through an exhausting experience during their stay at the hospital. It is well known to the public that access to public services is differentiated along these lines. If a user personally knows someone he will benefit from good service. If he does not, he should try to get such a connection by asking someone who knows someone working in the facility. Otherwise he will need money to bribe health care staff at various levels (from cleaning staff to nurses, students and doctors). Petty corruption allows

users to build a personal relationship with the staff, to obtain care and to get access to drugs and small medical equipment[17].

Individualized health care and privileged access to medical resources is a regime of exceptions and favors in an environment characterized by carelessness, lack of time and lack of basic resources. These are the conditions for the existence of a market for better service. As I demonstrate later, health staff do not hesitate to produce the conditions of such an informal market by artificially creating shortages in time and medical resources.

When observing the daily routine of the emergency service, one singular aspect puzzled me. Every morning before 08.00 the head of the emergency service provided an amount of drugs and small medical equipment for the following 24 hours. However, at 09.00 all these consumables had disappeared from the shelves. Of course they were not all utilized in one hour. This chronic shortage of resources was created by medical staff who abundantly filled their pockets each time they had to take their shift. Stealing drugs and equipment from the shelves is a practice that allows the staff to earn additional revenues. If the stolen products were not sold to brokers or merchants to provide the renowned black market at the Grand marché de Niamey, they would either be sold to ordinary users or be given to well-connected clients. Artificial shortages caused by the mismanagement of medical resources generate opportunities as well as contradictions. The system in which everyone participates poses problems of conscience to staff members: Who is responsible for these contradictions? In most cases, medical staff do not lack arguments to escape their responsibilities and justify their behaviour.

- How would I say to a relative that he must pay for a service that I provide with ten fingers. Maybe I will use a blade, some disinfectant and cotton, that's all!
- They (administrative staff) tell us that we must apply user fees before any intervention but they don't write that down because of the responsibility if the patient dies.
- I tell you, if it's a relative I will do it for free. This will not much affect the revenue collection of the NHN. Moreover we don't know how they manage these financial resources…
(Excerpt from field notes: two nurses discussing in the corridor, NHN, 2ⁿᵈ September 1999)

Look at that. Is this a good job!? He (a medical student) is not the only one who didn't receive his salary. Two months since we got our last salary. The house owner shouts at me. Water and electricity must be paid. We have gone 11 months without salary! (Excerpt of a conversation with a nurse, NHN, 23ʳᵈ September 1999).

'You must pay these drugs. Why don't you bring them back? Do you want your patient to die or what?! Hurry up to buy these drugs!' (Excerpt from field notes, NHN, 20 November 1999: a medical student scolding an attendant).

Everyday petty corruption takes its justification in high level corruption that allows ruling elites to enrich themselves rapidly and sometimes ostentatiously. Taking one's share of the

cake and serving the interests of relatives is somehow a way in which civil servants take their revenge on the state. Breaking official rules seems to belong to the weapons' arsenal of weak civil servants. Responsibilities are projected onto an ever changing 'Other' that can alternatively be the general situation in which salaries are paid irregularly[18], a corrupt hierarchy, other colleagues, the patients and their attendants… Yet providing free services to connected patients using resources stolen from the 'state' and exploiting unconnected and poor patients are two sides of the same coin. That is where the paradox lies since health providers denounce a system in which they actively participate. The same goes for users who generally consider helping a relative as legitimate as long as their interests and those of care providers go hand in hand but denounce the system when they can no longer benefit from it. This double mentality is not the privilege of interface bureaucrats. Clients and civil servants constantly surf on the waves of legitimacy and legality by juggling with official, social and practical norms.

Sometimes practical norms and social norms combine harmoniously against official rules (access to health service requires the payment of user fees). They are mobilized to justify a social practice: a connected patient comes to the emergency service, he meets a relative or a friend who works there and allows the patient to benefit from a rapid and efficient service free of charge. Another day, the same patient may arrive at the service without finding his/her personal relation. He would probably be treated as an anonymous patient and would have to pay not only official fees but informal fees as well in order to secure a better service. Tensions may then appear between practical norms (the payment of greasing money on the top of official fees) and social norms (e.g. according favors to relatives, benefitting personally from one's position in the bureaucracy):

'Going to NHN is not easy. It will exhaust your resources. They will start asking for money just to enter the hospital. Once you are inside and you don't give money, they won't take a look at your child. Even if the person is dying, if you don't pay they won't examine the person. That's why if you have a patient it is better to avoid the NHN!' (Interview with Aissa, mother of a young boy who was the victim of a car accident in Niamey, 29th November 1999).

Masquelier argues that medical staff and clerks 'invent their own rules' because of state's dysfunctioning and fragmentation (2001, p.285). By contrast, I would suggest that practical norms are co-produced by health civil servants and users along their daily interactions, as well as by official norms (laws, rules, ordinances) and social norms. Patients are not just 'disillusioned customers' or passive victims of the norms imposed by civil servants, they can also actively contribute to the transformation of practical norms. Like any other interface bureaucracy, users may contest the practical norms (which would tend to their erosion, transformation or shift) of modern public medicine or accept them (which would rather lead to their reproduction).

- 'Hey, is this because I am Tuareg and have a white skin that we are neglected?! I am Nigerien just like you. Do your work!' (a Tuareg attendant challenging a medical student).

- 'Hey Madam! If it were not that we have little choice, we wouldn't come to your hospital!'
says a frustrated user to a female medical student of the emergency service while he is
leaving.
- 'You are free to go into town!' answers the medical student.
(Excerpt from field notes: dispute between a colleague medical student and a patient, entrance
of the NHN, 20th October 1999)

Most of the time patients and attendants accept locally constituted practical norms either because they benefit from them or because they are in a difficult situation to exert pressure and claim or negotiate their rights. In emergency services corrupt practices, legitimate or not, can often entail a difference between life and death for suffering patients. Therefore those relatives who accompany the suffering are occasionally proactive in corrupt practices[19]. Sometimes they give money after the service has been provided as a form of gratitude. In some cases attendants are left with little choice but to find the amount of money requested by medical staff to save an ailing family member. Yet tensions rise from time to time and unlike the aforementioned case of Aissa (strategy of avoidance) clients may contest and challenge the prevailing norms, as these two last examples attest. In any case, health facility users participate in the process of fabrication of the practical norms that shape interactions between practitioners and clients.

Conclusions

The exploratory concept of practical norms is useful to capture the behavior of civil servants in interface bureaucracies and to explore the production of public services as a result of the interactions between civil servants and users. In this article I draw particular attention to the role of users in the division of labour and the production of health public services in Niger. Not only do users contribute to the quality of the service by performing a number of tasks (and not least by having the responsibility to care for the patient), they also shape the practical norms to which social actors refer to regulate interactions and activities.

Since the use of health services is not free of charge, most patients prefer to postpone the decision to go to health centers and often start using less expensive alternative treatments. When such alternatives are ineffective, the disease may deteriorate and patients become weaker when they arrive at a public health institution (local clinic, district center, hospital). They end up in an emergency situation where the lack of time and the scarcity of medical resources is in many ways very similar to the situation observed at the emergency service of NHN. The conclusions drawn from this case study may therefore be extended to other public health facilities in Niger and other countries.

The inhospitable environments created by public health institutions in Africa generate asymmetric relations between health providers and health seekers. Two main strategies allow the latter to secure their access to health care. For those who have connections within the hospital or know someone in town who knows an employee of the hospital (be it a volunteer,

an nursing orderly or a director), the strategy involves connecting these people who will facilitate the process. These patients will receive access to privileges and favors at the expense of unconnected users. For unconnected users, bribing health civil servants becomes a way to access the service. Although the frontiers between unconnected and connected users are not completely closed, not all patients have the possibility to shift from one category to the other. Even connected users may occasionally experience the harsh trajectory of being treated as an anonymous patient. This results in an increasing loss of confidence in health public services. In this context the quality and the role of the attendant are crucial not only for patients but for the functioning of health facilities. For health providers, health facilities offer opportunities to earn money beyond their salary. They can also be used to provide services to employees' relatives and acquaintances free of charge. Although relations of power are asymmetric, the situation of health employees is far from easy. Between a rock and a hard place, they often have to cure patients with limited means as well as having to deal with the daily experience of governing emotions (their own and those of users) that acute care usually generates.

As this case study shows, care is a complex matter that cannot be reduced to corrupt practices. The literature on informal payments highlights the role played by corrupt practices in the health sector, analyses the consequences of corrupt practices, assesses their legitimacy and most often attributes the phenomenon to a so-called 'endemic culture of gifts'. However, the case presented here rather suggests that the interactions between civil servants and users in health facilities have little to do with a traditional culture. They are better understood through the lens of practical norms. Furthermore, as I showed here, corruption in the health sector is one of the many ways by which users access a public health service. This perspective allows us to explore the agency of users and practitioners in health facilities. In acute conditions, the life of a patient does not only depend on the quality and efficiency of the services provided by the medical staff, it also depends on the qualifications of the persons (relatives, friends) accompanying the patient. In Niger (and other developing countries), the patient's attendant is a crucial component of the organisation and the effectiveness of health facilities in emergency situations. After a few interactions with the staff, the attendant should be able to understand the practical norms that govern the service if his/her patient is to survive. Users do know that chronic lack of materials and equipment is a result of systemic petty corruption and artificial shortages created by staff. They do know that they contribute to the reproduction of this system when they bribe health workers. Although everyone knows the consequences of such practices, they are done by all. Neither health workers nor users are just victims of a system or a set of cultural practices. Both contribute to the fabrication of the practical norms that regulate the daily functioning of health facilities and shape people's behaviour.

Word count: 9.321

References

Blundo, G. and Olivier de Sardan, J. P. with Bako Arifari, N. and Tidjani Alou, M. (2006) *Everyday Corruption and the State. Citizens and Public Officials in Africa.* London: Zed Books

Chiu, Y.-C., Clegg Smith, K., Morlock, L. and Wissow, L. (2007) Gifts, bribes and solicitions: Print media and the social construction of informal payments to doctors in Taiwan. *Social Science & Medicine.* 64. p.521-530.

Foley, E. E. (2010) *Your Pocket is What Cures You: The Politics of Health in Senegal.* Rutgers University Press.

Ensor, T (2004) Informal payments for health care in transition economies. *Social Science & Medecine.* 58. p.237-246.

Ensor, T. and San, P.B. (1996) Access and payment for health care: the poor of Northern Vietnam. *The International journal of health planning.* 11 (1). p.69-84.

Gall, P., Belli, PC., McKee, M and Szócska, M. (2006) Informal payments for health care: definitions, distinctions, and dilemmas. *Journal of Health Politics, Policy and Law.* 31 (2). p.251-293.

Grindle, M. (1997) Divergent cultures? When public organizations perform well in developing countries. *World development.* 25 (4). p.481-495.

Hahonou, E. (2001) Service ds urgences. Les interactions entre usagers et agents de sante à l'Hopital de National de Niamey. *Etudes et Travaux du LASDEL.* 5.

Jaffré Y. et Olivier de Sardan, J.-P. (dir.) (2003) *Une médecine inhospitalière. Les difficiles relations entre soignants et soignes dans cinq capitales d'Afrique de l'Ouest.* Paris: Karthala.

Jewkes, R., Naeemah, A. and Zodumo, M. (1998) Why do nurses abuse patients? Reflections from South African obstetric services. *Social Sciences and Medecine.* 47 (11). p.1781-1795.

Klein, T. (2007) Selecting therapies in Benin: making choices between informal, formal, private and public health services. *Africa Spectrum.* 42 (3). p.461-481.

Lewis, M. (2000) *Who is paying for health care in Eastern Europe and Central Asia.* Washington: World Bank, unpublished monograph.

Masquelier, A.M. (2001) Behind the Dispensary's Prosperous Façade: Imagining the State in Rural Niger. *Public Culture.* 13 (2). p.267-291.

McPake, B., Asiimwe, D., Mwesigye, F., Ofumbi, M., Ortenblad, L., Streefland, P. and Turinde, A. (1999) Informal economic activities of public health workers in Uganda: implications for quality and accessibility of care. *Social Science and Medicine.* 46 (7). p.849-65.

Olivier de Sardan, J.-P. (1999) A moral economy of corruption in Africa? *The Journal of Modern African Studies.* 37 (1). p.25-52.

Olivier de Sardan, J.-P. (2001), La sage-femme et le douanier. Cultures professionnelles locales et cultures bureaucratique privatisée en Afrique de l'Ouest. *Autrepart.* 20. p.61-73.

Olivier de Sardan, J.-P., Arifari, N.B. et Moumouni, A. (2005) La corruption dans la santé au Bénin et au Niger. *Etudes et Travaux du LASDEL.* 40.

Onwujekwe O., Dike N., Uzochukwu B. and O. Ezeoke, 2010, Informal payments for healthcare: Differences in expenditures from consumers and providers perspectives for treatment of malaria in Nigeria, *Health Policy*, 96, p.72-79.

Roth, A. J. (1972) Some Contingencies of the Moral Evaluation and Control of Clientele: The Case of the Hospital Emergency Service. *American Journal of Sociology.*77 (5). p.839-856.

Souley, A. (2001) Interactions entre personnels de santé et usagers à Niamey, *Etudes et Travaux du LASDEL*. 2.

UNDP (1998) *Rapport National sur le Développement Humain – Niger.*

Weaver M. (1995) User fees and patient behaviour: evidence from Niamey National Hospital. *Health Policy Plan*. 10 (4). 350-361.

Notes

---

[1] With the work done by Blundo, Olivier de Sardan and other scholars related to LASDEL being exceptions.

[2] http://wadr.org/fr/site/news_fr/1710/Niger--14-personnes-%C3%A9crou%C3%A9es-pour-corruption.htm (accessed 26 April 2013).

[3] The term 'unconnected patients' refers to patients who do not have connections to powerful friends or members of the medical staff. Such connections would allow them to avoid paying fees and to receive privileged treatment.

[4] The organisation of the healthcare system on the basis of the Bamako Initiative has radically changed access to the health service in Niger, which under colonial rule and until the late 1980s was free of charge.

[5] This is true for people who know they will not be able to avoid these fees because they are unconnected (see infra).

[6] Daily pavement-radio discussions disseminate rumors about the quality of various health facilities and more especially the quality of reception by medical staff. These rumors shape both people's expectations and behaviour within health institutions. Klein (2007), taking her point of departure in the under-utilization of public health facilities in Benin, reports similar findings regarding the importance of the patients' reception and the politeness of staff.

[7] Jaffré (1999)

[8] Although many users originating from remote areas may consider hospitals as an ultimate recourse, the trajectories of various patients I followed indicate a more nuanced picture. It should be added, the NHN also refers patients elsewhere. For instance, patients with a (simple) broken arm or leg coming to the hospital are often proposed by the hospital staff for release after the radiography in order to be cured by traditional healers who are renowned for their efficiency.

[9] The implementation of the cost recovery policy is nowadays well known to the public. It basically entails that all users have to pay various fees in order to access public health services. The official rate of each fee is publicly advertised on the walls in French, Zarma and Hausa: *furyaŋ nooru* (hospital admission fee), *fota nooru* (radiography fee); *daro nooru* (fee for a bed), etc.

[10] bulletin d'information de l'HNN, 1996.

[11] See also Jaffre and Prual about midwives delegating their tasks to student midwives, cleaning staff and even women who had just given birth (1994, p.1070).

[12] Between 1,150 and 2,000 patients stay for some days at the medical block. Patients have to pay 11,000 CFA Francs (which is approximately a third of the basic minimum monthly salary) to be admitted in this section of the emergency service.

[13] Visits are allowed between 06.00-07.00, 12.30-14.00 and 18.30-21.00.

[14] Malaria is the most common indication for admission at HNN and the first cause of mortality in Niger.

[15] The time factor is extremely important in malaria treatment since the parasites that affect the body develop rapidly. The treatment is generally to be applied for three days before the parasites are eliminated from the the patient's body.

[16] For a discussion on social habitus and statistical norms (regularity) see Olivier de Sardan in this special issue.

[17] See also Olivier de Sardan et al. (2005, p.8-11) for similar attitudes in Benin and urban Niger.

[18] Interestingly health labor unions erratically organize strikes motivated by bad working conditions or poor salaries but they rarely fully follow these strikes since these movements prevent the hospital workers from

earning their daily money. Although the hospital of Niamey is officially a non-profit institution owned by the state, the daily appropriation of the hospital by the staff turns it into a profit-oriented service (Hahonou, 2001).

[19] While I was conducting this fieldwork at the emergency service, together with a nurse colleague I was once bribed by a client who gave me an unsolicited present of 5,000 CFA Francs. This client was the father of a young female deaf teenager suffering a malaria attack. The man said 'Enjoy your lunch!'.

INTERNATIONAL JOURNAL FOR
EQUITY IN HEALTH

RESEARCH   **Open Access**

CrossMark

Integrating views on support for mid-level health worker performance: a concept mapping study with regional health system actors in rural Guatemala

Alison R. Hernández[*], Anna-Karin Hurtig, Kjerstin Dahlblom and Miguel San Sebastián

Abstract

Introduction: Mid-level health workers are on the front-lines in underserved areas in many LMICs, and their performance is critical for improving the health of vulnerable populations. However, improving performance in low-resource settings is complex and highly dependent on the organizational context of local health systems. This study aims to examine the views of actors from different levels of a regional health system in Guatemala on actions to support the performance of auxiliary nurses, a cadre of mid-level health workers with a prominent role in public sector service delivery. A concept mapping study was carried out to develop an integrated view on organizational support and identify locally relevant strategies for strengthening performance.

Methods: A total of 93 regional and district managers, and primary and secondary care health workers participated in generating ideas on actions needed to support auxiliary nurses' performance. Ideas were consolidated into 30 action items, which were structured through sorting and rating exercises, involving a total of 135 of managers and health workers. Maps depicting participants' integrated views on domains of action and dynamics in sub-groups' interests were generated using a sequence of multivariate statistical analyses, and interpreted by regional managers.

Results: The combined input of health system actors provided a multi-faceted view of actions needed to support performance, which were organized in six domains, including: *Communication and coordination, Tools to orient work, Organizational climate of support, Motivation through recognition, Professional development* and *Skills development*. The nature of relationships across hierarchical levels was identified as a cross-cutting theme. Pattern matching and go-zone maps indicated directions for action based on areas of consensus and difference across sub-groups of actors.

Conclusions: This study indicates that auxiliary nurses' performance is interconnected with the performance of other health system actors who require support, including managers and community-level collaborators. Organizational climate is critical for making auxiliary nurses feel supported, and greater attention to improving the quality of hierarchical relationships is needed in LMIC settings. The participatory nature of the concept-mapping process enabled health system actors to collaborate in co-production of context-specific knowledge needed to guide efforts to strengthen performance in a vulnerable region.

Keywords: Health worker, Nursing, Performance, Relationships, Health services management, Health system, Concept mapping

* Correspondence: alison.hernandez@umu.se
Division of Epidemiology and Global Health, Umeå University, 901 87 Umeå, Sweden

Hernández *et al. International Journal for Equity in Health* (2015) 14:91

Page 2 of 13

Introduction

Mid-level health workers (MLHWs) play a critical role in delivering health care in rural and remote areas [1]. In many low and middle income countries (LMICs), they form the front-line of service delivery for the poorest and most vulnerable populations. MLHWs have a shorter training than professional health workers, though they perform some of the same tasks, and unlike community health workers, they typically have formal certification from nationally-accredited training institutions [2]. In many African and Asian countries, new cadres of MLHWs have been created to fill gaps in underserved areas, such as health extension workers in Ethiopia and lady health workers in Pakistan. While in most Latin American countries, the front-line workforce is made up by a high proportion of auxiliary nurses (ANs), a long established group of MLHWs [3]. In Guatemala, ANs are the largest group of health worker, and they have a prominent role in public sector service delivery in rural areas where professionals are scarce [4].

The performance of MLHWs who are attending vulnerable populations with great health needs is a key leverage point to strengthen health systems' capacity to redress inequities and enable achievement of the highest attainable standard of health. Realization of these health system goals depends on health worker performance in the dimensions of being available, competent, productive and responsive [5]. Scaling up the numbers of MLHWs has been a key strategy to improve availability in areas with a chronic shortage of professional health workers. However, once in place, they face challenging working conditions characterized by lack of basic resources, sporadic supervision, and delayed wages. Improving health workers' performance in low-resource settings is a complex endeavor because these intersecting conditions influence both their capacity and motivation to deliver care with competence, productivity and responsiveness.

Due to the interconnections among these elements that shape health worker performance, interventions must be multifaceted and address characteristics of the health worker as well as the health facility and health system [6, 7]. Previous studies in LMIC settings have identified examples of successful implementation of interventions in these areas, such as clinical guidelines, supervision, pay-for-performance incentives, and decentralization of management functions [8–11]. However, the relationships between interventions and the desired changes are complex and highly context-dependent. Meta-analyses indicate that no strategy is effective in all settings, rather their success depends on implementation aspects and organizational processes [12, 13]. A realist review of human resource management intervention studies, which analyzed why certain interventions work in certain contexts and not in others,

points to the importance of adaptation to the local situation and involvement of local stakeholders in identifying and implementing solutions to problems [14].

In order to guide the development of context-specific strategies that respond to local conditions and build on local capacities, there is a need for research that gives voice to health system actors' views of the organizational configurations shaping health service delivery in LMICs [15]. A growing number of studies provide nuanced insight into how health workers and supervisors perceive the influence of challenging conditions and human resource management strategies on performance, motivation and job satisfaction [16–20]. While these studies indicate directions for action, effective design and implementation of interventions to modify conditions and strengthen support for performance depend on the organizational context of the local health system. Additional steps are needed to connect these voices to those of the actors in meso-level management of local health systems who play a critical role in the operational aspects of organizational support. Methodological approaches that integrate the experiential knowledge that groups of local actors draw on when working towards a complex goal, such as improving performance, can help facilitate the translation of health systems research to practice [21].

This study examines the views of actors from different levels of a regional health system in rural Guatemala on actions to support the performance of auxiliary nurses (ANs), in order to identify locally relevant strategies for strengthening performance. Previous studies conducted with ANs and supervisors in this setting indicated constraining factors, such as limited resources, control-oriented supervision and knowledge limitations, as well as factors that enabled their performance, including orientation to their work through community connectedness, and nursing principles of interpersonal relationships and vocation [22, 23]. The aim of this study was to gain insight into the views of health workers, district and regional managers on how these factors could be developed as well as other actions needed to support AN performance.

Methodology

Concept mapping

The methodology of concept mapping employs a structured, participatory process and rigorous data analyses to integrate the input of multiple stakeholder groups, and produce maps that depict the composite thinking of organizations or systems [24]. The method was selected based on its capacity to connect diverse actors in co-production of knowledge that is relevant for understanding and potentially transforming the operation of complex human systems [25]. Qualitative and quantitative

Hernández *et al. International Journal for Equity in Health* (2015) 14:91

Page 3 of 13

data are generated and integrated by participants, and then analyzed using multivariate statistical methods to produce visual representations or maps that synthesize the ideas and priorities of groups of actors. The concept mapping process includes the steps of identifying the focus, generating ideas, structuring ideas through sorting and rating, representation in maps, and interpreting the maps. Description of the implementation of these steps follows the orientation to the study setting.

The study setting

This study was conducted in the department of Alta Verapaz, located in the highlands of northern Guatemala. The population of 1.1 million lives predominantly in rural areas and 90 % belong to indigenous Mayan ethnic groups. Many rural residents are monolingual in the local languages of Q'eqchi' and Poqomchi', and have low levels of formal education. Alta Verapaz has the highest level of extreme poverty in the country (38 %), the second highest rate of illiteracy (40 %) [26]. The leading causes of mortality include pneumonia, acute diarrheal diseases, and malnutrition, and the maternal mortality rate is one of the highest in the country [27].

In the national public health system, the department of Alta Verapaz corresponds to a Health Region, which is sub-divided into 19 Municipal Health Districts. The managers working at the Regional Health Office (RHO) are responsible for administration and oversight of the implementation of the Ministry of Health's programs at the regional level and in the districts. At the district level, health services are provided through two district hospitals, 17 health centers and 34 health posts. Nongovernmental organizations contracted by the Ministry of Health also provide a package of essential services via mobile health teams to the most remote populations through the Coverage Extension Program. Service delivery and program implementation are managed at the district level by a district director and a district nurse, as well as technical coordinators who oversee the Coverage Extension Program.

The ANs work in various roles in primary and secondary health care. Secondary care services are provided in health centers, which typically employ around 15 to 30 ANs, depending on the size of the district, as well as the district medical director and district nurse. There are also positions for medical doctors to work in day and night shifts, but in most districts these positions had high turnover and high vacancy. In larger districts, additional professional nurses support the district nurse in oversight of inpatient and outpatient care, and monitoring program implementation. Health centers are also staffed by technicians in the areas of laboratory, pharmacy, and environmental health. Primary health care

activities at the community level are delivered through health posts and the Coverage Extension Program. Health posts are staffed by two ANs and an educator. In the Coverage Extension Program, the mobile team of health workers typically consists of a medical doctor or professional nurse, two or more ANs and an educator. In both primary health care settings, work activities depend on coordination with community health volunteers and communication with local leaders.

Identifying the focus

The Regional Health Office of Alta Verapaz provided the institutional base for the study, and the exact focus was defined in collaboration with the head of the Nursing Unit and the director of the RHO. They identified the disconnect between managers' and ANs' views of performance problems in the districts as a key area to explore with the study, because each group felt that the faults of the other were to blame. While managers felt ANs were apathetic and unmotivated, ANs expressed that their work and efforts were unrecognized and unappreciated. Regional Health Office leaders felt that concept mapping could be useful for integrating the perspectives of managers and ANs, as well as other health workers, to develop a more holistic vision of how to improve performance in the districts.

Based in discussions with RHO actors, the researchers developed a study protocol describing the steps of the concept mapping process that included the sampling plan and an informed consent form for participants. Recruitment of participants would be purposive to assure representation of regional and district managers, and health workers, including ANs as well as health professionals and technicians, from a wide range of work settings in the health region. Sampling would also be based on convenience by coordinating participation in the study with existing activities for managers and health workers in order to minimize interruption of their work.

Generating ideas

Four idea generation sessions were held during scheduled meetings and trainings where managers and health workers would be gathered at the RHO and in the districts. During these sessions, the first author presented results from previous studies carried out in the region, describing local challenges in health service delivery and tendencies found in nursing personnel that enabled them to confront difficult conditions [22, 23, 28]. The purpose and procedure of the concept mapping study were explained, and attendees were asked to write three or more suggested actions in response to the following focus prompt statement: *Name some actions that could be taken or are being taken to support and develop the performance of the nursing staff in the district health*

Hernández *et al. International Journal for Equity in Health* (2015) 14:91

Page 4 of 13

services. The forms were distributed to all present at the sessions. Those who chose not to participate simply did not return the form, though very few chose not to participate. The director of the RHO and the Head Regional Nurse were present in the two sessions held in the RHO, but they were not involved in inviting participation or collecting the forms in order to assure that those present at the sessions did not feel coerced to participate.

A total of 93 persons contributed ideas, and of these 38 were managers and 55 were health workers (see Fig. 1). All 19 districts were represented among managers and 15 districts were represented among health workers. There were 373 ideas and these were consolidated by the first author by combining repetitions, excluding statements that did not suggest an action, and then organizing the ideas by theme. The thematic consolidated list was discussed with managers from the Nursing and Human Resources Units at the RHO, and 30 action statements were formulated. Agreement on the adequacy of the 30 statements was reached based on the presence of the topics if not the exact content of the original ideas generated, and the need to make the rating survey a manageable length for participants in the following step.

Structuring ideas: Sorting and rating

Sorting is a technique for determining how participants view interrelationships among the ideas for action from the previous step and identifying organizing themes. The participants were approached on an individual basis in their work setting and were provided with 30 cards with one action written on each card. They were asked to organize the actions into groups that made sense to them and name their groups. The actions that made up the groups were recorded for each participant, and elaborations on the logic of the organization were noted when provided. A total of 12 managers participated in sorting, and two units of the RHO and two districts were represented.

The 30 actions were also used to create a rating sheet, on which health workers and managers were asked to assess the importance of each action based on its potential impact on performance and provide a score from one to five, where five represented great importance and high priority and one represented low importance and low priority. Representation of regional and district managers as well as primary and secondary care health workers was obtained through various means. Regional and district managers completed the ratings during a scheduled meeting at the RHO. Forty managers participated, and all 19 districts and five units of the RHO were represented. District nurses, technical coordinators from the Coverage Extension Program, and regional nurse managers assisted in data collections by administering the rating sheets to health workers in the districts. The sample included 95 health workers from 15 districts, and of these, 60 worked in secondary care and 35 in primary care.

Representation in maps

The data gathered in the structuring step was analyzed using concept mapping techniques that facilitate visualization of thematic clusters, comparison of patterns in the priorities of sub-groups, and identification of areas of consensus for action [29]. Analysis of the sorting data to generate cluster maps involved three steps: creating a similarity matrix that depicts the number of times pairs of action statements were grouped together, multidimensional scaling to configure points representing the statements on a bivariate plot based on their similarity, and hierarchical cluster analysis to aggregate statements that represent similar concepts into clusters. The most appropriate number of clusters was initially determined through examination of the conceptual coherence of the statements grouped together at successive levels of clustering and evaluation of the relative value of the precision provided by each level of division. Six clusters were identified and names were selected from those suggested

Fig. 1 Participation in the concept mapping process. * The majority of health worker participants were ANs, though professional nurses and technicians were also included in this group. RHO = Regional health office

Hernández *et al. International Journal for Equity in Health* (2015) 14:91

Page 5 of 13
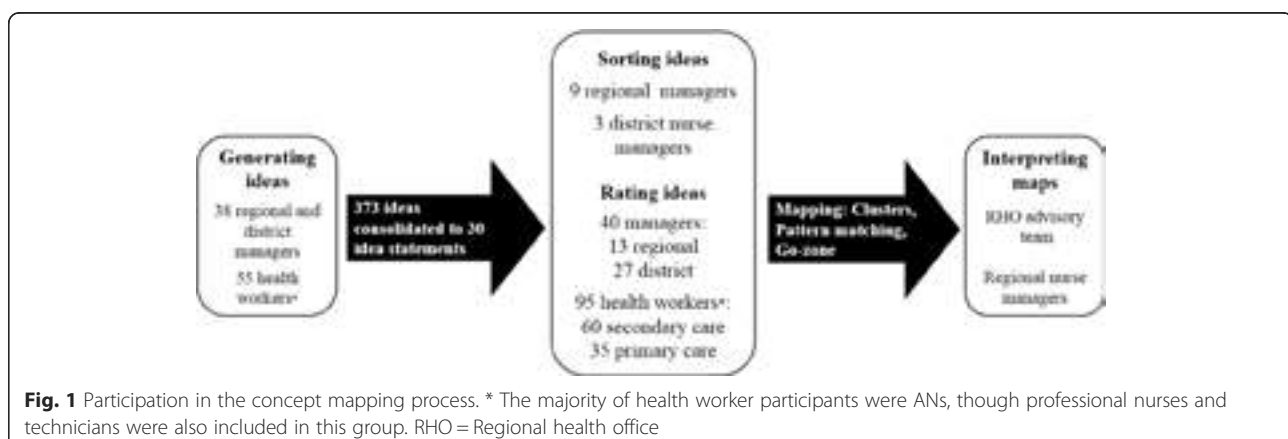
by participants in sorting based on their consistency with the content of the clusters.

Rating data was analyzed through comparison of role-stratified averages of the six clusters of actions and the 30 items. R-values were used to evaluate the correlation of sub-groups' views on the relative importance of action in the different thematic clusters as well as individual items. The greatest divergence in priorities at the cluster level was found in comparing managers and health workers, and these differences are represented in a Pattern Matching map. The greatest divergence in interest in individual action items was found between primary care workers and managers, while the interests of secondary care workers and managers were more highly correlated. These dynamics are represented in Go-zone maps, which depict average importance ratings of individual action items by two different groups on an X-Y bivariate plot, with the respective averages serving as their respective x- and y-coordinates. The X-Y plot is divided into quadrants by lines crossing each axis at the mean importance score of all actions by the respective group, so that items plotted in the top-right quadrant, the Go-zone, represent points of consensus for action.

Interpreting the maps

The results of these analyses were presented in two forums: a workshop for regional nursing managers, and a meeting of the RHO advisory team, made up by heads of the units. In the workshop, the participants worked in small groups to evaluate the appropriateness of the clusters generated by the analysis and were asked to determine if some actions should be moved to another cluster, if clusters could be joined or divided and if the names were appropriate. Participants reflected on their own experiences with actions to improve performance and discussed connections among the clusters of actions. After the presentation of the maps in the RHO advisory team meeting, members reflected on the accuracy of the depiction of the dynamics across organizational levels, and discussed factors influencing implementation of prioritized actions.

Ethics, consent and permissions

In accordance with the guidelines of the Guatemalan medical association, ethical clearance was not required as the study did not involve clinical trials or human testing. The study protocol was reviewed and authorized by the head of the Nursing Unit and the director of the RHO, and close contact with regional ministry stakeholders in planning and implementation helped ensure that local norms were respected. Informed consent forms were signed by participants in each step of the study, and they were oriented to the study purpose, measures to protect anonymity, and the voluntary nature of participation.

Results

Actions needed to support AN performance

The diverse range of actions suggested for supporting ANs provided a multifaceted view of performance based on the combined input of health workers and managers. The consolidated list of 30 actions (Table 1) included actions aimed at the ANs themselves, as well as managers, and community supporters, which reflected recognition of the interconnection of their performance with other actors in their work environment. Direct actions for supporting ANs included accompanying them and being receptive when they ask for help (item 24), and providing training on sensitivity in human relations as well as standards of practice and ministry programs (items 11, 16). Suggestions were also directed to the work of regional and district managers, such as accompanying them in problem-solving and improving the use of information in decision-making (items 3, 5). Community-focused actions to support ANs' performance included improved communication with leaders and strengthened training for volunteers (items 8, 14). These suggestions to promote support for managers and communities indicated their perception that better addressing their needs and interests also contributed to ANs' capacity to perform. The nature of the actions suggested also demonstrates recognition that performance is multidimensional and it depends on nurses' knowledge of institutional guidelines (item 11), opportunities for professional development (items 17, 19), their ability to relate to patients and communities and speak their language (items 8, 15, 16), as well as their motivation which is influenced by timely payment of wages and formal recognition (items 21, 28, 30).

Interpreting domains of action

Analysis of the sorting data indicated six thematic domains of actions which captured different forms of support that contribute to performance: *Communication and coordination, Tools to orient work, Organizational climate of support, Motivation through recognition, Professional development* and *Skills development*. These clusters and the action items of which they are comprised are depicted in the cluster map in Fig. 2. Nursing managers from the RHO who participated in the workshop to evaluate the clusters confirmed the appropriateness of the cluster names and the comprehensiveness of these thematic domains. The six-cluster organization was used in the comparative analysis of the priorities of managers and health workers presented in the following section of the results.

Feedback from the workshop and field notes from individual sorting sessions also provided a base for further

Hernández *et al. International Journal for Equity in Health* (2015) 14:91

Page 6 of 13

Table 1 Consolidated list of action statements and average rating scores organized by cluster

Clusters		Action items	Average rating
Tools to orient work	1	Provide orientation and induction for new employees	4.32
	2	Promote monitoring of quality of care	4.26
	3	Accompany the districts – do not just point out problems, rather understand and support them	4.11
	4	More supervision of work at the community level including suggestions on how to work better in the communities	4.09
	5	Fortify district managers' capacity to utilize information to guide decision-making	4.02
	6	Personalized orientation to humanitarian aims of work – not just productivity	3.91
	7	Provide guidelines for implementation of monitoring for employees at the district level	3.80
Communication and coordination	8	Improve communication with community leaders and the community so that we work as a team with better coordination	4.17
	9	Promote team work by delegating responsibilities and authority, and recognizing the importance of the contribution of all	4.15
	10	Accompaniment from district and regional management in some community meetings to promote trust in the services	3.95
Skills development	11	Trainings in the standards of practice and programs of the Ministry	4.45
	12	Continuing education meetings in the districts with themes that respond to detected needs	4.12
	13	Promote the use of technology to facilitate communication and efficient use of information	4.00
	14	Fortify trainings for community team with support from the district and educational materials	3.97
	15	Classes in Q'eqchi/Poqomchi for personnel who are not proficient in the local language	3.97
Professional development	16	Sensitivity trainings for personnel on empathy, trust and respectful treatment to promote good human relations	4.29
	17	Facilitate support to continue studies with permissions from the regional health office	4.11
	18	Strengthen training in vocation in the local nursing school	4.06
	19	Opportunities for development through short courses	4.05
	20	Develop nursing forums where nursing leaders share their vision and accomplishments to promote identification with the profession	3.56
Organizational climate of support	21	Negotiate for the timely payment of monthly wages	4.56
	22	Treat personnel with respect – do not speak to them in a derogatory way and value the psycho-social human being	4.53
	23	Promote climate of trust and mutual support through positive leadership at all levels	4.06
	24	Accompany nursing personnel: be attentive to their needs, resolve their doubts, and be receptive when they ask for help	4.01
	25	Recognize and support the actions carried out at the local level to obtain resources, develop projects and coordinate transport	4.00
Motivation through recognition	26	Recognize positive aspects like dedication, quality of service and connection to the population	4.15
	27	Recognition of actions that contributed to a saved life	4.13
	28	Management should recognize our work through verbal and written congratulations	3.98
	29	Recreational activities with personnel to promote better interpersonal relationships	3.84
	30	Recognize an employee of the month with a certificate	3.62

interpretation of the clusters and allowed for identification of three regions of the map (shown in Fig. 2). The clusters *Communication and coordination* and *Tools to orient work* were seen to be related in providing a "Guide for working across hierarchical levels". The clusters *Professional development* and *Skills development* represented actions for "Integral development". Participants pointed out that integral development for nurses included technical capacity as well as social capacities, such as sensitivity in human relations with patients and a sense of vocation. The clusters *Organizational climate of support* and *Motivation through recognition* were seen as aspects of "Leadership culture", which influence the affective state of workers. Items in *Organizational climate of support* could be divided into actions that contribute to the psycho-social environment and actions to

Hernández *et al. International Journal for Equity in Health* (2015) 14:91

Page 7 of 13
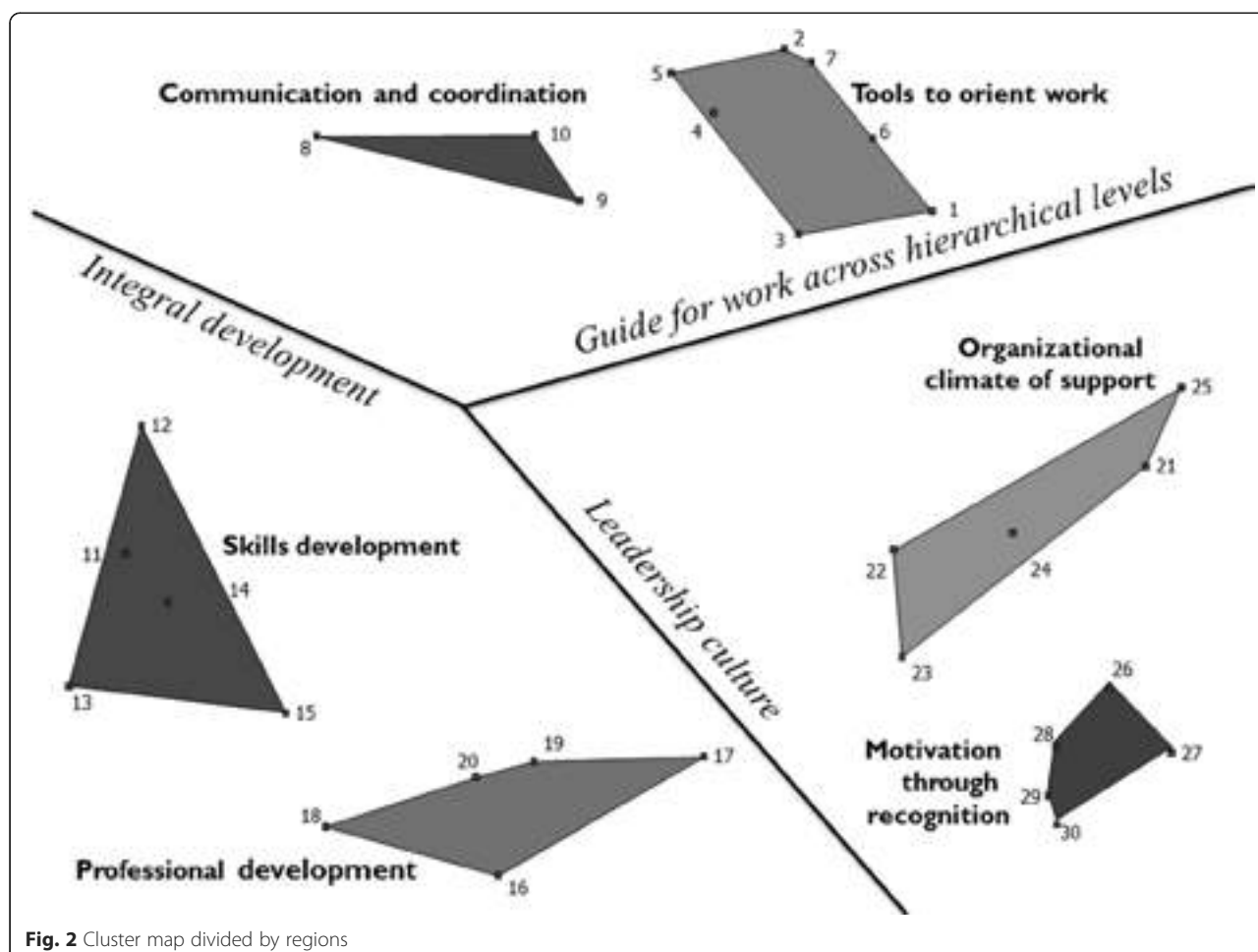
Fig. 2 Cluster map divided by regions

resolve problems or address needs. While actions to establish a positive psycho-social environment provide a base for working relationships, actions to resolve problems serve as responsive feedback to the workers, reinforcing that their needs are understood and considered important. Based on this division, actions promoting *Motivation through recognition* were also seen as related to the psycho-social environment of the organization.

Workshop participants also emphasized that the clusters were interrelated. They perceived that the *Organizational climate* of working relationships would shape the way actions in the cluster *Tools for orienting work*, such as induction for new employees and monitoring, were implemented and their impact. The provision of opportunities for *Professional* and *Skills development*, in line with the needs detected through application of the *Tools for orienting work*, would demonstrate responsiveness and contribute to an *Organizational climate of support*.

The nature of relationships across hierarchical levels was identified as a cross-cutting issue that was central to performance. Workshop participants expressed that

relationships between patients and ANs, ANs and district managers, and district managers and regional managers operate in a chain reaction. They described that the satisfaction of the patient begins with the ANs' sense of well-being, which is influenced by their relationship to their managers. Treating personnel with respect, valuing their psycho-social well-being, being attentive to their needs and recognizing their contributions were actions that helped ANs feel good in their work (items 22, 24, 26, 27, 28). In the same way, district managers' sense of well-being is shaped by their relationships to regional managers through the way they are treated and the nature of the support they receive to perform their role (items 3, 6). The regional nurse managers pointed out that because the nature of relationships operates in a chain reaction, it was possible to improve patients' satisfaction by modelling respectful treatment and responsive support at the top level of the regional health system.

Identifying and comparing priorities

Analysis of the importance ratings of these 30 actions indicated that items in the cluster *Organizational climate*

Hernández *et al. International Journal for Equity in Health* (2015) 14:91

Page 8 of 13

of support received the highest average rating (4.23) while actions in *Motivation through recognition* had the lowest average rating (3.94). The average importance ratings of items in the clusters *Tools for orienting work, Communication and coordination*, and *Skills development* were very similar (4.07, 4.09 and 4.10, respectively), while *Professional development* was somewhat lower (4.01). The list of clusters, the actions they contain and their respective ratings are presented in Table 1. At the level of individual items, it is particularly noteworthy that the most highly rated action was to "Negotiate for timely payment of wages," which indicates that responsiveness to health workers' needs should begin with efforts to alleviate the unfair burden of working without payment for months at a time. These results reflect the average rating of importance by all participants. However, examination of the stratified ratings revealed that sub-groups of health system actors held different views of what support was most needed.

The priorities of managers and health workers are compared at the cluster level in the Pattern Matching map shown in Fig. 3. The cluster *Organizational climate of support* was rated highest and *Motivation through recognition* was among the lowest for both managers and

health workers. These patterns indicate that interest in developing a more supportive organizational climate is shared across groups, providing a strong base for prioritization of action in this area. *Tools to orient work* were more highly valued by managers, while *Communication and coordination, Skills development* and *Professional development* were more valued by health workers. Thematic areas of action valued by managers and health workers indicate general directions for efforts to target the interests of these different groups, though understanding of dynamics in interest is enhanced by examining groups' ratings of the individual items within the clusters.

Comparison of the rating of individual actions by the sub-groups of primary and secondary care health workers and managers provided insight into dynamics in the kinds of support most valued in this context. The Go-zone maps (Fig. 4) show actions that were given above average ratings by both the indicated sub-groups of health workers and managers plotted by item number in the upper right quadrant. Comparison of Fig. 4a and b indicates that the majority of actions that were highly valued by secondary care workers were also rated highly by managers. However, many of the actions that
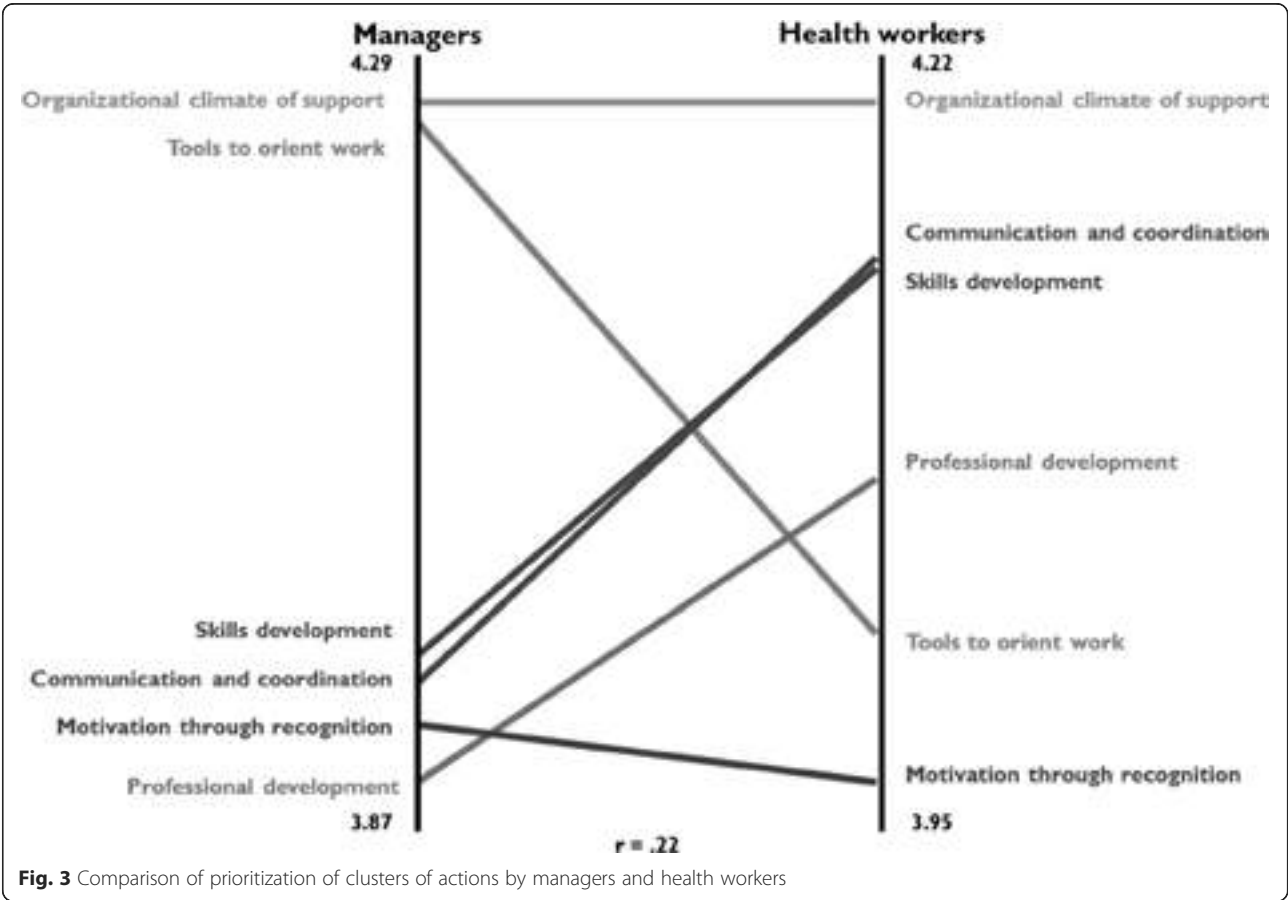
Fig. 3 Comparison of prioritization of clusters of actions by managers and health workers

Hernández *et al. International Journal for Equity in Health* (2015) 14:91

Page 9 of 13

Fig. 4 Go-zone maps (**a**). Importance rating of items by secondary care workers and managers (**b**). Importance rating of items by primary care workers and managers

Hernández *et al. International Journal for Equity in Health* (2015) 14:91

Page 10 of 13

primary care workers considered important, particularly for supporting performance at the community level and recognizing the contribution of leaders and volunteers (items 8, 14, 10), were less valued by managers.
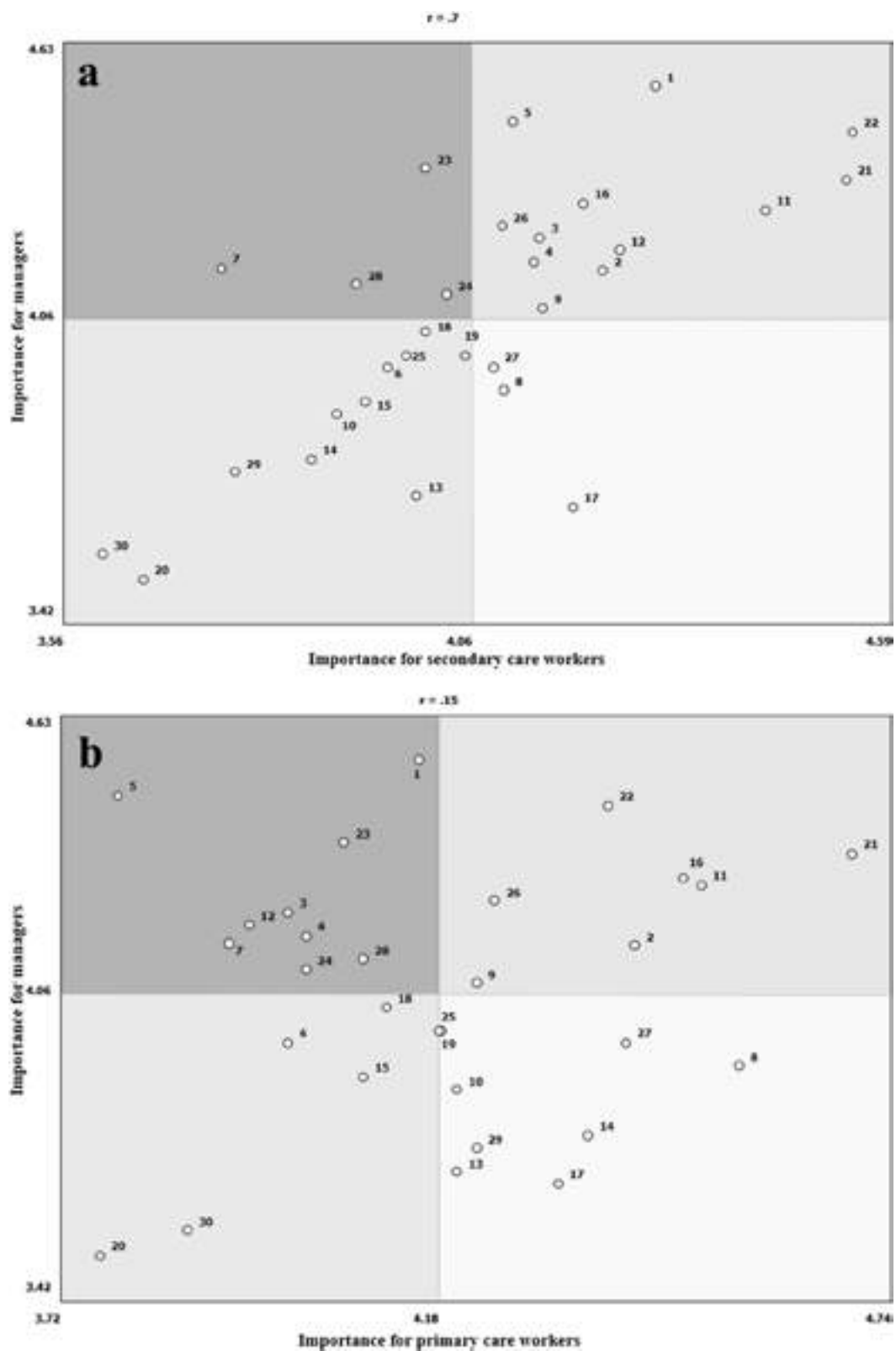
Discussion

This study presented an integrated view of regional health systems actors' perspectives on actions needed to support the performance of front-line ANs in a rural department of Guatemala. Locally-proposed actions addressed diverse forms of support for ANs including skills development, professional development, managerial tools, improved communication, organizational climate and positive recognition. These domains of action correspond to many of the challenges and barriers to performance identified in studies with health workers and managers in other LMIC settings [16, 17, 30–32]. The ideas generated provided a multidimensional view of performance that encompassed technical knowledge and skills, as well as the quality of the interpersonal relationship with the patient and community, and motivational aspects. Inclusion of actions to support managers and community-level collaborators reflected recognition of the interconnection of ANs' performance with other actors in their work environment. While the need for development of managers' capacity to improve health worker performance has been recognized in several studies [17, 33, 34], few have emphasized the importance of organizational support for community-level actors [35].

Regional managers' interpretation of the domains of action indicated that the nature of relationships across hierarchical levels was a cross-cutting issue for supporting performance. The importance of inter-personal relationships for health worker motivation and satisfaction has been lifted up in previous studies which describe recognition, appreciation, trust and respect as essential attributes [32, 36, 37]. This study provided further description of the nature of relationships that support performance, including attention to psycho-social well-being, understanding of needs and responsive assistance in problem resolution. These qualities were seen as relevant for relationships between managers and nurses, as well as regional and district managers. Regional managers further elaborated on the centrality of relationships to performance, pointing out that the climate of working relationships shaped the way managerial actions were implemented and received, which influenced the AN's sense of well-being and ultimately patient satisfaction. This interpretation reflects the common sense understanding that how you are treated affects how you treat others, but it also captures how organizational behavior is fundamentally shaped by human interactions and relationships [38, 39].

The centrality of working relationships was also highlighted by the consensus across manager and health worker groups that actions contributing to an "organizational climate of support" were most important for the performance of ANs. The concept of organizational climate has been defined as "the atmosphere that employees perceive is created in their organization by (management) practices" [40]. Health workers' desire for a more supportive organizational environment has been highlighted in previous studies, and the association between organizational climate and health workers' satisfaction in their job have been documented previously in LMIC settings [20, 31, 37, 41]. Focus on management of relationships and relationship building has been promoted as an approach to improving the quality of health care work environment, strengthening health workers' perception of organizational support and their commitment to organizational goals [42]. Nursing research from high income countries has shown that people-focused leadership practices oriented to understanding employees, building trust and responding to employee concerns contribute to better outcomes in job satisfaction, productivity and effectiveness than task-oriented leadership practices [43]. The nature of leadership and management practices that contribute to development of an organizational climate of support in LMIC health system settings is an important focus for further research.

Analysis of interests across sub-groups of health system actors provided a unique view of the social dynamics of this organizational context. Thematic patterns shown in the Pattern-Matching map indicated difference in the kinds of support most valued by health workers and managers. Primary and secondary care health workers were united in their interest in developing professionally, enhancing their skills and improving communication in the workplace, while managers gave more value to tools to orient work. This pattern fits the expectation that the groups would be more interested in support relevant to their own roles. Analysis of sub-groups' evaluation of individual items in the Go-Zone map revealed divergence in the interests of primary care workers and managers, and greater similarity in the interests of secondary care workers and managers. This trend may be due to the fact that managers have more contact with the work environment and service delivery model of secondary care, while the primary care model is developed in coordination with remote communities and receives limited direct supervision. However, this finding also reflected that strengthening collaboration with the community was outside the scope of managers' interests and as such, was not a high institutional priority. Managers' low evaluation of the importance of actions to support community-level work reflect that local

Hernández *et al. International Journal for Equity in Health* (2015) 14:91

Page 11 of 13

institutional priorities are inconsistent with national health policy, which specifies that "organized communities that prioritize actions for health promotion and prevention" are the functional base for comprehensive health care [44]. The tension between policies that prioritize health promotion and prevention and institutional practice has also been identified in other Latin American settings [45].

Methodological considerations

Recognition of the complexity of health system change has led to increasing interest in systems-oriented methodological approaches that consider dynamic relationships among system components and integrate the experiential knowledge actors draw on when working towards a shared, complex goal [46, 47]. Concept mapping is a recognized system-based tool for gaining understanding of complex issues in human and organizational systems in order to guide planning and evaluation of action for change [24, 25]. However, application of the method in LMIC health system settings is limited [21, 48, 49], and this study illustrates its usefulness for engaging with local actors in a collaborative research process in order to generate context-specific knowledge of a complex phenomenon.

Concept mapping was used to gain a meso-level system view of how to support ANs' performance, and this study benefited from the method's unique strengths. The multi-step participatory process allowed for integration of the views of diverse groups through qualitative idea generation and quantitative structuring and evaluation of ideas for action. Local actors' roles in co-producing the items that formed the content of the study and in interpreting the findings contrasts with other studies where the researchers traditionally take on these roles [50]. Interpretation by regional managers was facilitated by the visualization of conceptual themes and group dynamics in cluster, pattern-matching and go-zone maps. The active involvement of local actors throughout the process and the broad participation of managers and health workers from almost all districts in the region supported the validity of the representation of the regional health system in the findings. While there was a greater proportion of managers represented than health workers, role-stratified analysis ensured that their views on the relative importance of proposed actions were given equal weight in the findings. Further stratification of the findings by district could provide regional managers with a more nuanced view of variation in performance support needs within the health region, however, such analysis was beyond the scope of this study.

There were some challenges in applying this method in a LMIC regional health system setting. In other examples of concept mapping studies in the literature, the steps are often conducted over multi-day workshops and/or via internet platforms. These options were not feasible for this setting. The participation of health workers from geographically disperse districts was accomplished through coordinating idea generation sessions with existing meetings and enlisting managers to assist in administration of ratings surveys with health workers in the districts. It could be possible that health workers felt pressure to participate or hide their real opinions, due to the role of managers in facilitating, even though they were told it was voluntary and anonymous, and they signed informed consent forms. This may have led some to fill in the form with little personal interest, and provide answers that did not reflect their views. However, given the pattern of variation between health worker and manager responses, this did not seem to be the case.

Participation in the interpretation sessions was limited to regional managers due to the time demand of convening district actors involved in service delivery for a special session. Lack of involvement of health workers and district managers in interpretation was the main limitation of this study, as their insights into the organization of the domains and the operation of support across levels were not included in the final results. In spite of these challenges and limitations, a substantial level of participation was achieved in this study due to the RHO leadership's interest in the topic and the results. Their involvement in the interpretation of the ideas and priorities expressed by district level actors can contribute to the development of locally-relevant management approaches to support AN performance.

Conclusions

Regional managers expressed that the results of this study captured the "feeling" of the regional health system, and gave them evidence of what they sensed through experience but was not documented. The conceptual domains of action provided managers with a holistic framework for planning actions to support the performance of front-line ANs based on the integrated views of local health system actors. Dynamics in the actions valued by primary and secondary care health workers and managers indicated that development of an organizational climate of support should take top priority and complementary efforts should attend to interests specific to their different roles in the health system.

Interventions to strengthen the performance of health workers serving vulnerable populations can potentially contribute to redressing health inequalities, but their success depends on their interaction with the organizational configurations of the health systems where they are implemented [12, 15]. Greater understanding of the complex social worlds of health systems, particularly the

Hernández *et al. International Journal for Equity in Health* (2015) 14:91

Page 12 of 13

relationships between health workers, managers and communities, is needed to guide efforts to generate change in system behavior and performance outcomes [51, 52]. This study indicated that concept mapping is a useful methodology for engaging health system actors in co-production of the kind of evidence needed to guide action to improve performance based in understanding of organizational context in LMIC settings.

Competing interests

Authors' contributions

Acknowledgements

References
1. World Health Organization. Increasing access to health workers in remote and rural areas through improved retention. Global policy recommendations. Geneva: WHO; 2010.
2. Lehmann U. Mid-level health workers. The state of the evidence on programmes, activities, costs and impact on health outcomes. A literature review. Geneva: WHO; 2008.
3. Malvárez S, Castrillón C. Overview of the nursing workforce in Latin America. Washington DC: PAHO; 2005.
4. Estrada-Galindo G, Slowing-Umaña K. Síntesis. Sistema de salud en Guatemala: ¿hacia dónde vamos? Guatemala: United Nations Development Program; 2008.
5. World Health Organization. World Health Report 2006: Working together for health. Geneva: WHO; 2006.
6. Dieleman M, Harnmeijer JW. Improving health worker performance: in search of promising practices. Geneva: WHO; 2006.
7. Rowe AK, de Savigny D, Lanata CF, Victora CG. How can we achieve and maintain high-quality performance of health workers in low-resource settings? Lancet. 2005;366(9490):1026–35.
8. Armstrong Schellenberg J, Bryce J, de Savigny D, Lambrechts T, Mbuya C, Mgalula L, et al. The effect of integrated management of childhood illness on observed quality of care of under-fives in rural Tanzania. Health Policy Plan. 2004;19(1):1–10.
9. Frimpong JA, Helleringer S, Awoonor-Williams JK, Yeji F, Phillips JF. Does supervision improve health worker productivity? Evidence from the upper east region of Ghana. Trop Med Int Health. 2011;16(10):1225–33.
10. Harries A, Salaniponi F, Nunn P, Raviglione M. Performance-related allowances within the Malawi National Tuberculosis control programme. Int J Tuberc Lung Dis. 2005;9(2):138–44.
11. Atkinson S, Haran D. Back to basics: does decentralization improve health system performance? Evidence from Ceará in north-east Brazil. Bull World Health Organ. 2004;82(11):822–7.
12. Pallas SW, Curry L, Bashyal C, Berman P, Bradley EH. Improving health service delivery organisational performance in health systems: a taxonomy of strategy areas and conceptual framework for strategy selection. Int Health. 2012;4(1):20–9.
13. Oxman AD, Thomson MA, Davis DA, Haynes RB. No magic bullets: a systematic review of 102 trials of interventions to improve professional practice. Can Med Assoc J. 1995;153(10):1423.
14. Dieleman M, Gerretsen B, Van Der Wilt GJ. Human resource management interventions to improve health workers' performance in low and middle income countries: a realist review. Health Res Policy Syst. 2009;7(7). doi: 10.1186/1478-4505-7-7.
15. Blaise P, Kegels G. A realistic approach to the evaluation of the quality management movement in health care systems: a comparison between European and African contexts based on Mintzberg's organizational models. Int J Health Plann Manage. 2004;19(4):337–64.
16. Bradley S, McAuliffe E. Mid-level providers in emergency obstetric and newborn health care: factors affecting their performance and retention within the Malawian health system. Hum Resour Health. 2009;7:14.
17. Bradley S, Kamwendo F, Masanja H, de Pinho H, Waxman R, Boostrom C, et al. District health managers' perceptions of supervision in Malawi and Tanzania. Hum Resour Health. 2013;11(1):43.
18. Dieleman M, Toonen J, Toure H, Martineau T. The match between motivation and performance management of health sector workers in Mali. Hum Resour Health. 2006;4:2.
19. Mbindyo P, Gilson L, Blaauw D, English M. Contextual influences on health worker motivation in district hospitals in Kenya. Implement Sci. 2009;4:43.
20. McAuliffe E, Bowie C, Manafa O, Maseko F, MacLachlan M, Hevey D, et al. Measuring and managing the work environment of the mid-level provider- the neglected human resource. Hum Resour Health. 2009;7:13.
21. González-Block MA, Rouvier M, Becerril V, Sesia P. Mapping of health system functions to strengthen priority programs. The case of maternal health in Mexico. BMC Public Health. 2011;11:164.
22. Hernández A, Hurtig AK, Dahlblom K, San Sebastián M. Translating community connectedness to practice: a qualitative study of midlevel health workers in rural guatemala. ISRN Nurs. 2012;2012:648–769.
23. Hernández AR, Hurtig AK, Dahlblom K, San SM. More than a checklist: a realist evaluation of supervision of mid-level health workers in rural Guatemala. BMC Health Serv Res. 2014;14(1):112.
24. Kane M, Trochim WMK. Concept Mapping for Planning and Evaluation. Thousand Oaks, CA: SAGE Publications; 2007.
25. Willis CD, Mitton C, Gordon J, Best A. System tools for system change. BMJ Qual Saf. 2012;21(3):250–62.
26. ENCOVI. Pobreza y desarrollo: Un enfoque departamental. Instituto Nacional de Estadística: Guatemala; 2011.
27. MSPAS. Encuesta nacional de mortalidad materna. Ministerio de Salud Pública y Asistencia Social: Guatemala; 2011.
28. Hernández AR, San SM. Assessing the technical efficiency of health posts in rural Guatemala: a data envelopment analysis. Glob Health Action. 2014;7.
29. The Concept System (software). Ithaca, NY: Concept Systems Incorporated; 2000.
30. Manongi RN, Marchant TC, Bygbjerg IC. Improving motivation among primary health care workers in Tanzania: a health worker perspective. Hum Resour Health. 2006;4(1):6.
31. Mathauer I, Imhoff I. Health worker motivation in Africa: the role of non-financial incentives and human resource management tools. Hum Resour Health. 2006;4:24.
32. Dieleman M, Cuong PV, Anh LV, Martineau T. Identifying factors for job motivation of rural health workers in North Viet Nam. Hum Resour Health. 2003;1(1):10.
33. Muchekeza M, Chimusoro A, Gombe N, Tshimanga M, Shambira G. District health executives in Midlands province, Zimbabwe: are they performing as expected? BMC Health Serv Res. 2012;12(1):1–6.
34. Tavrow P, Kim YM, Malianga L. Measuring the quality of supervisor-provider interactions in health care facilities in Zimbabwe. Int J Qual Health Care. 2002;14 Suppl 1:57–66.
35. Razee H, Whittaker M, Jayasuriya R, Yap L, Brentnall L. Listening to the rural health workers in Papua New Guinea - the social factors that influence their motivation to work. Soc Sci Med. 2012;75(5):828–35.
36. Gilson L, Palmer N, Schneider H. Trust and health worker performance: exploring a conceptual framework using South African evidence. Soc Sci Med. 2005;61(7):1418–29.
37. Jayasuriya R, Whittaker M, Halim G, Matineau T. Rural health workers and their work environment: the role of inter-personal factors on job satisfaction of nurses in rural Papua New Guinea. BMC Health Serv Res. 2012;12.
38. Gilson L. Trust in health care: theoretical perspectives and research needs. J Health Organ Manag. 2006;20(5):359–75.
39. Blaauw D, Gilson L, Penn-Kekana L, Schneider H. Organisational relationships and the 'software'of health sector reform. South Africa: Centre for Health Policy. School of Public Health University of Witwatersrand; 2003.
40. Schneider B, Gunnarson SK, Niles-Jolly K. Creating the climate and culture of success. Organ Dyn. 1994;23(1):17–29.
41. Ortega-Altamirano DV, Alemán-Escobar ML, Brito-García I, Rueda-Neria CM, Salcedo-Álvarez RA. Cultura organizacional de enfermería dominante en un

Hernández *et al. International Journal for Equity in Health* (2015) 14:91

Page 13 of 13

hospital de la Secretaría de Salud de Morelos, México. Salud Publica Mex. 2011;53:11–6.

42. Anderson RA, McDaniel Jr RR. Managing health care organizations: where professionalism meets complexity science. Health Care Manage Rev. 2000;25(1):83–92.

43. Cummings GG, MacGregor T, Davey M, Lee H, Wong CA, Lo E, et al. Leadership styles and outcome patterns for the nursing workforce and work environment: a systematic review. Int J Nurs Stud. 2010;47(3):363–85.

44. Congreso de la República de Guatemala. Código de Salud. Guatemala: Tipografía Nacional; 2007.

45. De Córdova MIP, Mier N, Quirarte NHG, Gómez TG, Piñones S, Borda A. Role and working conditions of nurses in public health in Mexico and Peru: a binational qualitative study. J Nurs Manag. 2012;21:1034–43.

46. Swanson RC, Cattaneo A, Bradley E, Chunharas S, Atun R, Abbas KM, et al. Rethinking health systems strengthening: key systems thinking tools and strategies for transformational change. Health Policy Plan. 2012;27 suppl 4:iv54–61.

47. Peters DH. The application of systems thinking in health: why use systems thinking? Health Res Policy Syst. 2014;12:51.

48. Ridde V. Equity and health policy in Africa: Using concept mapping in Moore (Burkina Faso). BMC Health Serv Res. 2008;8(1):1–12.

49. Rachlis B, Ahmad F, van Lettow M, Muula AS, Semba M, Cole DC. Using concept mapping to explore why patients become lost to follow up from an antiretroviral therapy program in the Zomba District of Malawi. BMC Health Serv Res. 2013;13:210.

50. Burke JG, O'Campo P, Peak GL, Gielen AC, McDonnell KA, Trochim WMK. An introduction to concept mapping as a participatory public health research method. Qual Health Res. 2005;15(10):1392–410.

51. Gilson L, Hanson K, Sheikh K, Agyepong IA, Ssengooba F, Bennett S. Building the field of health policy and systems research: social science matters. PLoS Med. 2011;8(8), e1001079.

52. Sheikh K, Ranson MK, Gilson L. Explorations on people centredness in health systems. Health Policy Plan. 2014;29 suppl 2:ii1–5.

Human Resources for Health

CH 2|5

RESEARCH

Open Access

CrossMark

Factors behind job preferences of Peruvian medical, nursing and midwifery students: a qualitative study focused on rural deployment

Luis Huicho[1,2,3,4,5,11*], Cristina Molina[6], Francisco Diez-Canseco[5], Claudia Lema[7], J. Jaime Miranda[2,5], Carlos A. Huayanay-Espinoza[4] and Andrés G. Lescano[8,9,10]

Abstract

Background: Deployment of health workforce in rural areas is critical to reach universal health coverage. Students' perceptions towards practice in rural areas likely influence their later choice of a rural post. We aimed at exploring perceptions of students from health professions about career choice, job expectations, motivations and potential incentives to work in a rural area.

Methods: In-depth interviews and focus groups were conducted among medical, nursing and midwifery students from universities of two Peruvian cities (Ica and Ayacucho). Themes for assessment and analysis included career choice, job expectations, motivations and incentives, according to a background theory a priori built for the study purpose.

Results: Preference for urban jobs was already established at this undergraduate level. Solidarity, better income expectations, professional and personal recognition, early life experience and family models influenced career choice. Students also expressed altruism, willingness to choose a rural job after graduation and potential responsiveness to incentives for practising in rural areas, which emerged more frequent from the discourse of nursing and midwifery students and from all students of rural origin. Medical students expressed expectations to work in large urban hospitals offering higher salaries. They showed higher personal, professional and family welfare expectations. Participants consistently favoured both financial and non-financial incentives.

Conclusions: Nursing and midwifery students showed a higher disposition to work in rural areas than medical doctors, which was more evident in students of rural origin. Our results may be useful to improve targeting and selection of undergraduate students, to stimulate the inclination of students to choose a rural job upon graduation and to reorient school programmes towards the production of socially committed health professionals. Policymakers may also consider using our results when planning and implementing interventions to improve rural deployment of health professionals.

Keywords: Medical students, Nursing students, Midwifery students, Career choice, Motivations, Incentives, Rural practice, Attraction, Retention

* Correspondence: lhuicho@gmail.com
[1]Instituto Nacional de Salud del Niño, Lima, Peru
[2]School of Medicine, Universidad Peruana Cayetano Heredia, Lima, Peru
Full list of author information is available at the end of the article

Huicho *et al. Human Resources for Health* (2015) 13:90

Page 2 of 11

Background

Peru has recently progressed to the upper middle-income country category [1] and has achieved sustained economic growth for several years, along with significant improvements in maternal and child health [2-4]. Despite this progress, rural and remote areas of the Amazon and the Andes still have high poverty rates [5] and high maternal, neonatal and under-five mortality rates [6].

Continued efforts to improve social determinants are warranted to close the remaining gaps. Additionally, the health system needs further improvement in efficiency and equity, to allow adequate implementation of public health interventions, including improved deployment of health workers in rural areas.

We showed previously that rural jobs are highly unattractive for practising doctors, nurses and midwives [7-9]. Health workers perceive rural posts as transient alternatives, with expectations to shift soon to an urban job [7]. Attraction and retention strategies should consider these perceptions if they are going to retain health workers for more than a few years, so as to contribute to measurable health impact.

Studying perceptions at the undergraduate level can inform about future expectations, motivations and preferences. They can also inform how established they are at this stage, as an additional factor that may shape later job preferences.

There is relatively scarce literature addressing incentives and motivations of students of health professions to work in rural areas, particularly in low- and middle-income countries [10-20]. Most of them focus on quantitative surveys lacking in-depth exploratory assessments [10,13,16,18,19] and address primarily medical students [13,14,19,20]. However, there is evidence that mid-level health providers perform at least as well as medical doctors in several tasks [21,22] and that the context-specific skill mix of several health cadres other than doctors may guarantee quality health care provision [23-25]. Hence, in-depth explanatory studies among several health cadres may be useful to identify relevant incentives that can further be assessed through methods such as stated job preferences [10].

We previously found that 80% of doctors practising in Ayacucho had been trained in Ica, a coastal city near Lima, the capital of Peru [7]. In contrast, about 80% of nurses and midwives practising in Ayacucho had studied in the same city [7]. Ayacucho is an Andean department with vast rural underserved areas. Based on these findings, this study aimed at identifying factors related to students' reasons for career choice, job expectations, intrinsic motivations and incentives to work in rural areas.

Methods

Study design and subjects

Focus groups and in-depth interviews were conducted among medical students in their last 3 years of undergraduate training in Ica, Peru (School of Medicine, Universidad Nacional San Luis Gonzaga), and among nursing and midwifery students in their last 2 years of undergraduate training in Ayacucho, Peru (School of Nursing and School of Midwifery, Universidad Nacional San Cristóbal de Huamanga). Eligible students were identified from the official university lists, and participants were finally selected among those willing to participate.

Setting

With 755 508 inhabitants, Ica is a predominantly coastal and urban department [26], located 325 km south of Lima. It has a human development index of 0.77, compared with 0.87 for Lima [27]. It has one public university (Universidad Nacional San Luis Gonzaga de Ica) that hosts a medical school and is the main provider of doctors for Ayacucho [7].

Ayacucho city, the capital of Ayacucho's department, is located at about 575 km southeast of Lima. Remote mountainous and jungle areas characterize a substantive extension of the department. Out of a total of 658 400 inhabitants, about 42% of its population live in rural areas [26]. It is one of the poorest departments of the country, with a human development index of 0.59 [27]. The only public university in Ayacucho provides most of the nursing and midwifery workforce deployed in this department [7].

The health system in Peru has been described previously [7]. Briefly, it is a three-tiered system, namely the Ministry of Health, Social Security and private sector. The public sector provides health care based on semi-contributory and subsidized plans. Social security is restricted to formal employees.

Public sector health professionals are inequitably distributed, with rural and remote areas lacking sufficient numbers of health workers, particularly doctors [28]. Upon graduation, all health professionals who foresee to work in the public sector or pursue a postgraduate training have to work for 1 year in a rural post (*SERUMS, acronym in Spanish*) [29].

As part of the Universal Health Insurance (*Aseguramiento Universal en Salud*) strategic policy [30], new attraction and retention incentives are being considered for implementation in Peru. This also represented a timely opportunity to perform our study.

Background theory

Our background theory is based on various assumptions described below, derived from our previous findings in Peru and other settings [7-9,31-34]. We used them to

prepare the guides to focus groups and in-depth interviews. They also served as our analysis framework.

1. Students choose a health career for different reasons. They have an altruistic perception of the career, as a way to help people improve their lives through prevention or treatment of their health problems. Students also think that a health career can help them to gain professional, economic and social recognition.
2. Upon graduation, all students expect to get a job in a large urban hospital, rather than a rural job at a small health facility. Additionally, medical students have more inclination towards setting their practice in urban areas.
3. Medical, nursing and midwifery students in their early years perceive already rural jobs as unattractive. However, undergraduate students are still more inclined than health professionals to accept rural posts, provided adequate incentives are offered, because of a strong sense of solidarity towards disadvantaged populations.
4. Medical students are less willing than nursing or midwifery students to take in the future a rural job. This is related to their more frequent urban origin and to the fact they are only educated to work in clinical settings and perform clinical tasks. Health facilities in rural areas are perceived as unattractive due to the lack of professional development opportunities and the fact that clinical practice can be heavily impacted by the lack of basic infrastructure and equipment.
5. Isolated financial incentives focused on salary increases, although important, are not strong enough to persuade future health professionals to establish their professional practice in rural areas.
6. Students of rural origin or having parents with rural origin are more inclined to accept a rural job.
7. Lack of previous professional experience represents a challenge to make decisions related to job preferences. Typically, participation in such a study would require students to imagine that they are already professionals and that they are actually looking for a professional appointment.

Sampling

Twelve focus group sessions and 20 in-depth interviews were conducted, using purposive sampling. Point of saturation was the criterion for stopping further discussions. We attempted to obtain gender and rural/urban origin balance, although a predominance of female students in the nursing and midwifery groups was anticipated [35]. Group discussions were performed first. Participants for in-depth interviews were identified from

different focus group members, taking into account their degree of participation in the group discussions and their willingness to provide further input during interviews. Focus groups were assembled separately for medical students and for nursing and midwifery students.

Tools, main themes and piloting

Guides for focus group sessions and in-depth interviews were prepared taking advantage of previous experience and on the basis of the background theory. Main themes and subthemes included are shown in Table 1. The guides were piloted with students from the same careers attending local institutions other than the target universities. After the pilots, they were rephrased and refined as needed. A questionnaire was prepared to collect basic socio-demographic information.

Fieldwork

Official lists of students were obtained at each university, and classrooms were visited with support of university authorities, academic coordinators and students' delegates.

The field phase of the study was completed between November 2010 and March 2011. A team composed by two interviewers familiar with qualitative studies approached the students at the universities, explained the purpose of the study, selected those willing to

Table 1 Topics included in the interviews and focus group sessions

Themes and subthemes
A. Career choice aspects
1. Reasons underlying career choice
2. Solidarity (altruism) influence
3. Family influence
4. Role of rural origin
B. Future job expectations
1. Large and small health facilities
2. Professional development opportunities
3. Salary and other financial reasons
C. Motivations to work in a rural area
1. Solidarity feelings
2. Reciprocity principle (paying back for public investment in training)
3. Equity lens (willingness to work for poorest segments of the population)
D. Incentives to work in a rural area
1. Financial
2. Professional development
3. Family welfare
4. ICT and road infrastructure to break rural isolation
5. Infrastructure and equipment of health facility

ICT information and communications technology

Huicho *et al. Human Resources for Health* (2015) 13:90

Page 4 of 11

participate and obtained informed consent. All interviews and focus groups were recorded.

Ethical issues

The institutional ethics committee at the Instituto Nacional de Salud del Niño, in Lima, approved the protocol and the tools. Local university authorities provided official authorization, and written informed consent was obtained from all participants. Confidentiality was maintained by restricting access to participants' identity to authorized study personnel.

Analysis

Transcription of information obtained was performed, and a priori categories for analysis were considered for each group (*career choice aspects*, *job expectations*, *motivations to work in rural areas* and *incentives to work in rural areas*). These were the same themes included in the interviews and focus groups. Iterative discussions between the core research team, interviewers and field supervisors were held, and different interpretations and approaches were considered, according to triangulation and reflexivity principles [36]. The analysis was performed on the basis of the categories described above, by using ATLAS.ti 5.0 (Scientific Software Development GmBH, Berlin, Germany), through assemblage of a codebook. After the discussion rounds, definitive categories and subcategories were identified, reflecting the discourse of participants and the interpretation of researchers. They are shown below. The discourse of nursing and midwifery students is presented together, as they did not show outstanding differences.

Results

Overall, we performed 10 focus group sessions with 67 participants and 20 in-depth interviews. Tables 2 and 3 show the number of participants by gender and rural/urban origin. In Ica, we completed four group discussions with 27 participants, while in Ayacucho, we performed six focus groups with 40 participants.

We summarize in Table 4 the intrinsic motivations and incentives to work in a rural area by career group, in terms of relevance expressed by participants. In the next sections, we expand on the discourse that emerged through the individual and group sessions.

Table 2 In-depth interview participants, by gender and by geographic area of origin

	Male	Female	Urban	Rural	Total
Medical students	4	4	4	4	8
Nursing students	2	4	4	2	6
Midwifery students	2	4	4	2	6
Total	8	12	12	8	20

Table 3 Focus groups participants, by gender and by geographic area of origin

	Male	Female	Urban	Rural	Total
Medical students	15	12	13	14	27
Nursing students	6	16	11	11	22
Midwifery students	6	12	8	8	18
Total	27	40	32	33	67

Career choice
Medical students

Medical students consistently expressed their early vocation for patients' care as a reason for choosing their career. They perceived medicine as an appealing profession that can restore health.

> "I have always been excited with the prospect of helping people, of curing persons, of manipulating medical tools, you know". Female, rural origin.

They also said that becoming doctors would be a straight way to improve their economic, professional and social status.

> "I knew that by studying medicine I would become a respected professional, I would improve my income, and I would be a respected person". Male, urban origin.

Table 4 Intrinsic motivations and incentives to work in a rural area by career group, in terms of relevance expressed by participants

Incentives	Medical students	Nursing/midwifery students
Intrinsic motivations		
Pro-social	++	++++
Philanthropic	++	++++
Financial		
Salary	+++++	+++
Allowance for housing and mobility	++	++
Non-financial		
Complete equipment	++	+++
Road infrastructure	+++	+++
Professional development opportunities	+++	++
Permanent position	+++	+++
Access to ICT	+	++
Combined		
Salary + equipment	++++	+++++
Salary + road	++++	++++
Salary + professional development	++++	+++
Salary + professional development + permanent position	+++++	+++++

ICT information and communications technology

Huicho *et al. Human Resources for Health* (2015) 13:90

Page 5 of 11

Medicine also seems to attract students because they perceive it as a discipline allowing them to understand how the human organism works and as a mean to persuade people to adopt healthy life styles.

"I was intrigued by how the human body works. I realized that there is much ignorance and misunderstanding about it. This may lead to worsening of diseases. I believe that we can educate people, so they can avoid diseases and enjoy a healthy life". Male, urban origin.

Family influence was also an important factor for career choice.

"I have an uncle, gynecologist. He has been very close to our family. He must have influenced on my decision to study medicine". Female, rural origin.

Nursing and midwifery students
Expectations to improve their socioeconomic condition through their professional practice were less frequently expressed in comparison with medical students as a reason to career choice. This was usually stated along with other reasons, such as family influence and the desire to serve poor communities.

"I chose my career because I wanted to help people, just like my mother. She is also a nurse. Mhhh, maybe also as a way of securing an income". Male, urban origin.

Family members working in the health sector might also have influenced their career choice, even since their childhood.

"Mhhh… my mother works at a health center. I used to go there with her since I was a child, and I liked what people were doing in those facilities". Male, rural origin.

The prospect of helping to restore people's health was also mentioned, as well as the prospect of establishing a unique communication channel with their future patients.

"There is something unique about, you know, about the communication and the relationship with patients. No one else can achieve this. This can allow curing, saving lives. And I like this". Female, rural origin.

The desire of overcoming discrimination and hostile attitudes towards poor and vulnerable people was also expressed as a reason for choosing a nursing or midwifery career.

"… when I went to hospitals, I realized that patients may not find sympathetic and friendly health professionals, especially if they are poor, or indigenous… Something is wrong, we need to improve this, it is our duty". Female, rural origin.

Career choice: similarities and differences between career categories
All groups concurred that important factors driving their career choice included their desire to help people, the influence of early life experiences and the influence of health professionals acting as role models. Vocation of service was a strong reason for career choice by nursing and midwifery students, while economic and social status expectations seemed to be more powerful factors for medical students.

Expectations towards rural service
All cadres
There were mixed feelings about the prospect of taking up a rural post (SERUMS) after graduation. Participants acknowledged it as a retribution for the investment made in their training and also as an opportunity for gaining professional experience in remote areas. They also thought SERUMS was a unique opportunity for discovering the local culture and for becoming familiar with local health problems.

"All health workers must complete their SERUMS, it is the way we pay what the country spent in our training. Besides, if we don't go to a rural area, then we can't work [for the government], we can't apply for postgraduate [specialty] studies". Medical student, male, urban origin.

"I know that we have to work with poor communities, as a retribution… But at the same time, each community has its own culture, then you can learn a lot from them, you discover local health problems…". Nursing student, female, urban origin.

SERUMS was also perceived as a transient post in rural settings full of constraints and challenges. Moreover, participants imagined that SERUMS can provide them the opportunity to make up their minds about their professional future.

"Well, SERUMS is only temporary, only for one year. It is not easy to become used to those places. They often speak Quechua and you don't, and it's hard to become adapted. Salary is minimal; distance to city makes travels very hard. Health posts are poor, ill-equipped, you are often alone. After a while, you have already learnt a lot and you want to get a

Huicho *et al. Human Resources for Health* (2015) 13:90

Page 6 of 11

specialty, in a large city. But while you are performing your SERUMS, you think about your future, it helps you decide what you will do afterwards…". Medical student, male, rural origin.

Job expectations
Medical students

Once graduated, medical students would prefer to work in large, urban public hospitals, which may allow them to accumulate clinical experience to develop a professional career.

> "I don't have a definitive choice yet. But I would like to be in contact with patients, and I guess that for me the best thing would be to work in an urban referral hospital, where you can see more patients". Male, urban origin.

They also expressed their preference for large hospitals from the Social Security over those from the Ministry of Health, due to perceived greater financial incentives.

> "Social Security hospitals offer more benefits to their professionals… and there, they get their regular salaries plus two additional ones. That's better than the salaries you get at the Ministry of Health". Female, rural origin.

Nursing and midwifery students

Nursing and midwifery students, compared with medical students, particularly those of rural origin, showed more willingness to work in a rural area, as an expression of solidarity.

> "¿Where to work once graduated? Well, I would go back where I was born, to put into practice what I have learnt, to help solving people's problems, at least in part". Male, rural origin.

Motivations to work in a rural area

We considered as motivations those factors "intrinsic" to students, not immediately explained by external factors related to some way of retribution that would contribute to personal, professional and social development. Intrinsic motivations have also been defined as "the desire to do something for its own sake" [11] or as pro-social and philanthropic motivations [37].

Medical students

They felt that better health can contribute to improve life conditions of people. This motivation was more explicit and consistent in those of rural origin or with parents of rural origin.

> "I always had in mind that once graduated I should go to a rural community, because by preventing and curing diseases, I could help people to improve their lives". Female, rural origin.

> "…Once you finish your career, you are willing to help, you can help most where people is poorer, with lower education, with few comfort. Helping them to be healthier will contribute to poverty improvement". Female, rural origin.

Nursing and midwifery students

Unlike medical students, they felt that they could contribute to the health of the community, though not necessarily to improve their socioeconomic conditions.

> "In a rural area, what we could do is offer people health advice, health care. We are not going to reduce their poverty, but at least we can help them with health promotion and prevention, we can treat their health problems". Female, rural origin.

Incentives to work in a rural area
Medical students

An adequate salary was considered the main incentive to work in a rural area, along with other non-financial incentives, such as factors facilitating the accomplishment of their professional duties. The achievement of acceptable personal and family life standards was also expressed as an important incentive.

> "As a doctor who studied for several years, my main incentive would be a good salary, along with adequate working conditions to perform my clinical duties. I would also expect to receive incentives leading to acceptable life conditions for myself and my family". Male, urban origin.

Improvement of geographic accessibility and of road infrastructure was considered important to decrease the disadvantages of living in an isolated rural area and also to facilitate referral of patients.

> "I would go to a rural area if there is a road that makes easier and safe to go to the city. I mean good roads, not the bad ones there are in those areas. Second, a health facility with adequate infrastructure and with complete equipment, so we can really help patients, so we can stabilize those with severe problems, and then refer them safely, quickly, in an ambulance, right?" Female, rural origin.

Getting a permanent urban job and bonus points when applying to a specialty programme after a work period in

Huicho *et al. Human Resources for Health* (2015) 13:90

Page 7 of 11

a rural area were perceived as important incentives. However, medical students expressed their reluctance to wait for too long before being promoted to a permanent position.

"I would expect to get a permanent job, but preferably in an urban hospital, because after 2 or 3 years in a rural health facility, I think I would deserve to move to a better place. I would also expect to get some incentives for applying to a specialty". Male, urban origin.

Nursing and midwifery students

Their salary expectations were lower than those of medical students, and the importance of concurrent non-financial incentives was also expressed. They put more emphasis on equipment and infrastructure, which would allow them to achieve better clinical performance. The relevance of access to information technology and to professional training opportunities was also highlighted.

"Well, you need to get an income for satisfying your daily needs: food, travel, accommodation. You also need saving for the sake of yourself and your family. We are not asking for the amount a doctor would receive, but we would expect a decent salary at least. I would also expect a decent health facility, with all equipment for performing my duties". Male, rural origin.

"Salary, yes, absolutely. But also periodic opportunities for accessing postgraduate courses and online training, to ensure that you are not lagging behind, that you keep having a good clinical performance". Male, rural origin.

Discussion
Career choice
Medical students

It is encouraging that a genuine concern for others is still a prominent reason for choosing a medical career, an asset that should be reinforced during undergraduate training through frequent contact with underserved communities, as it is occurring in some medical schools in Peru [38]. This is important to avoid the decline of idealism in students, which unfortunately seems to occur since the early years of medical training [39], affecting specifically the interest of students to work for underserved communities, their sense of responsibility for the health of society as a whole and their perception of the medical profession as a powerful tool for social service.

Early life experiences may influence a career choice in medicine and other fields [40,41]. This is an insufficiently explored area and deserves consideration as part

of training efforts of future generations of health professionals. The role of family factors in the decision to choose a medical career, previously reported [31,40,42], has also been found in our study, reflecting the positive role that family models play in shaping young people's career choice decisions.

Our medical students believed that by becoming doctors they can guarantee their later professional, economic and social status, which is at odds with the generalized perception that medicine does not guarantee anymore a profitable future [31,42,43], unless doctors resort to multiple practice appointments [42,43]. This may be due to the fact that students have not experienced yet the actual constraints imposed by the labour market, which privileges professions related to productive and technological activities [43]. It may also be related to the fact that our participants lived in cities with lower economic development and living standards compared with the national levels, which would explain at least in part their lower income expectations.

The academic appeal of medicine has been reported in other settings [44,45], and according to our study, it remains an influence on career choice. This positive perception of medical profession should be complemented by medical schools during undergraduate training through strong messages emphasizing the social role of medicine.

Nursing and midwifery students

Nursing and midwifery students are aware that their future salary standards and scope of practice are more limited than those of doctors. They also show higher social service motivations. These findings are in line with other studies showing that nursing and midwifery career choices seem more related to factors other than exclusive financial gains [46-48]. Academic institutions should take advantage of this higher idealism and social service motivation to foster the willingness to work in rural settings. Therefore, nursing and midwifery students seem more influenced by reasons related to the desire to help, to establish sympathetic relationships with patients and to relieve in some way what they perceive as social inequalities in the provision of health care [48,49].

The influence of early life experiences and role models also represent an opportunity window for fostering early positive perceptions towards nursing and midwifery careers.

Expectations towards rural service
All cadres

While medical students showed preference for working in large urban hospitals, they did not express simultaneous interest in private practice or in dual practice, in contrast with what has been reported in other studies

Huicho *et al. Human Resources for Health* (2015) 13:90

Page 8 of 11

[50], probably because they are not part of the labour market yet. Dual practice is widespread in Peruvian urban settings and needs serious consideration when discussing health workforce reforms, including better regulation of professional practice [51].

Academic institutions should consider changes in undergraduate curriculum to reinforce rural job expectations. Likewise, policymakers should not overlook the strong expectations towards urban positions expressed by all students, and they should consider including as a potential incentive the offer of an urban post after a given period of rural practice. Otherwise, the probability of rural retention would be jeopardized by the expectation of young doctors in pursuing a specialist training instead of choosing a rural job, which has been reported recently in Peru [52] and was confirmed by our study.

Rural service SERUMS is a 1-year appointment, a period perceived as insufficient to make a real difference for people's health. The Peruvian government has been considering plans to extend the SERUMS duration to 3 years. However, effective steps to counteract the reluctance of health professionals to remain in remote and rural areas with inadequate health facilities and life conditions need serious consideration and implementation [53]. This includes systematic efforts by academic institutions to reinforce students' altruism and solidarity, through reinforcement of rural rotations, and through a stronger presence of global health, medical humanities, sociology, anthropology and ethics in the medical curriculum, to ensure that bold messages on equitable health care as a basic human right are delivered.

Job expectations
Medical students
In Peru, health professionals working at the Ministry of Health earn substantially lower wages than those serving in the Social Security, a fact that leads to a substantial health workforce migration from the former to the latter sector [54]. This salary gap should be addressed when planning attraction and retention strategies in developing settings with three-tiered health systems [55-57].

Nursing and midwifery students
The intrinsic solidarity showed in our study by nursing and midwifery students was also reported elsewhere [11]. This characteristic, along with the prospect of making clinical decisions in rural jobs when there is no doctor, should be considered when designing attraction and retention strategies. Rural deployment and retention efforts should pay special attention to nurses and midwives, considered key members of the essential health teams in Peru, as it has shown that they are able to provide quality of health care [21], a fact that is particularly important in rural areas with chronic scarcity or absence

of doctors. Importantly, health professionals of rural origin should be particularly targeted for rural enrolment when implementing retention interventions.

Motivations to work in a rural area
Intrinsic motivations have been described previously in medical, nursing and midwifery students [17,18,58,59]. However, they have been somewhat neglected when planning attraction and retention strategies for different health professions [11,37,59]. Intrinsically motivated health workers may be more amenable to achieve better clinical performance, provided they are adequately trained, receive supportive supervision and receive adequate extrinsic incentives [60]. Such motivations are particularly stronger in nursing and midwifery students, who therefore should be targeted with greater emphasis by rural deployment interventions.

Resorting to altruism has recently been proposed as an alternative strategy to improve undergraduate enrolment and permanence in the career, particularly for nurses in developing countries [61]. Moreover, particular efforts should be made to enrol students of rural origin in the entry selection process, and their greater disposition to serve rural people should be reinforced during the training process. Academic institutions and policymakers should seriously consider this factor when planning attraction and retention strategies.

Incentives to work in a rural area
Medical students
Our study confirmed that combined rather than isolated incentives are stronger to persuade our future doctors to choose a rural job, which is in agreement with previous reports [7-10,33,62]. We identified various non-financial incentives that could be combined with financial incentives, such as health facility equipment, family welfare, professional development opportunities, access to information and communications technology, improved road infrastructure and access to a permanent job, among others. Students also feel that after a period of service in a rural area, they deserve to be transferred to an urban post and to get preferential incentives. These findings provide a clear message to policymakers: attraction and retention strategies must be planned and implemented considering bundled incentives, which may vary from setting to setting and even within poor areas.

Nursing and midwifery students
We also found that in this group combinations of adequate salaries with a wide range of other incentives are more powerful than isolated incentives, which confirmed similar results showed previously in graduate nurses and midwives [7-9]. Interestingly, our nursing and midwifery

Huicho *et al. Human Resources for Health* (2015) 13:90

Page 9 of 11

students insisted in the provision of adequate equipment at health facilities as an additional attractive, likely related to their strong intrinsic motivations.

Lessons and opportunities

We are aware that a qualitative study like this one has limitations to discriminate accurately the relative strength of different incentives, while alternative approaches such as discrete choice experiments focused on stated job preferences can identify them. We expect to report separately such preferences by combining the information found in our qualitative results with the published evidence and with current national and subnational rural deployment and retention policy initiatives.

We also acknowledge that our comparison of medical students and nursery and midwifery students may be affected by the fact that our participants are from two different regions, with different socioeconomic and cultural characteristics. While Ica is comparatively richer and more urban than Ayacucho, rural areas represent still a substantial proportion of this latter department. Therefore, our results should be interpreted within the framework of these contrasting contexts.

Both common and singular discourses found in medical, nursing and midwifery students should be considered by academic institutions when planning their enrolment and training programmes and by policymakers when planning implementation of attraction and retention strategies. The current emphasis of undergraduate training on a highly specialized and clinically oriented medicine needs to be counterbalanced through an increased promotion of a primary health care approach, with heavier focus on prevention and social aspects. Failing to take them into account can jeopardize the success chances of the current universal health coverage initiative launched by the government [30], which aims to close the equity gap of deployment that affects the rural areas.

Conclusions

We showed a high disposition of undergraduate students to work in rural areas, which was more evident in nursing and midwifery students and in those of rural origin. Our findings may be useful to improve targeting and selection of students at educational institutions, to reshape the curriculum of these professions in aspects related to rural health with the aim of producing socially committed graduates and specifically to strengthen the disposition of students to consider a rural job once they start their professional practice. Policymakers planning the implementation of interventions to improve the rural deployment of health professionals can also benefit from our results.

Author details
[1]Instituto Nacional de Salud del Niño, Lima, Peru. [2]School of Medicine, Universidad Peruana Cayetano Heredia, Lima, Peru. [3]School of Medicine, Universidad Nacional Mayor de San Marcos, Lima, Peru. [4]Centro de Investigación para el Desarrollo Integral y Sostenible, Universidad Peruana Cayetano Heredia, Lima, Peru. [5]CRONICAS Centre of Excellence in Chronic Diseases, Universidad Peruana Cayetano Heredia, Lima, Peru. [6]Project Development and Evaluation, Universidad ESAN, Lima, Peru. [7]Salud Sin Límites Perú, Lima, Peru. [8]School of Public Health and Administration, Universidad Peruana Cayetano Heredia, Lima, Peru. [9]Department of Parasitology, US Naval Medical Research Unit 6 (NAMRU-6), Lima, Peru. [10]Public Health Training Program, US Naval Medical Research Unit 6 (NAMRU-6), Lima, Peru. [11]Batallón Libres de Trujillo 227, LI33 Lima, Peru.

References
1. Data. Peru. [http://data.worldbank.org/country/peru]. Accessed date 30 November 2015.
2. Countdown to 2015 report: 'unfinished business' on maternal, child health. [http://www.who.int/pmnch/about/governance/partnersforum/countdown/en/]. Accessed date 30 November 2015.
3. Building a Future for Women and Children: The 2012 Report [http://www.countdown2015mnch.org/documents/2012Report/2012-Complete.pdf]. Accessed date 30 November 2015.
4. Surviving the first day. State of the world's mothers 2013 [http://www.savethechildren.org/atf/cf/%7B9def2ebe-10ae-432c-9bd0-df91d2eba74a%7D/SOWM-FULL-REPORT_2013.PDF]. Accessed date 30 November 2015.
5. Situación de la pobreza en el 2008 [http://censos.inei.gob.pe/Documentos Publicos/Pobreza/2008/Informe_Tecnico.pdf]. Accessed date 30 November 2015.
6. Encuesta Demografica y de Salud Familiar 2011 [http://proyectos.inei.gob.pe/endes/2011/Libro.pdf]. Accessed date 30 November 2015.

Huicho *et al. Human Resources for Health* (2015) 13:90

Page 10 of 11

7. Huicho L, Canseco FD, Lema C, Miranda JJ, Lescano AG. Incentives to attract and retain the health workforce in rural areas of Peru: a qualitative study. Cad Saude Publica. 2012;28:729–39.

8. Huicho L, Miranda JJ, Diez-Canseco F, Lema C, Lescano AG, Lagarde M, et al. Job preferences of nurses and midwives for taking up a rural job in Peru: a discrete choice experiment. PLoS One. 2012;7, e50315.

9. Miranda JJ, Diez-Canseco F, Lema C, Lescano AG, Lagarde M, Blaauw D, et al. Stated preferences of doctors for choosing a job in rural areas of Peru: a discrete choice experiment. PLoS One. 2012;7, e50567.

10. Diversity in career preferences of future health workers in Rwanda. Where, why, and for how much? [http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2010/05/11/000333037_20100511015328/Rendered/PDF/544420PUB0EPI01BOX0349416B01PUBLIC1.pdf]. Accessed date 30 November 2015.

11. Serneels P, Montalvo JG, Pettersson G, Lievens T, Butera JD, Kidanu A. Who wants to work in a rural health post? The role of intrinsic motivation, rural background and faith-based institutions in Ethiopia and Rwanda. Bull World Health Organ. 2010;88:342–9.

12. Health worker attitudes toward rural service in India: results from qualitative research [http://siteresources.worldbank.org/HEALTHNUTRITIONANDPOPULATION/Resources/281627-1095698140167/HealthWorkerAttitudesTowardRuralServiceinIndia.pdf]. Accessed date 30 November 2015.

13. Witter S, Thi Thu Ha B, Shengalia B, Vujicic M. Understanding the 'four directions of travel': qualitative research into the factors affecting recruitment and retention of doctors in rural Vietnam. Hum Resour Health. 2011;9:20.

14. Murthy SRK, Ramani S, Chokshi M, Khandpur N, Hazarika N. What do doctors want? Incentives to increase rural recruitment and retention in India. BMC Proc. 2012;Suppl 1:P5.

15. Diab PN, Flack PS, Mabuza LH, Reid SJ. Qualitative exploration of the career aspirations of rural origin health science students in South Africa. Rural Remote Health. 2012;12:2251.

16. Kotha SR, Johnson JC, Galea S, Agyei-Baffour P, Nakua E, Asabir K, et al. Lifecourse factors and likelihood of rural practice and emigration: a survey of Ghanaian medical students. Rural Remote Health. 2012;12:1898.

17. Lori JR, Rominski SD, Gyakobo M, Muriu EW, Kweku NE, Agyei-Baffour P. Perceived barriers and motivating factors influencing student midwives' acceptance of rural postings in Ghana. Hum Resour Health. 2012;10:17.

18. Lori JR, Rominski S, Richardson J, Agyei-Baffour P, Kweku NE, Gyakobo M. Factors influencing Ghanaian midwifery students' willingness to work in rural areas: a computerized survey. Int J Nurs Stud. 2012;49:834–41.

19. Johnson JC, Nakua E, Dzodzomenyo M, Agyei-Baffour P, Gyakobo M, Asabir K, et al. For money or service?: A cross-sectional survey of preference for financial versus non-financial rural practice characteristics among Ghanaian medical students. BMC Health Serv Res. 2011;11:300.

20. Kaye DK, Mwanika A, Sekimpi P, Tugumisirize J, Sewankambo N. Perceptions of newly admitted undergraduate medical students on experiential training on community placements and working in rural areas of Uganda. BMC Med Educ. 2010;10:47.

21. Huicho L, Scherpbier RW, Nkowane AM, Victora CG. How much does quality of child care vary between health workers with differing durations of training? An observational multicountry study. Lancet. 2008;372:910–6.

22. Lassi ZS, Cometto G, Huicho L, Bhutta ZA. Quality of care provided by mid-level health workers: systematic review and meta-analysis. Bull World Health Organ. 2013;91:824–833I.

23. Dubois CA, Singh D. From staff-mix to skill-mix and beyond: towards a systemic approach to health workforce management. Hum Resour Health. 2009;7:87.

24. Fulton BD, Scheffler RM, Sparkes SP, Auh EY, Vujicic M, Soucat A. Health workforce skill mix and task shifting in low income countries: a review of recent evidence. Hum Resour Health. 2011;9:1.

25. Buchan J, Dal Poz MR. Skill mix in the health care workforce: reviewing the evidence. Bull World Health Organ. 2002;80:575–80.

26. Censo XI de Población y VI de Vivienda 2007. [http://censos.inei.gob.pe/cpv2007/tabulados/]. Accessed date 30 November 2015.

27. Informe Sobre Desarrollo Humano Perú 2009. Por una densidad del Estado al servicio de la gente [http://hdr.undp.org/sites/default/files/idh2009-peru-vol1-2.pdf]. Accessed date 30 November 2015.

28. Zevallos L, Pastor R, Moscoso B. Supply and demand of medical specialists in the health facilities of the Ministry of Health: national, regional and by type of specialty gaps. Rev Peru Med Exp Salud Publica. 2011;28:177–85.

29. Comunícate SERUMS [http://www.minsa.gob.pe/dggdrh/comunicate/index.html]. Accessed date 30 November 2015.

30. Aseguramiento Universal en Salud [http://www.minsa.gob.pe/portada/aseguramiento/default.html]. Accessed date 30 November 2015.

31. Llanos Zavalaga LF, Reyes Lecca RC, Lecca García LW, Velasquez Hurtado JE, Silva Tica E, Huayta Zacarias E. Perceptions of the medical career among senior high school students. Acta Medica Herediana. 2004;15:136–43.

32. La Decisión de Estudiar Enfermería [http://hist.library.paho.org/Spanish/EMS/39600.pdf]. Accessed date 30 November 2015.

33. Increasing access to health workers in remote and rural areas through improved retention: global policy recommendations. [http://whqlibdoc.who.int/publications/2010/9789241564014_eng.pdf]. Accessed date 30 November 2015.

34. Bernabe E, Icaza JL, Delgado-Angulo EK. Reasons for choosing dentistry as a career: a study involving male and female first-year students in Peru. Eur J Dent Educ. 2006;10:236–41.

35. Evans J. Men nurses: a historical and feminist perspective. J Adv Nurs. 2004;47:321–8.

36. Malterud K. Qualitative research: standards, challenges, and guidelines. Lancet. 2001;358:483–8.

37. Intrinsic motivations and the non-profit health sector: evidence from Ethiopia [http://www.csae.ox.ac.uk/workingpapers/pdfs/2010-04text.pdf]. Accessed date 30 November 2015.

38. Rivas-Nieto A, Curioso WH, Guillén-Astete C. Student participation in rural health intervention projects: the IRIS-X experience in Peru. Rev Per Med Exp Sal Pub. 2009;26:387–94.

39. Morley CP, Roseamelia C, Smith JA, Villarreal AL. Decline of medical student idealism in the first and second year of medical school: a survey of pre-clinical medical students at one institution. Med. Educ. Online; 18: 2013.

40. Fuchs B, Miller JD. Pathways to careers in medicine and health. Peabody J Educ. 2012;87:67–72.

41. Pearson W, Miller JD. Pathways to an engineering career. Peabody J Educ. 2012;87:46–61.

42. Ausman JA, Javed A, Ahmed S, Mohammad AS, Pour AS, Mathew E, et al. Social factors influencing career choice in a medical school in the United Arab Emirates. Educ Med J. 2013;5:14–20.

43. Human resources in public health and education in Peru. In: Cotlear D, ed. A new social contract for Peru: an agenda for improving education, health care, and the social safety net. [http://siteresources.worldbank.org/INTPCENG/Resources/A_New_Social_Contract_for_Peru.pdf]. Accessed date 30 November 2015.

44. Aschbacher P, Li E, Roth EJ. Is science me? High school students' identities, participation and aspirations in science, engineering, and medicine. J Res Sci Teach. 2010;47:564–82.

45. Kikwilu EN, Mugonzibwa EA, Rugarabamu PG, Ntabaye MK. Tanzanian high school students' attitude towards five university professional courses. East Afr Med J. 2000;77:143–6.

46. Law W, Arthur D. What factors influence Hong Kong school students in their choice of a career in nursing? Int J Nurs Stud. 2003;40:23–32.

47. Miers ME, Rickaby CE, Pollard KC. Career choices in health care: is nursing a special case? A content analysis of survey data. Int J Nurs Stud. 2007;44:1196–209.

48. Kersten J, Bakewell K, Meyer D. Motivating factors in a student's choice of nursing as a career. J Nurs Educ. 1991;30:30–3.

49. Larsen PD, McGill JS, Palmer SJ. Factors influencing career decisions: perspectives of nursing students in three types of programs. J Nurs Educ. 2003;42:168–73.

50. Ferrinho P, Sidat M, Fresta MJ, Rodrigues A, Fronteira I, da Silva F, et al. The training and professional expectations of medical students in Angola, Guinea-Bissau and Mozambique. Hum Resour Health. 2011;9:9.

51. Jan S, Bian Y, Jumpa M, Meng Q, Nyazema N, Prakongsai P, et al. Dual job holding by public sector health professionals in highly resource-constrained settings: problem or solution? Bull World Health Organ. 2005;83:771–6.

52. Mayta-Tristan P, Mejia CR, Riega-Lopez P, Rojas-Mezarina L, Posso M, Mezones-Holguin E. Labor projection in the countryside and associated factors in newly collegiated physicians in Lima, Peru 2010. Rev Peru Med Exp Salud Publica. 2011;28:186–93.

53. Frehywot S, Mullan F, Payne PW, Ross H. Compulsory service programmes for recruiting health workers in remote and rural areas: do they work? Bull World Health Organ. 2010;88:364–70.

Huicho *et al. Human Resources for Health* (2015) 13:90

Page 11 of 11

54. Pardo K, Andia M, Rodriguez A, Perez W, Moscoso B. Remunerations, benefits and labor incentives perceived by health care workers in Peru: an analysis comparing the Ministry of Health and the Social Insurance, 2009. Rev Peru Med Exp Salud Publica. 2011;28:342–51.

55. Esteves RJ. The quest for equity in Latin America: a comparative analysis of the health care reforms in Brazil and Colombia. Int J Equity Health. 2012;11:6.

56. Ewig C, Bello AH. Gender equity and health sector reform in Colombia: mixed state-market model yields mixed results. Soc Sci Med. 2009;68:1145–52.

57. Knaul FM, Gonzalez-Pier E, Gomez-Dantes O, Garcia-Junco D, Arreola-Ornelas H, Barraza-Llorens M, et al. The quest for universal health coverage: achieving social protection for all in Mexico. Lancet. 2012;380:1259–79.

58. Mohamed AM. Willingness and professional motivations of medical students to work in rural areas: a study in Alexandria, Egypt. Health Care in Low-resource Settings. 2013;1:11–17.

59. Agyei-Baffour P, Kotha SR, Johnson JC, Gyakobo M, Asabir K, Kwansah J, et al. Willingness to work in rural areas and the role of intrinsic versus extrinsic professional motivations - a survey of medical students in Ghana. BMC Med Educ. 2011;11:56.

60. Generosity norms and intrinsic motivation in health care provision: evidence from the laboratory and the field. [http://www.ebrd.com/downloads/research/economics/workingpapers/wp0147.pdf]. Accessed date 30 November 2015.

61. Smith R, Lagarde M, Blaauw D, Goodman C, English M, Mullei K, et al. Appealing to altruism: an alternative strategy to address the health workforce crisis in developing countries? J Public Health (Oxf). 2013;35:164–70.

62. Lehmann U, Dieleman M, Martineau T. Staffing remote rural areas in middle- and low-income countries: a literature review of attraction and retention. BMC Health Serv Res. 2008;8:19.

HUMAN RESOURCES
FOR HEALTH

CH 2|5|6

RESEARCH

Open Access

'Emigration is a matter of self-preservation. The working conditions . . . are killing us slowly': qualitative insights into health professional emigration from Ireland

Niamh Humphries[1*], Sara McAleese[1], Anne Matthews[2] and Ruairi Brugha[1]

Abstract

Background: Achieving a sustainable health workforce involves training and retaining sufficient staff to deliver health services. The Irish health workforce is characterised by a high level of emigration of Irish-trained staff and a heavy reliance on internationally trained staff. This paper presents qualitative findings from a mixed-method study of doctors, nurses and midwives who have recently emigrated from Ireland.

Methods: Using Facebook, this study elicited 556 (388 completed) responses to an exploratory mixed-method online survey in July 2014. Respondents provided rich responses to two free-text questions, one on health worker return ($N = 343$) and another on health professional emigration ($N = 209$) from the source country (Ireland).

Results: Respondents emigrated because of difficult working conditions in the Irish health system (long working hours, uncertain career progression), which compared poorly with conditions in the destination country. Respondents' experiences in the destination country vindicated the decision to emigrate and complicated the decision to return. Their return to Ireland was contingent upon significant reform of the Irish health system and an improvement in working conditions, expressed, for example, as:

> 'It's not about the money, it's about respect . . . we love working in medicine, but we love our families and health more' (RD283).

Conclusions: This paper highlights that doctors, nurses and midwives are emigrating from Ireland in search of better working conditions, clear career progression pathways and a better practice environment. The question for the source country is whether it can retain and attract back emigrant doctors, nurses and midwives by matching their expectations.

Background

Health professional emigration

A key component of a sustainable health workforce is the ability to '*keep scarce skills in the system by effective retention strategies*' [1]. Despite the importance of retention for source countries, most collect little or no data on the emigration of health professionals. Alongside a dearth of data on health professional emigration, little is known about emigrant health professionals, their motivations for emigration and level of interest in return. This information is important in facilitating better understanding of, and responses to, health professional emigration by the source country. As Kapur explains, '*citizens leave their country for a reason. And when they leave, the factors that led them to leave do not disappear. Understanding these factors is critical*' [2], both to their retention and also to attracting them back to the source country.

Research on health professional migration in high-income countries has tended to focus on them as destination rather than source countries. The few studies that have considered the factors influencing the emigration of health professionals from European Union (EU) source

* Correspondence: nhumphries@rcsi.ie
[1]Department of Epidemiology and Public Health Medicine, Royal College of Surgeons in Ireland, RCSI, 123 St. Stephen's Green, Dublin 2, Dublin, Ireland
Full list of author information is available at the end of the article

Humphries *et al. Human Resources for Health* (2015) 13:35

Page 2 of 13

countries offer valuable insights. Research has found that United Kingdom (UK)-trained doctors in New Zealand emigrated primarily for professional reasons, such as a desire for improved training and career progression [3]. German doctors' intent on emigration cited heavy workloads, poor working conditions and poorly structured postgraduate training as factors influencing the emigration decision [4]. UK-trained midwives who migrated to Australia noted that they had felt overworked and stressed and had struggled to provide good care in the UK [5]. German emigrant nurses cited dissatisfaction with working conditions, low remuneration and professional recognition as reasons for their emigration [4].

Health professional emigration in the Irish context

Since 2008, Ireland has become one of the EU countries hardest hit by economic recession and has experienced higher levels of general emigration than countries such as Spain or Greece [6]. All indications suggest high levels of health professional emigration from Ireland since the onset of economic recession in 2008 [7, 8]. Some initial indications of the impact of health professional emigration on the Irish health system include:

- A 100% increase in spending on agency or locum junior doctors between 2013 and 2014 [9].
- Although the total vacancy rate for non-consultant hospital doctor (NCHD) posts as of January 2015 was small (177 of 5300) (personal communication, Health Service Executive (HSE)), most of these are likely to be posts in rural hospitals and those not connected to formal postgraduate training schemes.
- A decrease of 12 000 in the number of directly employed whole-time equivalent staff since a peak in 2007 and significantly increased spending on agency staff in recent years [10, 11].
- Health employers struggling to fill nursing posts in surgical theatre and critical care specialties [12].
- Warnings from the Irish Medical Organisation[a] and from general practitioners of an emerging staffing crisis in the Irish health system as a result of doctor emigration [13, 14].

However, in Ireland, as in other developed countries, there are limited data available to confirm outward health professional migration trends [15–17]. The main source of data on the medical workforce comes from the medical register, which records the number of doctors *registered* to practise, rather than the number active in the medical workforce (Table 1). There has been an increase in the number of hospital doctors employed in the public sector since 2008 as a result of the continued implementation of the European Working Time Directive (EWTD). No disaggregation of these data is available. While 34.3% of doctors registered in Ireland are internationally trained [18], the number of internationally trained doctors entering the workforce annually or employed in the public sector is unknown. As a result, the inward migration of internationally trained doctors may mask the scale of doctor emigration from Ireland, as posts vacated by emigrating Irish trained doctors are filled by internationally trained doctors.

Table 2, which presents data on the numbers of nurses and midwives registered in Ireland, also shows a significant discrepancy between the number registered to practise and those employed in the nursing/midwifery workforce (public sector). Although there was an increase in the total number of nurses registered to practise between 2008 and 2014, the number employed in the public sector has decreased by 11% during that time (see Table 2). This decrease could be largely considered a result of austerity-related measures such as the incentivised early retirement schemes for public sector staff, as well as a result of emigration and perhaps as a result of a move of staff into the private healthcare sector, which is not reliably measured nationally. The nursing register allows registered nurses and midwives to classify themselves as active or inactive in the Irish health workforce. As Table 2 shows, the number registered on the active register decreased by 6% between 2008 and 2014.

Verification data

To emigrate as a health professional and practise in another country, the registration body in the destination country must verify the good standing of the health professional with the registration body in the source country,

Table 1 Data on doctors registered/employed in Ireland, 2008–2014[b,c] [14, 28, 50] (personal communication, HSE, Medical Council)

	2008	2009	2010	2011	2012	2013	2014	2015
Number of doctors on register	17 741	18854	18 770	18 812	18 184	18 160	19 066	19 616
Number of public sector consultants and junior hospital doctors (NCHDs) employed (headcount)	7 197	7 120	7 127	7 413	7 418	7 474	7 862	8 554
Number of public sector employed, medical/dental	8 109	8 083	8 096	8 331	8 320	8 353	8 713	9 761
Number of general practitioners (GPs) contracted to HSE (2010 and 2014)			2 258				2 416	

Humphries *et al. Human Resources for Health* (2015) 13:35

Page 3 of 13

Table 2 Data on nurses registered/employed in Ireland, 2008–2014 [50, 51]

	2008	2009	2010	2011	2012	2013	2014
Number of nurses/midwives on register	88 224	89 504	90 530	91 700	92 726	94 715	94 604
Number of nurses/midwives on active register	68 614	68 483	67 415	67 130	66 888	66 409	64 790
Number of nurses employed in the public sector	38 108	37 466	36 503	35 902	34 637	33768	33 992

a process known as verification. Professional registration bodies collect data on the numbers of verification requests annually, and this is the primary indicator of health professional emigration intent in the Irish context [15, 19]. Although valuable as a source of data on intent to emigrate, the difficulties with verification data are multiple: health professionals may emigrate without applying for verification, they may apply for verification retrospectively (after emigration has already occurred), they may apply for verification on several occasions, or they may apply and not follow through with emigration [17]. Verification data may be subject to manipulation as health professionals can use verification requests to pressurise employers and/or governments to initiate debate on health professional emigration or working conditions [17]. Verification data are perhaps best interpreted as indicative of a health professional's *intent* to emigrate rather than a measure of *actual* emigration [15, 16]. Despite the limitations of verification data, it is currently one of the only methods of measuring health professional emigration from Ireland.

Figures 1 and 2 present verification data obtained from the Medical Council of Ireland (MCI) and the Nursing and Midwifery Board of Ireland (NMBI). The data presented in Figure 1 relate to the overall number of verification certificates issued, rather than the number of individual health professionals issued with verification certificates (these data are unavailable for doctors in the Irish context). In 2013 when 500 doctors acquired verification from the GMC, it was described as an exodus and a significant danger to the UK medical workforce [20]. Figure 1 indicates that Ireland may be experiencing quite a significant level of doctor emigration relative to the size of its medical workforce.

Figure 2 shows the number of individual nurses/midwives issued with verification certificates between 2006 and 2013. Interesting in this context is the impact that an external shock, such as the onset of economic recession in 2008/9, appears to have had on nurses/midwives' intent to emigrate, with record number of verifications issued in those years (Figure 1), equating to approximately 3000 individual nurses/midwives in each of those years (Figure 2). In 2009, Ireland graduated approximately 1264 nurses/midwives [16]. The number of verifications issued has since levelled off somewhat and approximately 1200–1500 nurses and midwives per annum obtain verification certificates (Figure 2). This includes non-EU migrant nurses and midwives [16] as well as Irish-trained nurses/midwives and suggests a potentially significant outflow from the Irish health system, albeit a flow that appears to be stabilising.

Destination country data

Another means of measuring the rate of health professional emigration from Ireland is by examining the immigration or registration records of destination countries. Improved information sharing internationally on health professional migration is a recommendation of the World Health Organization (WHO) Global Code of Practice on the International Recruitment of Health Personnel [21] and represents an opportunity for source country emigration trends to be verified with destination countries. By way of example, Table 3 presents data on the inward migration of Irish-trained doctors and nurses to Australia and indicates a significant flow of nurses and doctors from Ireland to Australia between 2009 and 2014. Although most entered Australia on temporary entry visas, there is

Figure 1 Overall number of verifications issued to doctors, nurses and midwives, 2008–2014.[d] Source: data from MCI and NMBI.

Humphries *et al. Human Resources for Health* (2015) 13:35

Page 4 of 13
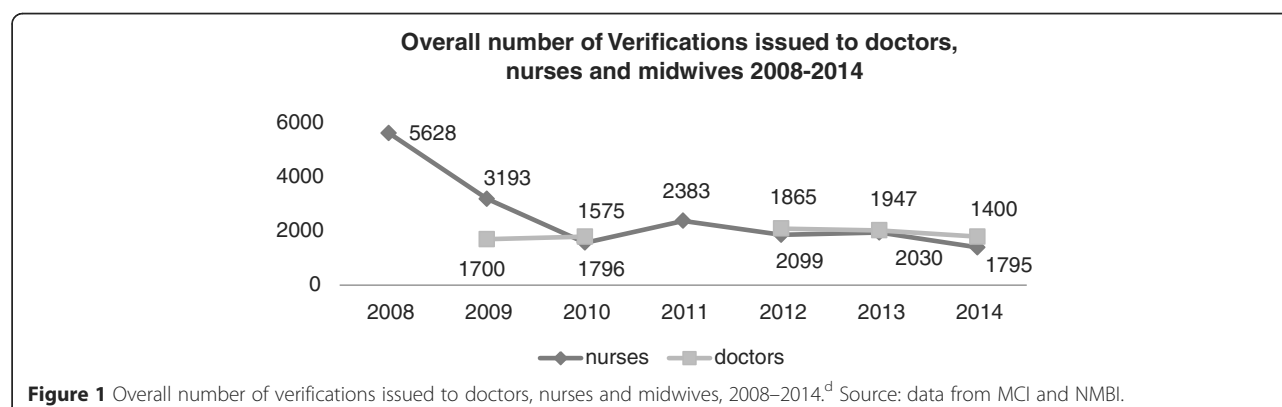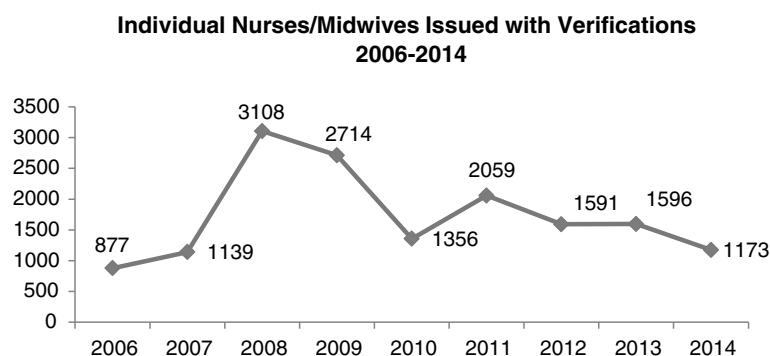
Figure 2 Individual nurses/midwives issued with verifications, 2006–2014. Source: data from NMBI.

scope for health professionals to switch to more permanent visas once in-country.

Nurses/midwives in Ireland

According to Organisation for Economic Co-operation and Development (OECD) figures, Ireland has 12.6 nurses per 1000 population in comparison to the EU28 average of 8 nurses per 1000 population [22]. However, as outlined above, these figures relate to the number of nurses/midwives on the active register[e] rather than the number in direct nursing/midwifery practice [23]. There are no national nursing/midwifery workforce databases that measure the overall numbers of nurses/midwives in practice and therefore no national data on nurse–patient ratios or on working patterns. The RN4CAST study of nurse staffing in 12 European countries estimated a patient-to-nurse ratio in Irish medical/surgical wards of 6.9:1 [24], which was the second lowest (i.e. most favourable) in the study [24]. However, the study also found that nurses in these wards in Ireland worked an average shift of 12 h, which is not the pattern in RN4CAST, where 50% of nurses worked shifts of 8 h or less [25]. The RN4CAST data only apply to general medical/surgical wards in acute adult hospitals and so are not representative of the entire nursing workforce. Ireland's nursing/midwifery workforce has been impacted by austerity-related measures to reduce the public sector wage bill, namely the public sector recruitment embargo and incentivised early retirement schemes [16].

In Ireland, as internationally, austerity-related savings were sought via a reduction in staff numbers rather than by improving efficiency in the health system [26]. Although the number of nurses/midwives employed in the public sector has decreased since 2009 (see Table 2),

there has been a marked increase in hospital activity (inpatient and day), meaning that fewer staff treat a greater number of patients [10]. The public sector recruitment embargo 2009–2013 meant there were few employment opportunities open to newly qualified nurses and midwives. A graduate nurse employment scheme launched in 2013 offering 1000 new nursing positions at reduced salary rates was controversial and was the focus of a boycott by the Irish Nursing and Midwifery Organisation[f] (INMO). Given the bleak employment prospects, particularly for newly qualified nurses and midwives since 2009, high emigration levels are unsurprising and the available data illustrate this.[g] A national survey of the nursing and midwifery graduates in 2010 found that 29% (179/610) were working abroad within a year of graduation [27]. Irish-trained nurses and midwives have been actively recruited by employers in the UK, United States of America (USA), Canada and Australia in recent years.

Doctors in Ireland

Ireland has 2.7 doctors per 1000 population, according to OECD figures [22], compared to the EU28 average of 3.4 doctors per 1000. However, this ratio is based on the number of doctors registered, which may be greater than the number in the workforce[h] [28]. Table 1 shows some discrepancy between the number of doctors registered and the numbers in public practice. Some of the discrepancy can be explained by the employment of doctors in the private healthcare sector, for which reliable workforce data are not available.

Accounts in the media by Irish-trained doctors who have emigrated refer to poor working conditions and the pressure of working in the Irish health system,

Table 3 Irish-trained health professionals issued with Australian visas, 2009–2014 [52]

	Permanent entry visas	Temporary entry visas	Total
Irish-trained doctors	155 doctors	1000 doctors	1155 doctors
Irish-trained nurses	328 nurses	2010 nurses	2338 nurses

Humphries *et al. Human Resources for Health* (2015) 13:35

Page 5 of 13

describing it as a system '*that was quite obviously failing*' [29] as a reason for their emigration. In terms of working hours, Ireland has struggled to achieve EWTD compliance. Hospital doctors frequently work more than the mandated 48 h per week, with recent research reporting that junior hospital doctors typically working 80–90 h per week [30]. A recent campaign by junior hospital doctors sought to have hospital shifts restricted to 24 h in duration.

Emigrant Irish-trained doctors also cite '*inadequate training, inadequate remuneration and lack of career prospects*' [31] as factors influencing their decision to emigrate. This relates to the postgraduate training structures in Ireland. Having completed their medical degree, doctors in Ireland embark on postgraduate specialist training of between 4 and 12 years in duration (depending on specialisation). Throughout their training, doctors are employed on temporary contracts and generally move hospital/location every 6–12 months [32, 33], although proposals to provide greater predictability of location for doctors on training schemes are being introduced [34]. Once this training has been successfully completed, doctors are eligible to apply for (but are not guaranteed) a specialist post of Consultant or General Practitioner within the Irish health system.

Although no comprehensive data on doctor emigration from Ireland are currently available, the available data indicate substantial levels of emigration. For instance, a survey which tracked doctors who completed internship[i] in the Irish health system in mid-2011 found that 45% were no longer working in the public health system in Ireland, and it is likely that the majority had emigrated [7]. Exits from the Irish medical register are also an indication of emigration. In 2012, exit rates of 6.4% and 6.3% were recorded for doctors aged 25 to 29 years and 30 to 34 years [18], and similar rates were recorded in 2013 with 7.9% of doctors aged 25-29 years and 6% of doctors aged 30–34 exiting the medical register [28]. A general limitation of professional register exit data is that it does not differentiate between exit for emigration and exit for other reasons (retirement, death, change of profession, etc.); however, such high exit rates in younger cohorts suggest emigration as a major factor. A further limitation is that health professionals may maintain registration in their home/source countries while working abroad.

Health professional emigration and health workforce planning

To develop a sustainable health workforce, as recommended by the WHO Global Code of Practice on the International Recruitment of Health Personnel [21], each country must '*educate, retain and sustain*' an appropriate health workforce [21]. Ireland has recently scaled up its medical training and is educating sufficient numbers of health professionals to meet demand [35]. Yet a failure to sustain and retain those health professionals has resulted in emigration and a continued reliance on internationally trained health professionals to staff the health system.

The evidence base and systems for routine monitoring of health professional emigration, needed for the development of '*effective health workforce policies and planning*' [36], are weak in the Irish context. While national media highlight the problem, minimal systematic evidence has been generated around health professional emigration. Could Ireland's emigrant health professionals be considered '*crisis escapees*' [37] whose emigration is a direct result of the recession, or as a result of recession-related cost-containment in the health sector [26]? This scenario might see emigration patterns mirror Ireland's economic situation. Alternatively, emigration may be a result of sudden 'triggers' [38] or as a result of a more gradual build-up of frustration by health professionals [38], and assumptions about what combination of factors are motivating Irish-trained health professionals to emigrate need to be explored and tested.

In Ireland, as elsewhere, the economic recession has resulted in salary reductions and tax increases [26], along with cost-containment measures across the health system. To what extent has the economic recession been a trigger for health professional emigration? How important have recession-related measures, such as reduced entry level salaries for health professionals, been in triggering emigration and making them reluctant to return home? To what degree is health professional emigration indicative of a wider set of problems in how a country manages its health workforce and broader health system? Oulton notes that employers in many countries have failed to address long-standing deficiencies relating to working hours, training, staffing levels and salaries [39]. Previous research by the authors has recommended a greater emphasis by employers and health workforce planners on retention than international health professional recruitment as a response to staffing shortages [15].

Drawing on qualitative and quantitative data from 388 Irish-trained emigrant health professionals, this paper seeks to improve understanding of the dynamics of health professional emigration from the perspective of the emigrants themselves. Qualitative data will provide insight into their motivations for emigration and their perspectives on whether or not they plan to return to work in the Irish health system. This information will be beneficial to health workforce planners in Ireland and other high-income source countries and should help to inform improved health workforce policy and practice.

Humphries *et al. Human Resources for Health* (2015) 13:35

Page 6 of 13

Methods

A mixed-method online survey of health professionals (doctors, nurses and midwives) who had recently emigrated from Ireland was conducted in July/August 2014, using convenience sampling. There were 556 responses to the survey, of which 388 were completed responses. The research was designed as a pilot to inform the development of a large-scale project on health professional emigration. Ethical approval for this study was obtained from the Royal College of Surgeons in Ireland in early 2014. This paper presents qualitative findings from that online survey.

Survey design

The survey tool was designed drawing on the wider literature on health professional migration as well as the authors' previous experience of conducting surveys with non-EU migrant doctors and nurses [15, 40] and with nurses and midwives [41]. The survey contained 21 questions, including 7 which allowed free-text responses. In addition to the questions analysed in this paper, free-text response questions were also used to gather data on the main reasons for emigration, the factors that attracted respondents to a specific destination country and the factors that might encourage them to remain there. Although most of these free-text responses were subsequently categorised and quantified, collecting free-text responses allowed for all factors influencing respondents' emigration decisions to be identified. The survey was piloted with a number of health professionals prior to its launch online.

Survey recruitment

Emigrant health professionals are a hard-to-reach group. For academics conducting research with emigrants, '*the lack of a representative sampling frame . . . has proved a major stumbling block*' [6]. This project initially sought to access a representative sample of emigrant health professionals by sampling from the verification records held by the relevant source country professional councils. Unfortunately, it was not possible to access a representative sample in this way. It was decided instead to recruit a convenience sample of emigrant health professionals using health professional contacts and social networking sites as gatekeepers. This was an online form of snowball sampling whereby emails were forwarded and/or Facebook posts issued by the research team via gatekeepers, inviting emigrant health professionals to participate in the survey. While not a representative sample, it was felt that using snowball sampling to access a convenience sample would provide valuable insights into health professional emigration and would inform the subsequent development of a larger-scale study on health professional emigration. The recruitment process is described more fully in a separate manuscript (McAleese et al.:

Gone for good? A survey of emigrant health professionals, submitted).

Survey and data analysis

In line with the literature, free-text questions were incorporated in the survey so as to obtain information on all factors influencing emigration and also to provide respondents with an opportunity to voice their opinions [42]. Data generated from these questions were imported from SPSS into MaxQDA where the data were manually coded, using thematic coding [43]. The main themes to emerge from the question on health system change included contracts/salaries, better working conditions, health system reform and training and career progression. The main themes to emerge from the final 'any other comment' question included health worker emigration and health system reform. The analysis of free-text survey responses differs from analysis of qualitative interview data in having a small amount of data from a large number of respondents—less depth, but from a greater breadth of respondents. *Verbatim* quotes from respondents were used to illustrate themes [42]. The presentation of qualitative findings sought to follow the recommendations made by Sandelowski [44]. Respondents are referred to in text as RNXXX, meaning Respondent Nurse and their survey number; RDXXX, Respondent Doctor; and RMXXX, Respondent Midwife.

Findings

Respondent profile

Of the 388 emigrant health professional respondents eligible to participate in the survey, 307 were doctors, 73 were nurses and 8 were midwives. The majority (89%, $N = 336$) of respondents were Irish-trained, and most (93%, $N = 338$) had emigrated from Ireland since 2008. Most respondents (58%, $N = 200$) were 25-34 years old, with a further (31%, $N = 108$) aged 34–44 years. Females accounted for 58% ($N = 203$) of respondents. Most respondents had emigrated to Australia (33%, $N = 115$), the UK (29%, $N = 103$) and the USA (17%, $N = 59$).

Respondents were asked to identify the grade at which they last worked in the Irish health system to assess seniority prior to migration. Among medical respondents, 90% ($N = 274$) had worked as junior hospital doctors[j] prior to emigration. Of these, 22% ($N = 85$) had worked at Specialist Registrar level (the most senior level of junior hospital doctor) and 20% ($N = 77$) at intern level (the most junior level of junior hospital doctor). Only 4% ($N = 11$) of respondents had worked at Consultant level and 6% ($N = 19$) at GP level prior to emigration. Among nursing and midwifery respondents, 74% ($N = 56$) had worked at Staff Nurse/Midwife level and 17% ($N = 13$) had been students prior to emigration.

Humphries *et al. Human Resources for Health* (2015) 13:35

Page 7 of 13

Questions analysed

This paper presents an analysis of responses to two open-ended questions. A high proportion of respondents answered these open-ended questions—343/372 (92%) responded to the question, 'What changes to the Irish health system might attract back emigrant doctors, nurses or midwives?', with responses ranging from 2 to 177 words, and 209/372 (56%) respondents answered the final survey question: 'Do you have any other comments about the emigration of health professionals from Ireland?', with responses ranging from 1 to 297 words.

The themes to emerge from the two questions overlapped and are presented together. The findings tell the story of a large group ($N = 388$) of health professionals who had emigrated from a high-income country—the Republic of Ireland. They discuss their reasons for emigration, with many seeing it as a means of escaping from difficult working conditions in Ireland, their source country. They describe a lack of respect afforded to health professionals in the Irish health system, particularly in relation to staffing levels and working conditions. Respondents spoke of the superior working conditions in their destination countries, which appeared to both vindicate their emigration decision and complicate the decision to return. The key take-home message from this paper is that any measures to improve retention or encourage reform are incomplete without considering the perspective of emigrant health professionals. Although findings presented in this paper suggest that system-level change is necessary to improve working conditions in the Irish health system, change must respond to and be informed by the experiences of individual health professionals.

Working conditions driving emigration

Respondents felt that their emigration from Ireland had been driven by professional rather than personal reasons. Of the top five reasons for emigration given by respondents, all but one related to the workplace (in order of preference: working conditions, training, career progression, financial reasons, personal reasons). Given the impact of economic recession on Irish households generally in terms of unemployment, negative equity and debt burdens, this was a surprising finding.

Respondent health professionals, particularly doctors, felt that the working conditions experienced in Ireland left them with '*no option but to leave*' (RD44). Both nurse and doctor respondents gave concrete examples of the working conditions they had experienced in the Irish health system, particularly in relation to long working hours and described the impact on their lives.

'*I frequently worked 36+ hour shifts and almost always more than 80 hours/week*' (RD211).

'*In emergency you might have one day off here and there. There's no real pattern from a life planning point*' (RD283).

'*No point having days off when you have to spend the whole time recuperating from the exhaustion of your working days*' (RN48).

Respondents were acutely aware of the impact these working conditions had on the health and well-being of the health workforce generally and on themselves specifically. One respondent spoke of the impact of working conditions on their own well-being:

'*I ended up in hospital twice, because of the ridiculous amount of work we did due to long hours and under staffing*' (RD127).

Respondents described their emigration as a rational response to the working conditions experienced in the Irish health system.

Disrespect and the Irish health system

Respondents felt that that health employers' did not respect the health professionals in their employ and that poor working conditions were evidence of that disrespect. Respondents felt that this issue of respect, as reflected in improved health professional working conditions, needed consideration:

'*it's not about the money it's about respect and understanding that we love working in medicine, but we love our families and health more*' (RD283).

'*It's awful to feel exiled from your country because of the expectations and work conditions of your job*' (RD299).

Respondents, especially doctors, spoke of a general disrespect for health professionals in Ireland, from the media and also from health employers. There was much discussion of an '*anti-doctor media narrative*' (RD159) and a feeling that health professionals were regularly vilified in the media (RD19, RD94). Respondents felt that the Health Services Executive (HSE—the main public sector employer of health professionals) fuelled these campaigns in order to weaken the negotiating power of health professionals (RD57, RD206). It was noted that this was having a negative effect on health professional retention and also on the public's attitude towards the health workforce, as one respondent explained:

'*the HSE needs to start working with frontline health care staff instead of using the media to target us*' (RD287).

Humphries *et al. Human Resources for Health* (2015) 13:35

Page 8 of 13

Nursing/midwifery experience

The experiences of nurses/midwifery respondents largely echoed that of their medical colleagues, particularly in relation to working conditions, staffing levels and the need for respect, other elements of their experience are presented here.

Nursing and midwifery respondents noted their dissatisfaction at the recent introduction of a graduate nursing scheme which sought to recruit entry level nurses on reduced rates of pay. All respondents who mentioned the scheme called for its abolition. One nursing respondent described this scheme as '*immoral . . . totally demoralising for the entire profession*' (RN370). In relation to career progression more generally, nurses and midwives echoed their medical colleagues in calling for '*better career paths, more structure, improved staffing levels, pay scales which reflect the role*' (RN313).

Nursing and midwifery respondents articulated the difficulties they faced in terms of their practice environment in the Irish health system, particularly as a result of staff shortages, and expressed concerns for patient safety.

'*in certain areas in Irish hospitals, it is very difficult to demonstrate safe practice because of the pressure being put on staff nurses (staff shortages, increased workloads, etc.*' (RN237).

'*improve working conditions to make it safer for patients*' (RN246).

There was a feeling that perhaps task shifting might enable the Irish health system to make better use of the available resources within its workforce, as this midwifery respondent explains:

'*start using resources properly—use midwives to their full potential, e.g. using MLUs[k] on - site in hospitals, more midwifery led clinics, to free up our medical colleagues for the women who really need their input and care*' (RM326).

Emigration decision vindicated in destination country

If respondents had doubts about the decision to emigrate, these did not emerge strongly from the findings, with respondents expressing few regrets and describing the decision to emigrate as '*the best decision we ever made*' (RD323) and as a '*no brainer*' (RD323, RD208). The emigration decision appeared vindicated by the working conditions in the destination country. Invariably, the Irish health system compared poorly in comparison to the destination country, particularly in relation to training and working conditions.

'*I was in shock when I first arrived to the UK when I saw how well doctors in training are supported and treated*' (RD80).

'*It was not until I worked abroad that I realised the full extent of this abuse. The absolute disregard for our training, lifestyles, good will is a disgrace*' (RD292).

Emigration enabled respondents to realise that the difficult working conditions they had endured in Ireland were not universal. Respondents described the joy of working in a well-funded health system (RD260), of being appreciated and supported in their work (RD89), and working in less stressful environments (RN321, RD12) with less burnout and better morale: '*my colleagues are terrific and unbroken*' (RD260). Respondents spoke about receiving more support and encouragement in their current health system, particularly from senior members of staff.

'*When I got to Australia I immediately loved it. I loved the way the senior medical staff were friendly and helpful and encouraging and present on the floor (ED).[l] I loved the way I worked with nursing staff that felt and work like part of a team . . . I felt appreciated and could see a clear career path*' (RD87).

The contrast in experience between destination and source country was also clearly articulated by nursing and midwifery respondents who felt more appreciated and respected in their destination country, '*in Ireland you work to live, here you live to work due to wonderful opportunities, training and job satisfaction*' (RN305). The overall feeling was that there '*is no comparison between working at home and abroad*' (RD379). Respondents gave many specific examples of things that were done differently in the destination country health system, ranging from tax incentives (RD41, RD186) to improved rotas and cover for sick leave/annual leave (RD22) to availability of research budgets (RD151). However, the main difference noted between the Irish health system and their current health systems appeared to be the staffing levels, as this respondent describes:

'*I was shocked to come to work in a comparable unit in the UK . . . They have fully FIVE TIMES as many registrars, SHOs, interns, and consultants as the Irish hospital. It's shocking when you look back*' (RD127).

Improved working conditions in the destination country appeared to provide respondents with the opportunity to rediscover the joy of practising their profession without having to contend with a difficult work environment. This

Humphries *et al. Human Resources for Health* (2015) 13:35

Page 9 of 13

seemed both to vindicate the emigration decision and also complicate the decision to return.

Return (personal vs professional motivations)

Despite their reservations about the Irish health system and their sense of anger at an emigration often perceived as involuntary, some respondents remained open to the possibility of return. In discussing their potential return to Ireland, respondents distinguished between personal and professional motivations. Many were eager to return 'home' to be near to family and friends:

'*I would love to come back to Ireland due to having family and friends and the fact that it is my home*' (RD59).

'*I want to return home from a personal point of view but right now it makes no sense professionally*' (RD74).

Others were eager to come home to help reform the Irish health system, but feared the professional costs associated with such a decision, as this respondent explains:

'*I want to contribute to the recovery of the Irish healthcare system but I felt abused and demoralised as an intern and would need to see a significant improvement in the aforementioned areas before I would consider going back*' (RD63).

Their experience in the destination country had shown respondents that a more pleasant working environment was achievable outside Ireland. These experiences were the lens through which any potential return to Ireland was seen. Respondents seemed to maintain a keen interest in developments in the Irish health system while abroad, which suggests an interest in returning to work in Ireland, which was contingent on evidence of improved working conditions there. Twenty-nine percent of respondents (*N* = 102) reported their intent to return to Ireland in the future with a further 29% (*N* = 103) open to the possibility.

Reforms before return

Respondents felt that significantly improved working conditions in the Irish health system would be necessary prior to their return. The prospect of returning to the poor working conditions that they had left was simply not an option. The comparative experience of destination country working conditions, as well as a reflection on the working conditions that pre-empted their emigration, appeared to be key influencers in this regard:

'*things must drastically improve for any to be attracted back to work in a significantly inferior health care system*' (RD38).

'*frankly I couldn't bring myself to come back now to a system that is over stressed, understaffed and has ever worsening morale*' (RD114).

The most common needed reforms cited by respondents (45%, *N* = 173) involved a combination of several factors, illustrating the complexity of health system reform and the challenges facing health workforce planners and policy-makers who seek to promote their return.

'*Better working hours, transfer of tasks, support by senior colleagues, structured teaching, better pay, less hours, respect*' (RD80).

'*Improved working conditions and ability to provide good patient care—reduced working hours of junior doctors, more consultants, more ancillary staff, computerised health records, prompt access to tests and care for our patients*' (RD344).

Staffing levels were considered an important dimension of health system reform, mentioned by 19% (*N* = 75) of respondents. Respondents highlighted the need for increased numbers of front-line staff, specifically in relation to improved nurse–patient ratios and ensuring adequate cover for staff on leave. They also spoke about the need for task shifting between health professionals to achieve a more appropriate use of existing staff resources.

'*More nurses and doctors at the front - line, proper working hours without constantly having to stay late and do unpaid overtime due to the lack of adequate staff, resources available at hospital and ward level to allow staff to carry out their work without constant stress and worry. More appropriate staff to do jobs . . . reduction in the amount of documentation required from nurses that is not directly related to patient care*' (RN225).

Although the reforms mentioned by respondents are wide-reaching, the underlying goal, as articulated by respondents, was for a safe practice environment in which health professionals could perform to the best of their abilities and '*to feel pride at the end of a shift well done instead of dismay at feeling that slap-dash substandard care has been provided*' (RD115).

The risk of non-return

While respondents discussed the possibility of return, they framed it as a time-limited window of opportunity.

Humphries *et al. Human Resources for Health* (2015) 13:35

Page 10 of 13

They felt that the Irish health system would have to move quickly to encourage the return of emigrant health professionals, before they become established (personally and/or professionally) abroad.

> '*Many of our friends are staying here until things improve at home. Worryingly the longer we are here the easier it is for us to stay*' (RD368).

> '*if they don't act quickly, the lost generation will settle and establish themselves elsewhere—and it's harder to move back the longer you stay away*' (RD217).

These insights demonstrate the heightened expectations of emigrant health professionals. Having experienced superior working conditions and practice environments in the destination country, they now expected similar conditions in the source country. Research findings also illustrate how 'life' can get in the way of a potential return, with respondents becoming more established (personally and professionally) in the destination country over time. Without specifically deciding to become permanent emigrants, respondents nevertheless spoke of the process through which the option of return becomes ever more remote.

> '*if terms and conditions at every level of medicine in Ireland are not changed soon, people will settle overseas, have children, etc. and won't bother applying to return to Ireland regardless of terms. There is a relatively short window of opportunity*' (RD151).

Discussion

The overwhelming message from emigrant health professionals is that the unsatisfactory working conditions they experienced within the Irish health system were a major factor in their decision to emigrate and feature equally strongly in their considerations of whether or not to return. In this regard, the findings echo international findings [5, 45] and confirm previous findings in the Irish context [7]. In previous research by the authors, non-EU migrant doctors painted a '*bleak picture*' [35] of working conditions in the Irish health system. Together, this growing body of research points to inherent (and interconnected) flaws in the Irish health system, flaws which probably contribute to high attrition of health professionals from the Irish health system and an over-reliance on internationally trained health professionals. The Irish health system has '*neglected more sustainable, long-term health workforce planning strategies*' [15] for stemming the tide of health professional emigration and achieving health workforce sustainability.

As this paper has demonstrated, improved data collection is a prerequisite to a better understanding of health professional emigration from source countries such as Ireland and is a necessary first step in the process of addressing health professional emigration and moving towards health workforce sustainability, as recommended by the WHO Global Code [21]. In terms of administrative data, there is a need for accurate information on the active health workforce, those practising as distinct from those registered to practice. Data on the size and composition of the current health workforce (profession, place of employment, gender, age, grade, etc.) will enable a more accurate assessment of movements into and out of the health workforce. In terms of migration-specific data, there is a need for outflow data, i.e. details on all those who exit the Irish health workforce, as well as inflow data which also capture those who have re-entered the health workforce following time working in another country.

In the interim, more information could be requested from health professionals by the source country at the point at which they request verification of professional registration/good standing. If the source country were, at this point, to capture the verification request along with details of the individual health professional, their intended destination country and their intended duration of emigration, it would provide a valuable snapshot of health professional emigration intent *prior to* emigration.

Without more comprehensive, up-to-date routine data, source country health workforce planners are operating in a vacuum and face an uphill battle in seeking to address the emigration of health professionals. As the authors have stated previously, the lack of timely and comprehensive data is a serious impediment to workforce planning [16]. Poor health workforce data in relation to emigration make it difficult to (1) accurately ascertain the full extent of the emigration problem facing the health system, (2) demonstrate the drain on resources that health professional emigration represents, and (3) undertake medium- to long-term workforce planning, and finally, (4) the lack of baseline data will make it impossible to evaluate the effectiveness of any policy levers employed by the source country to address health professional emigration.

There have been some important policy responses to health professional emigration in recent years at the Irish and global levels. In 2007, Ireland increased the number of undergraduate medical places and introduced a new graduate entry medicine programme, resulting in an increase in the number of EU/Irish medical graduates produced (from 305 to 750 annually by 2015). According to policy predictions [46], Ireland is now training a sufficient number of doctors to meet demand. This is a significant achievement in a relatively short space of time and is recognised as an important component in the creation of a sustainable health workforce. According to the WHO Global Code, sustainability in terms of training

Humphries *et al. Human Resources for Health* (2015) 13:35

Page 11 of 13

must be accompanied by measures to retain sufficient health professionals to meet domestic demand [21]. A 2013/4 Strategic Review of Medical Training and Career Structure by Ireland's Department of Health focused attention on the need to improve retention in the medical workforce [34, 47]. The 25 recommendations made in these reports address many of the broad medical recruitment and retention issues mentioned by respondents in this study. While these reports and recommendations are to be welcomed, the overwhelming message from respondent emigrant health professionals is that time is of the essence when it comes to implementation.

Ultimately, the solution to health professional emigration is retention, i.e. that source countries, such as Ireland, train and retain sufficient health professionals to staff their health system. Policies to encourage return, while important, are a reaction to, rather than a prevention of, health professional emigration. While some degree of health professional emigration is manageable, even desirable in terms of encouraging advanced specialisation and broadening horizons, it must take place in a managed fashion so that circular/return migration becomes the norm for emigrating health professionals, rather than the exception. In this paper, respondents spoke of emigrating for professional reasons—as a result of poor working conditions, a lack of respect, unclear career progression and poor practice environments. In the destination countries, respondents spoke of better working conditions, better morale and better staffing levels. If the Irish health system is to achieve a sustainable health workforce, then health professionals must be able to access good working conditions, training and career progression in the Irish health system. Emigration to achieve these basics must become a thing of the past.

Conclusions

There are a few 'silver linings' for the Irish health system to take from this study of 388 emigrant health professionals. Firstly, emigrant health professionals remain interested in returning to their source country, which means that there is still a window of opportunity within which health system reform might provide the impetus to attract them back. However, this is a window that will narrow over time. Secondly, the reforms proposed by emigrant health professional respondents relate to endogenous factors within the control of the health system [48], more than to wider factors outside the control of the system, which in the Irish context might be economic recession, high unemployment and high levels of personal debt. A caveat, however, is that to attract back health professionals, the health system must reform in order to compete with the working conditions and career progression opportunities offered by other destination countries.

Finally, although the scale of the health system reform suggested by respondents is daunting, the prospect that health system reform might encourage the return of emigrant health professionals from the destination country, while also leading to improved retention in the source country, provides a strong impetus.

This paper highlights that doctors, nurses and midwives are emigrating from Ireland in search of better working conditions, clear career progression pathways and a better practice environment. The question for the source country is whether it can retain and attract back emigrant doctors, nurses and midwives by improving their working conditions.

Limitations

A limitation of the study is that it uses a convenience sample which relied upon health professionals volunteering to participate in the survey. The use of social media supported by gatekeepers successfully recruited a large number of emigrant health professionals in a short space of time, with 40% (216) of responses received within 24 h of the survey going live (McAleese et al.: Gone for good? A survey of emigrant health professionals, submitted). The use of convenience sampling provided the research team with rapid access to '*a sufficiently large number of highly motivated respondents*' [49]. One reason for the high response may have been a recent high-profile Facebook campaign, 'Enough is Enough', which sought improved working conditions for junior hospital doctors in Ireland. This meant that a large group of doctors, emigrants and non-emigrants, were already interested in and engaged on the survey topic, at the time the survey went live. There are two limitations of this approach. The first is that the sample over-represents doctors. The authors have attempted to counter that by presenting some findings specific to nursing/midwifery respondents, but accept that the paper affords more attention to the medical perspective. A second limitation is that accessing doctors via the 'Enough is Enough' campaign means that the sample may include a disproportionate number of doctors who were dissatisfied with the Irish health system.

Another limitation of the study is in its wider generalisability to other source and destination countries, that it focuses on Irish-trained health professionals, who, as English speakers, are perhaps more likely than their European counterparts to emigrate to (and integrate into) other English-speaking destination countries such as the UK, Australia, New Zealand, Canada and the USA. This makes the experiences of UK- and Irish-trained health professionals unusual in a European context although perhaps comparable to the emigration of francophone health professionals to Canada.

Humphries *et al. Human Resources for Health* (2015) 13:35

Page 12 of 13

Endnotes

[a]The Irish Medical Organisation (IMO) is the trade union representing doctors in Ireland.

[b]Consultants are the most senior grade of hospital doctor in the Irish context. They have completed their medical education and training, are registered on the Specialist register and have obtained the post of Consultant. NCHDs or junior hospital doctors are doctors who have graduated from medical school and are employed within the health service as Interns, Senior House Officers, Registrars, and Senior or Specialist Registrars. Some NCHDs are also involved in postgraduate training.

[c]Data presented in Table 1 comes from several sources, each of which collects and categorises data in different ways, making comparisons difficult. General practitioners (GPs) in Ireland operate as private businesses, but are contracted by the HSE to provide services to certain patient groups.

[d]In Figure 1, medical data are unavailable for 2008 and 2011.

[e]Some of those who opt to remain on the active nursing register may be involved in management, research and education. Others remain on the active nursing register although not working in direct nursing.

[f]The main trade union for nurses and midwives in Ireland.

[g]In February 2015, it was announced that 800 new nursing posts would be created in the Irish health system.

[h]A workforce database for junior doctors and consultants is currently under development by the National Doctors Training and Planning Unit, HSE and should be operational by 2016.

[i]Internship is the first clinical post after graduation from medical school. Internship (usually 1 year in duration) must be completed before full registration on the General Division of the Medical Register can be achieved.

[j]Known as NCHDs or non-consultant hospital doctors in the Irish context. NCHDs comprise all junior hospital doctors from interns, to Senior House Officers (SHOs), to Registrars, to Specialist Registrars (SpRs).

[k]Midwife-led units.

[l]Emergency department.

Abbreviations

ED: Emergency Department; EU: European Union; EWTD: European Working Time Directive; HSE: Health Service Executive; IMO: Irish Medical Organisation; INMO: Irish Nursing and Midwifery Organisation; MaxQDA: Qualitative Data Analysis Software; MCI: Medical Council of Ireland; NCHD: Non-consultant hospital doctor (junior hospital doctor); NMBI: Nursing and Midwifery Board of Ireland; OECD: Organisation for Economic Co-operation and Development; SPSS: Statistical Package for the Social Sciences; UK: United Kingdom; WHO: World Health Organization.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

NH, RB and AM developed the study proposal. SMcA and NH were involved in the data collection. NH and SMcA conducted the data analysis. NH prepared all the drafts and redrafts of the paper. SMcA, AM and RB provided editorial comment on the draft versions of the paper. All authors have read and approved the final manuscript.

Author details

[1]Department of Epidemiology and Public Health Medicine, Royal College of Surgeons in Ireland, RCSI, 123 St. Stephen's Green, Dublin 2, Dublin, Ireland. [2]School of Nursing and Human Sciences, Dublin City University, Dublin, Ireland.

References

1. Crettenden I, Dal Poz M, Buchan J. Right time, right place: improving access to health service through effective retention and distribution of health workers. Hum Resour Health. 2013;11:60.
2. Kapur D. Diaspora, development and democracy: the domestic impact of international migration from India. Princeton and Oxford: Princeton Press; 2010.
3. Sharma A, Lambert T, Goldacre M. Why UK-trained doctors leave the UK: cross sectional survey of doctors in New Zealand. J R Soc Med. 2012;105:25–34.
4. Ognyanova D, Young R, Maier C, Busse R. Why do health professionals leave Germany and what attracts foreigners? A qualitative study. In: Buchan J, Wismar M, Glinos I, Bremner J, editors. Health professional mobility in a changing Europe: new dynamics, mobile individuals and policy responses. Copenhagen: European Observatory on Health Systems and Policies & WHO; 2014.
5. Sidebotham M, Ahern K. Factors influencing midwifery migration from the United Kingdom to Australia. Int Nurs Rev. 2011;28:498–504.
6. Glynn I, Kelly T, MacEinri P. Irish emigration in an age of austerity. Cork: Department of Geography & Institute for the Social Sciences in the 21st Century, University College Cork; 2013.
7. HSE MET. Implementation of the reform of the intern year. Second interim report. HSE Medical Education and Training Unit: Dublin; 2012.
8. HEA. What do graduates do? The class of 2012. An analysis of the universities first destination of graduates survey 2013. Dublin: Higher Education Authority; 2013.
9. Culliton G. HSE recruiting foreign NCHDs through EURES. In: Irish Medical Times. Dublin; 2014.
10. O'Brien T. Understanding change in the Irish healthcare system. Balancing quality of care, resource limitations and system reform: implications, challenges and opportunities. In: SPHeRE Presentation. Trinity College Dublin: Dublin; 2013.
11. Wall M. Health service agency staff bill could reach €326m. Dublin: Irish Times; 2014.
12. Mudiwa L. Specialist nurse shortage hits health service. Dublin: Irish Medical Times; 2013.
13. Irish Medical Organisation. Joint Statement from IMO Consultants and NCHDs on Consultant crisis in our public hospitals. 2014. https://www.imo.ie/news-media/news-press-releases/2014/joint-statement-from-imo-/. Accessed 13 May 2015.
14. Ryan O. Doctors warn general practice in Ireland is 'on the brink of collapse'. In: thejournal.ie. 2014.
15. Humphries N, Brugha R, McGee H. Overseas nurse recruitment: Ireland as an illustration of the dynamic nature of nurse migration. Health Policy. 2008;87(2):264–72.

Humphries *et al. Human Resources for Health* (2015) 13:35

Page 13 of 13

16. Humphries N, Brugha R, McGee H. Nurse migration and health workforce planning: Ireland as illustrative of international challenges. Health Policy. 2012;107:44–53.

17. Glinos I, Wismar M, Maier C, Palm W, Figueras J. Health professional mobility and health systems in Europe: conclusions from the case studies. In: Wismar M, Maier C, Glinos I, Dussault G, Figueras J, editors. Health professional mobility and health systems evidence from 17 European countries. United Kingdom: World Health Organization on behalf of the European Observatory on Health Systems and Policies; 2011.

18. Medical Council. Medical workforce intelligence report. A report on the annual registration retention survey 2013. In: Medical workforce intelligence report. Dublin: Medical Council of Ireland; 2014.

19. Bidwell P, Humphries N, Dicker P, Thomas S, Normand C, Brugha R. The national and international implications of a decade of doctor migration in the Irish context. Health Policy. 2013;110(1):29–38.

20. Cooper C. Britain's flying doctors asked to come home. In: the Independent. London. 2015.

21. World Health Organization. The WHO global code of practice on the international recruitment of health personnel. Geneva: World Health Organization; 2010.

22. OECD/European Union. Health at a glance. Europe 2014. Paris: OECD; 2014.

23. Scott PA, Matthews A, Corbally M. Nurses' and midwives' understanding and experiences of empowerment in Ireland. Dublin: Department of Health and Dublin City University; 2003.

24. Aiken LH, Sloane DM, Bruyneel L, Van den Heede K, Griffiths P, Busse R, et al. Nurse staffing and education and hospital mortality in nine European countries: a retrospective observational study. Lancet. 2014;383(9931):1824–30.

25. Griffiths P, Dall'Ora C, Simon M, Ball J, Lindqvist R, Rafferty AM, et al. Nurses' shift length and overtime working in 12 European countries: the association with perceived quality of care and patient safety. Med Care. 2014;52:975–81.

26. Thomas S, Burke S, Barry S. The Irish health-care system and austerity: sharing the pain. Lancet. 2014;383:1545–6.

27. HSE. Findings from the survey of 2010 nursing and midwifery graduates: where are they now? Dublin: HSE Office of the Nursing and Midwifery Services Director; 2011.

28. Medical Council. Medical workforce intelligence report. A report on the annual registration retention survey 2012. In: Medical workforce intelligence report. Dublin: Medical Council of Ireland; 2013.

29. Gilbert T. Dublin vs Adelaide: a junior doctor's life. Dublin: Irish Times; 2013.

30. McGowan Y, Humphries N, Burke H, Conry M, Morgan K. Through doctors' eyes: a qualitative study of hospital doctor perspectives on their working conditions. Br J Health Psychol. 2013;18:874–91.

31. McCann S. Why train doctors just to see them go? Ireland: Irish Times; 2012.

32. Irish Medical Organisation. Submission to Oireachtas Joint Committee on Health and Children: non consultant hospital doctors. Dublin: Irish Medical Organisation; 2011.

33. Humphries N, Bidwell P, Tyrrell E, Brugha R, Thomas S, Normand C. "I am kind of in stalemate". The experiences of non-EU migrant doctors in Ireland. In: Buchan J, Wismar M, Glinos I, Bremner J, editors. Health professional mobility in a changing Europe. Copenhagen: WHO European Observatory on Health Systems and Policies; 2014

34. Department of Health. Strategic review of medical training and career structure. Progress report. Dublin: Department of Health. 2015.

35. Humphries N, Tyrrell E, McAleese S, Bidwell P, Thomas S, Normand C, et al. A cycle of brain gain, waste and drain - a qualitative study of non-EU migrant doctors in Ireland. Hum Resour Health. 2013;11:63.

36. Dussault G, Buchan J. The economic crisis in the EU: impact on health workforce mobility. In: Buchan J, Wismar M, Glinos I, Bremner J, editors. Health professional mobility in a changing Europe: new dynamics, mobile individuals and policy responses. Copenhagen: European Observatory on Health Systems and Policies & WHO; 2014.

37. Glinos I, Buchan J. Health professionals crossing the European Union's internal and external borders: a typology and health professional mobility and migration. In: Buchan J, Wismar M, Glinos I, Bremner J, editors. Health professional mobility in a changing Europe: new dynamics, mobile individuals and policy responses. Copenhagen: European Observatory on Health Systems and Policies & WHO; 2014.

38. Oman KA, Moulds R, Usher K. Specialist training in Fiji: why do graduates migrate and why do they remain? A qualitative study. Hum Resour Health. 2009;7:9.

39. Oulton J. International trade and the nursing profession. In: Zarrilli S, Kinnon C, editors. International trade in health services. Geneva: UNCTAD and WHO; 1998.

40. Humphries N, Brugha R, McGee H. Sending money home: a mixed-methods study of remittances sent by migrant nurses in Ireland. Hum Resour Health. 2009;7:66.

41. Heinen MM, van Achterberg T, Schwendimann R, Zander B, Matthews A, Kózka M, et al. Nurses' intention to leave their profession: a cross sectional observational study in 10 European countries. Int J Nurs Stud. 2013;50(2):174–84.

42. O'Cathain A, Thomas KJ. "Any other comments?" Open questions on questionnaires - a bane or a bonus to research? BMC Med Res Methodol. 2004;4:25.

43. Richards L. Handling qualitative data. A practical guide. 2nd ed. London: Sage; 2009.

44. Sandelowski M, Leeman J. Writing usable qualitative health research findings. Qual Health Res. 2012;22(10):1404–13.

45. Maybury C. The European Working Time Directive: a decade on. Lancet. 2014;384:1562–3.

46. Working Group on Undergraduate Medical Education. Fottrell report. Medical education in Ireland: a new direction. Report of the Working Group on Undergraduate Medical Education. Dublin: Department of Health and Children; 2006.

47. Department of Health. Strategic review of medical training and career structure. Final report. Dublin: Department of Health; 2014.

48. Padarath A, Chamberlain C, McCoy D, Ntuli A, Rowson M, Loewenson R. Health personnel in Southern Africa: confronting maldistribution and brain drain. In: Equinet Discussion Paper Number 3. Regional Network for Equity in Health in Southern Africa (EQUINET), Health Systems Trust (South Africa), and MEDACT (UK); 2004.

49. Leiner DJ. Convenience samples from online respondent pools: a case study of the SocSci Panel. In: Working Paper. Munich, Germany: Institut fur Kommunikationswissenshaft und Medienforschung, Ludwig-Maximilians-Universität München; 2014

50. Department of Health. Health in Ireland key trends. Dublin: Department of Health; 2014.

51. Nursing and Midwifery Board of Ireland (NMBI). Statistics. 2015. http://www.nursingboard.ie/en/statistics.aspx. Accessed 13 May 2015.

52. Hawthorne LA. Analysis of unpublished data provided by Statistical Division. Department of Immigration and Border Protection: Canberra; 2014.

Exploring the connectedness of rural auxiliary midwives to social networks in Koutiala, Mali

Emily A. Hurley, MPH (Doctoral Student)[a],*, Nicole E. Warren, PhD, MPH, CNM (Assistant Professor)[b], Seydou Doumbia, MD, PhD (Professor, Chair)[c], Peter J. Winch, MD, MPH (Professor, Director)[a]

[a] Department of International Health, Social and Behavioral Interventions Program, Johns Hopkins Bloomberg School of Public Health, Baltiomre, USA
[b] Department of Community-Public Health, Johns Hopkins School of Nursing, Baltimore, USA
[c] Department of Public Health, Malaria Research and Training Center, Université des Sciences, des Techniques et des Technologies de Bamako, Mali

ARTICLE INFO

ABSTRACT

Background: rural auxiliary midwives are central to clinical maternal care in Mali. However, little is known about their social role within the villages they serve. Exploring the social connectedness of midwives in their communities can reveal areas in which they need additional support, and ways they could benefit their communities beyond their clinical role.

Objective: to examine rural auxiliary midwives' social connectedness to the communities they serve.

Design: embedded, mixed methods design combining social network case studies with semi-structured interviews.

Participants and setting: midwives were recruited for semi-structured interviews during technical trainings held in Koutiala in southern Mali. Social network analyses were conducted among all adult women in two small villages purposively sampled from the Koutiala region.

Methods: 29 interviews were conducted, transcribed, and coded using NVivo (Version 9) to qualitatively assess social connectedness. In two villages, the complete social networks of women's friendships were analysed using UCINET Version 6 ($n=142$; 74). Rank-orders of actors according to multiple measures of their centrality within the network were constructed to assess the midwives' position among village women.

Findings: both local and guest midwives reported feeling high levels of social integration, acceptance, and appreciation from the women in their communities. Specific challenges existed for guest or younger midwives, and in midwives' negotiations with men. In the two sociometric analyses, both the local and guest midwives ranked among the most influential social actors in their respective villages.

Key conclusions and implications for practice: though they hold a unique position among other rural women, this study suggests that midwives in Koutiala are well connected socially, and may be capable of becoming effective agents of network based-behavioural health interventions. Additional support is warranted to help midwives affirm a credible professional status in a male-dominated society, especially those of local status and younger age. Programme planners and policy-makers should consider the potential of midwives in communication when designing behaviour change interventions for women in similarly underserved areas.

REVIEW

Realizing universal health coverage for maternal health services in the Republic of Guinea: the use of workforce projections to design health labor market interventions

Christel Jansen[1]
Laurence Codjia[2]
Giorgio Cometto[3]
Mohamed Lamine Yansané[4]
Marjolein Dieleman[1]

[1]Health Unit, Royal Tropical Institute, Amsterdam, the Netherlands; [2]Health Workforce, World Health Organization, Geneva, Switzerland; [3]Global Health Workforce Alliance, World Health Organization, Geneva, Switzerland; [4]Health Focus GmbH, Conakry, Guinea

Video abstract

Point your SmartPhone at the code above. If you have a QR code reader the video abstract will appear. Or use:
http://dvpr.es/1zeOBj7

Correspondence: Christel Jansen
Health Unit, Royal Tropical Institute, Linnaeusstraat 35F, PO Box 95001, 1090 HA Amsterdam, the Netherlands
Tel +31 20 568 8591
Fax +31 20 568 8444
Email c.jansen@kit.nl

Background: Universal health coverage requires a health workforce that is available, accessible, and well-performing. This article presents a critical analysis of the health workforce needs for the delivery of maternal and neonatal health services in Guinea, and of feasible and relevant interventions to improve the availability, accessibility, and performance of the health workforce in the country.

Methods: A needs-based approach was used to project human resources for health (HRH) requirements. This was combined with modeling of future health sector demand and supply. A baseline scenario with disaggregated need and supply data for the targeted health professionals per region and setting (urban or rural) informed the identification of challenges related to the availability and distribution of the workforce between 2014 and 2024. Subsequently, the health labor market framework was used to identify interventions to improve the availability and distribution of the health workforce. These interventions were included in the supply side modeling, in order to create a "policy rich" scenario B which allowed for analysis of their potential impact.

Results: In the Republic of Guinea, only 44% of the nurses and 18% of the midwives required for maternal and neonatal health services are currently available. If Guinea continues on its current path without scaling up recruitment efforts, the total stock of HRH employed by the public sector will decline by 15% between 2014 and 2024, while HRH needs will grow by 22% due to demographic trends. The high density of HRH in urban areas and the high number of auxiliary nurses who are currently employed pose an opportunity for improving the availability, accessibility, and performance of the health workforce for maternal and neonatal health in Guinea, especially in rural areas.

Conclusion: Guinea will need to scale up its recruitment efforts in order to improve health workforce availability. Targeted labor market interventions need to be planned and executed over several decades to correct entrenched distortions and mismatches between workforce need, supply, and demand. The case of Guinea illustrates how to design and operationalize HRH interventions based on workforce projections to accompany and facilitate universal health coverage reforms.

Keywords: human resources for health, workforce projections

Introduction
Human resources for maternal and neonatal health in Guinea

The maternal mortality ratio and the neonatal mortality rate in the Republic of Guinea are estimated at, respectively, 724 per 100,000 live births and 33 per 1,000 live births.[1]

Reducing maternal and neonatal mortality is therefore a priority in the National Health Development Plan of the Republic of Guinea. One of the strategies to do so is to improve the availability, quality, and performance of human resources for health (HRH).[2]

In Guinea, 44% of all births are attended by a physician (Médecin-Généraliste [MG]); a nurse (Infirmier Diplômé d'Etat [IDE]); a midwife (Sage-Femme [SF]); or an auxiliary nurse (Agent Technique en Santé [ATS]). These cadre are called "trained providers." However, auxiliary nurses (who provide 4.2% of the assistance during birth) have received 3 years of training after their Brevet d'Etudes du Premier Cycle (BEPC, first secondary education cycle, or junior high school), and this training includes limited attention to MNH.[3] As opposed to the MG, IDE, and SF, ATSs are therefore not considered qualified to be the primary responsible person for the provision of maternal and neonatal health (MNH) services in Guinea, although no formal document exists that prohibits or allows ATS to assist during birth. Of all births, 40% are assisted in a health facility, and 88% of these births take place in the public sector. This is lower in rural areas, where only 32% of all births are assisted by a MG, IDE, SF, or ATS. In these rural areas, 29% of all births take place in a health facility, of which 97% are in the public sector. In both urban and rural areas, SFs provide most of the trained birth assistance (respectively, 56% and 19% of all births). In rural areas, in the absence of qualified staff, traditional birth attendants, family members and friends, followed by ATSs assist in deliveries.[1]

The pathway to universal health coverage (UHC): the role of the workforce

UHC is the goal that all people obtain the health services they need without the risks of financial hardship linked to paying for them.[4] One of the barriers that prevent Guinean citizens from accessing maternal and neonatal health services is the costs related to these services. This is among the reasons why the Government of the Republic of Guinea introduced in 2010 the policy of delivering MNH services free of charge. According to an evaluation in the region N'Zérékoré in 2012, this policy increased the indication, direct referral for, and utilization of life-saving cesarean sections.[5] Since then, Guinea has continued reflections on pathways toward UHC, under the leadership of the Ministry of Public Health (MOPH) and with support from the World Health Organization (WHO) and the European Union.[6]

The pathway to realizing UHC poses the challenge of ensuring a health workforce that can respond to the community needs. Reforms aiming to support the demand side consequently need to be accompanied by a strengthening of the supply side: a health workforce that is available, accessible, and acceptable and provides good quality services. Recent insights have shown that the formulation of interventions to educate, recruit, deploy, retain, and manage the performance of HRH for UHC requires evidence-based workforce planning based on an in-depth analysis of the health labor market.[7,8]

Multistakeholder workforce planning process in Guinea

Therefore, in 2012, the MOPH of Guinea started a process of 1) analyzing the current situation with regard to HRH providing MNH services;[3] 2) projecting future Human Resources for Maternal and Neonatal Health (HRMNH) needs and expected HRH availability following health sector demand and supply; 3) identifying relevant labor market interventions to address the mismatches in terms of availability, geographical accessibility, acceptability, and quality; and 4) analyzing the feasibility of these strategies.[9]

Multiple stakeholders (including Directorates from the MOPH, the Ministry of Public Service, the Ministry of Education, and representatives from health facilities) under the leadership of the MOPH Secretary General and the advisor to the Minister of Public Health were involved in the aforementioned stages of this consultative process. In November 2013, two workshops took place with national experts and stakeholders to develop and test the planning methodology. Given the priority of maternal and child health for the health sector in Guinea, the analysis focused primarily on human resources for maternal and neonatal health services. This article presents the health workforce projections that were used for the planning of the MNH workforce in Guinea.

Methods
Workforce planning methodologies for UHC

The purpose of workforce planning through projections is to establish long-term objectives for the expected HRH needs and match these with projections of the expected demand and supply of HRH. Doing this enables the rational identification of long-term HRH targets and of interventions to be implemented in the short, medium, and long-term to meet these targets.[10]

Developing the projections requires gathering a wide range of stock and flow data to model the health labor market demand and supply.[6] But at least as complex is the collection

and use of data to proxy the population needs for health services and to convert these needs into HRH requirements.[11] Projecting HRH requirements can be done on the basis of various methodologies or benchmarks that all aim to convert population health needs into HRH requirements, such as a workforce-to-population ratio, a health needs method, a service demand method, or a service target method.[10,12]

The service demand method is used in OECD (Organisation for Economic Co-operation and Development) countries with advanced workforce planning mechanisms, like Australia, the Netherlands, and the United Kingdom.[11,13–16] In the Netherlands for example, utilization rates in the previous years are used as proxy of population needs. These utilization rates are then translated into future HRH needs.[14] This is justifiable in a context where universal coverage is already achieved, as service demand can be assumed to equal service needs. However, even in these countries, there is a risk of projecting into the future current mismatches between need and utilization.[11]

In countries where UHC is not yet a reality, access barriers make that the actual population health service needs are higher than those reflected by the health service utilization rates.[7] For this reason, needs-based modeling is more appropriate than the service demand method in health systems where there is social and political commitment to UHC but where UHC is not yet a reality.[11]

Health labor market approach and workforce planning

At the same time, from a health labor market perspective, calls have been made upon policy makers to move away from needs-based methods for estimating workforce requirements, as an exclusive focus on boosting supply (ie, training more health workers) may not be sufficient in itself, without understanding role of and factors influencing demand (ie, employing more health workers). In a health labor market, the financial resources available determine the demand for HRH exerted by public providers, private providers, and donors. However, these financial resources rarely match the amount required to meet needs, in particular in low- and lower-middle income countries. The mismatch between "demand" (budgeted positions available) and "supply" (the pool of potential health workers available in a country) within the health labor market tends to be overlooked when departing from a needs-based planning of HRH.[17]

In light of the Republic of Guinea's commitment to UHC, a health needs method was used to project future HRH needs, but combined with deterministic modeling of both future health sector demand and supply, in order to arrive at a baseline scenario that shows need, demand, and supply so as to inform the development of targeted health labor market interventions tailored to the context of the health system in Guinea. The projection method was developed on the basis of the planning methodology designed for the H4+ High Burden Country Initiative in 2012.[18]

Projecting HRH requirements based on MNH needs

Figure 1 summarizes the various parameters and steps to be taken in the methodology. These steps are explained in more detail below. The methodology, parameters, and input data for the baseline scenario were discussed and determined with a group of international and national experts, including a demographer, public health experts, HRH experts, and (para)medical professionals.

Distribution of future pregnancies

As a first step in determining the needs for HRH, the national and United Nations (UN) population data, differentiated per age group and per sex, has been used to map human population distributions and to produce estimates of projected future numbers of pregnancies until 2025 within the eight regions of Guinea and for both urban and rural areas, taking into account population growth rates, urbanization rates, and age-, region-, and residence-specific fertility rates.[19] Between 2010 and 2025, the population of Guinea is expected to grow

Projecting HRH requirements
1. Determining the distribution of future pregnancies;
2. Definition of a package of services to be provided to pregnant women and need for these services;*
3. Defining key cadres required per service and division of the workload; and
4. Determining HRH productivity.

Projecting HRH supply and demand
5. Determining the current HRH stock;
6. Determining the average annual health sector demand (recruitment);
7. Determining the average annual inflow; and
8. Determining average annual attrition due to retirements, voluntary, and involuntary reasons.

Figure 1 Summary of the model: steps to be taken to arrive at the projections of staffing needs, supply, and demand.
Notes: *The package included family planning services around pregnancies and birth, four antenatal care visits, post-abortion care, skilled assistance of uncomplicated births, basic emergency obstetric and neonatal care, comprehensive emergency obstetric and neonatal care, three postnatal care visits, and care for neonates with complications.
Abbreviation: HRH, human resources for health.

from 10,876,000 to 15,590,000.[20] In the same period, the number of pregnancies per year increases from 484,884 to 745,800. In 2010, about 73% of these pregnancies took place in rural areas; in 2025 this will be 62%.

Package of MNH services to be provided

Subsequently, a package of MNH services for these pregnant women was defined, based on a nationally defined package of key contact moments during pregnancy and birth. These contact moments are described under Figure 1. During these consultations, essential reproductive, maternal and neonatal health services are provided according to the national standards. The percentage of pregnant women in need of these services was determined.

Key cadres required per service and division of the workload

The primary responsible cadres that should be delivering these services in Guinea were identified as the IDE, SF, MG, gynecologists (GYN), and pediatricians (PED). ATSs have an important role in supporting these cadres in the provision of MNH services, but are not considered skilled birth attendants. Per service within the package of MNH services, a normative division of the workload between the five key cadres was made by experts from the MOPH and representatives of the professional organizations. Their consensus was based on normative policies and guidelines on "who should be doing what" on the one hand, and data collected on "who is currently doing what" on the other hand. The latter was part of the assessment at the facility level. In the normative division of work, SFs should be the key cadre in providing the services related to uncomplicated deliveries and basic emergency obstetric and neonatal care, assisted by IDEs and MGs who also handle a part of the workload. GYNs should provide the majority of the comprehensive emergency obstetric and neonatal care, with the assistance from MGs, and PEDs should provide the care to neonates with complications.

Productivity

Thereafter, the following steps from the Workload Indicators of Staffing Needs (WISN) methodology were used to calculate the theoretical productivity of HRH: estimating working time available, setting activity standards or time needed per activity, and calculating the time needed for activities other than direct service delivery per cadre.[21] In Guinea, HRH have an estimated 210 working days per year available for work, but in reality, absenteeism and dual practice

are known to limit the working time of HRH in the public sector significantly.[8,17] However, as no data were available to estimate these actual working hours, the theoretical and optimal working time was used.

The set of activities was determined per cadre and included the package of MNH activities, the other non-MNH activities, and support activities such as meetings, preparatory activities, or reporting. Based on health facility data and discussions with national and international experts, activity standards were defined per MNH activity, and an informed estimate was made of the percentage of the time dedicated per cadre to specific MNH services, to non-MNH services, and to support activities. For SFs, for example, the time dedicated to non-MNH services and support activities was estimated at, respectively, 0% and 20%, indicating that 80% of their time is available for MNH services. For IDEs, time dedicated to MNH services was assumed to be 20%, while another 30% of the time is dedicated to support activities. These productivity estimates, which were assumed to remain constant over time, allowed for converting the target population and the package of services into HRH needs for the provision of MNH services, per cadre, per year, per region, and per residence.

Projecting HRH demand and supply

After projecting HRH needs, a second step was to project the future HRH supply or availability (ie, the HRH employed to provide those services). Following a joint assessment of various health labor market dynamics and parameters, a stock and flow model for estimating workforce supply was prepared. The model distinguished between the pool of potential service providers, which comprises new graduates and other qualified but unemployed HRH ("supply" in health labor market terms) and the budget and employment opportunities available ("demand" in health labor market terms). The methodology (summarized in Figure 1) comprised the following steps:

1. Current "stock" employed in the health system, per employer and per payment mechanism
   A 2009 survey disaggregated the health workforce data by sex, age, marital status, type of health facility, residence (urban or rural), type of contract (employer; fulltime or part-time), and salary scale.[22] In Guinea, 52% of the HRH are female, although differences exist between cadres (eg, practically all SFs are female and around 60% of IDEs and ATSs are female). The average age of the workforce is 45.3 years. Practically no MG or specialists work in rural areas; for SF and IDE this is, respectively, 8% and 11%.

With regard to the ATSs, 31% work in rural areas. In the absence of trend data, these percentages were introduced as constant parameters into the projections. Practically all HRH have a fulltime contract, and therefore the headcount data on the 2009 HRH stock was assumed to equal the availability of HRH in fulltime equivalent (FTE).

One mechanism for HRH recruitment is a centrally organized, periodic group vacancy notice followed by submission of applications and a test (the concours[23]). After this civil service recruitment process, the selected candidates are integrated in the civil service scheme (statut général), on the basis of a permanent civil servant contract which includes specific arrangements for the health workforce (statut particulier). However, not all advantages for the health workforce that were agreed upon in this statut particulier of 2008 have come into effect, as for many provisions, insufficient budget is available. On average, about 80% of the HRH that are involved in the provision of MNH work within this civil service scheme, according to the 2009 HRH survey. The other 20% work as a contractor in the public or private sector.

A job in the civil service is the preferred option for most HRH, as this entails a job guarantee – even though financial benefits in the private sector are higher. However, in the past 10 years, only in 2005, 2011, and 2014, the civil service recruited HRH through this group vacancy notice. This means that after graduation, the potential supply of health professionals has to wait for months or years before being able to take part in the civil service recruitment process. In the meantime, they work as independent contractors in the public or private sector, as volunteers, are unemployed, or they leave the Guinean health sector altogether. The pool of volunteers, unemployed HRH or HRH who have left the health sector or the country is unknown. As part of data collected in 13 health facilities in Guinea, five out of 38 interviewed HRH involved in the provision of MNH services appeared to work at the facility as volunteers, some already for years.[8]

Payment of civil servants is arranged at the central level by the Ministry of Public Service. Payment of HRH contracted by the public or the private sector is arranged by the health facilities, the district or regional health authorities, or the communities that employ the HRH. Discussions with stakeholders indicated that volunteers are likely to generate their income through informal payments.[8]

2. Average annual demand (recruitment) of HRH
   In principle, the number of HRH to be recruited is determined every year by the Ministry of Public Service, based

on a proposal of the MOPH. However, the last two rounds were organized in 2007 (the actual deployment took place in 2011) and in 2014.[8] This prevented performing a trends analysis to estimate the future average annual recruitment through the civil service recruitment process. Based on these two rounds since 2007, an assumption was made that in the baseline scenario (the scenario in which the country would continue with its "business as usual") a civil service recruitment process would be organized every 4 years. It was estimated that the number of new hires in future recruitment rounds would be equal to the average number of staff employed in the rounds of 2011 and 2014.

No data were available on the annual number of contractors that are recruited in the public and private sector. Consequently, this part of the stock and flow model is unaccounted for in the supply projections. In order to compensate for this lack of information on annual recruitment, the HRH requirement projections were expressed at 85% instead of 100% of the total population needs for HRH providing MNH services. It was assumed that the other 15% of the services would be provided by these independent contractors in the public and the private sector that are not included in the supply-side projections. This assumption was informed by the aforementioned information that 12% of the population receives birth assistance in the private sector and that around 20% of the workforce is composed of contracted HRH.[1,22]

3. Average annual supply of new graduates
   The 2012 health workforce analysis[22] and information retrieved through experts provided data on the capacity and annual number of graduates from Guinea's health training institutes between 2006 and 2010. In consultation with national experts and stakeholders, this information was used to arrive at assumptions on the expected average number of graduates per year per cadre. The percentage of these graduates willing to work in the national health sector was not known, but in 2007 and 2014 the number of applications for the civil service recruitment process exceeded the number of places available. Based on the data from the 2009 HRH survey, the number of foreign trained staff working in the health sector in Guinea is negligible. Inflow from HRH returning to the health sector in Guinea was unknown and was therefore not included as a variable in the projections.

4. Average annual attrition
   Based on the dates of births as registered during the 2009 HRH survey and the retirement age per cadre, the workforce exits due to retirement until 2025 were forecasted.

However, no other data were available on percentages and reasons for voluntary and involuntary attrition per year. The average annual attrition rate for reasons other than retirement was estimated at 7% for MGs and specialists (as they tend to migrate more often) and 5% for IDEs, ATSs, and SFs; these attrition estimates were made in consultation with national experts and are based on information available in the international literature.[17]

Scenario planning

The described parameters and values informed one "baseline scenario" of the projected workforce need, demand, and supply between 2014 and 2024. This represented a scenario in which current demographic trends continue and current training, recruitment, and deployment efforts, or "business as usual" would be maintained and no additional strategies or interventions would be implemented. This baseline scenario included disaggregated data on HRH requirements and supply ("demand" in health labor market terms) per region, setting (urban or rural), and cadre.

The projections enabled the identification of the challenges related to the universal availability and accessibility of HRH for MNH between 2014 and 2024, per cadre, region, and setting. After identification of the major challenges, the health labor market framework[6,17,23–25] was used to identify targeted and feasible interventions to improve the availability and distribution of HRH; these interventions were then translated into changes in the values of the projection parameters described above. This allowed for producing an alternative ("policy rich") scenario B modeling the impact

of such interventions on the availability and distribution of HRH, per region, setting (urban or rural), and cadre.

Results

The baseline scenario showed the projected HRH needs and supply of MGs, IDEs, SFs, GYNs, and PEDs in Guinea between 2014 and 2024.

As is shown by Figure 2, Guinea's population would need 5,981 qualified HRH to act as principal care providers in the provision of the package of MNH services in the public sector in 2014. This required workforce should comprise 2,674 IDEs; 2,263 SFs; 942 MGs; 43 GYNs; and 59 PEDs. The 2014 supply of these cadres (the employed HRH) is 49% of the needs. While the HRH needs are projected to increase by 22% in the coming decade due to trends in population growth and expected pregnancies, the supply of HRH is projected to decline by 15% under the assumptions of the model (which represent the situation in which current in- and outflows are maintained), leading to a projected decline in coverage rate of HRH needs from 49% to 34%.

Figure 3 shows the average number of graduates per year (the pool of potential HRH; ie, the supply) and the average number of recruits per year in the public sector (the public sector demand). This figure shows that simply training more HRH will not solve the problem, as every year, 671 ATSs, 24 IDEs, 16 SFs, and 230 MGs are being trained and enter the health labor market without being recruited into the civil service. Therefore, accelerating progress in increasing the availability of HRH in Guinea requires that recruitment efforts be scaled up, targeting the
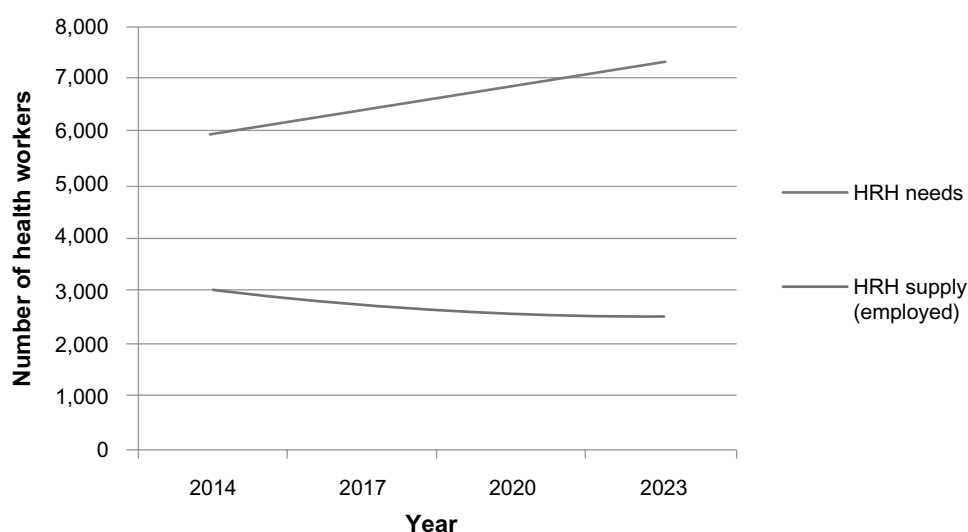
Figure 2 The evolution of the HRH needs and supply (IDE, SF, MG, GYN, and PED) in Guinea – baseline scenario.
Abbreviations: GYN, Gynécologue (gynecologist); HRH, human resources for health; IDE, Infirmier Diplômé d'Etat (nurse); MG, Médecin-Généraliste (physician); PED, Pédiatre (pediatrician); SF, Sage-Femme (midwife).
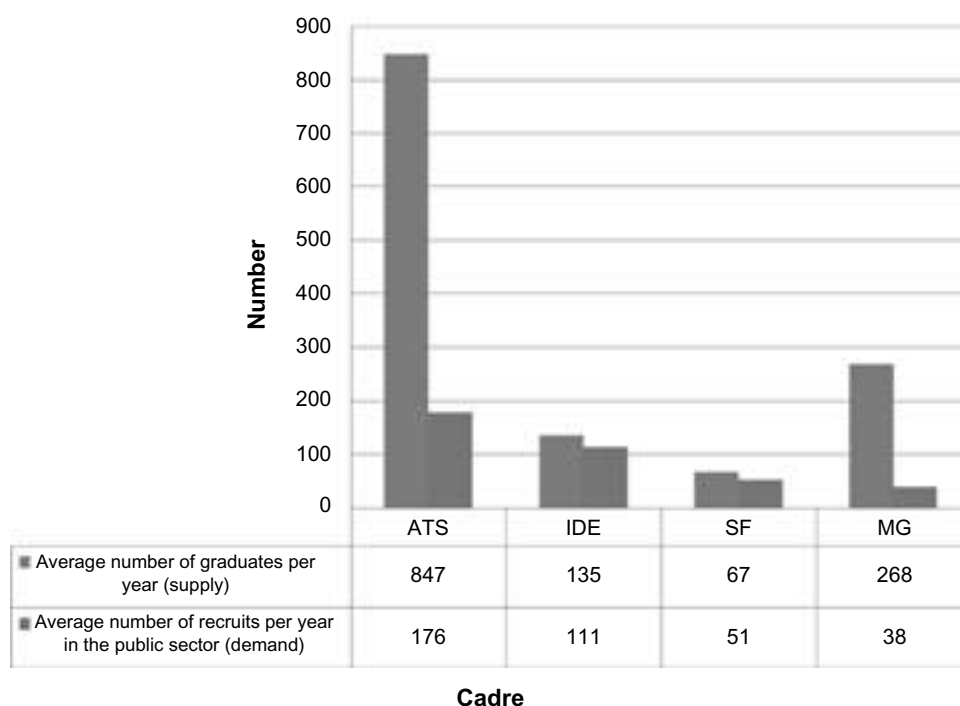
Figure 3 Average annual training ("supply") and public sector recruitment ("demand") for ATS, IDE, SF, and MG in Guinea – baseline scenario.
Abbreviations: ATS, Agent Technique en Santé (auxiliary nurse); IDE, Infirmier Diplômé d'Etat (nurse); MG, Médecin-Généraliste (physician); SF, Sage-Femme (midwife).

right cadres and the right geographical locations in order to maximize benefits.

The overall availability of 49% of the HRH needed to meet the needs of the population for MNH services at the national level actually masks differences among cadres, which vary from 18% for SFs to 254% (a surplus) for GYNs. Figure 4 shows a more detailed picture, in which the 2014 need and supply is shown per cadre. For IDEs and SFs, the supply is not meeting the need. The supply of MGs, GYNs,

and PEDs on the other hand seems to meet and even exceed the population needs. Furthermore, Guinea employs a large workforce of ATSs who are not considered skilled birth attendants; this pool is 1.3 times as large as the entire pool of employed IDEs, SFs, MGs, GYNs, and PEDs together.

Table 1 demonstrates the extent to which the supply will meet the population needs in the coming years. Even though the supply of MGs in 2014 seems sufficient, the supply will fall short in the coming years, if no action is undertaken to
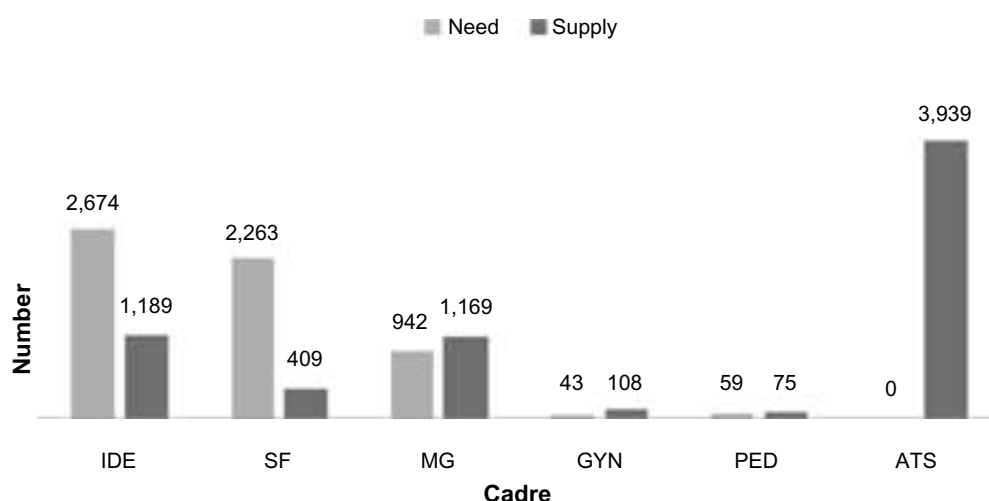
Figure 4 Needs and supply of HRH in Guinea per cadre (2014).
Abbreviations: ATS, Agent Technique en Santé (auxiliary nurse); GYN, Gynécologue (gynecologist); HRH, human resources for health; IDE, Infirmier Diplômé d'Etat (nurse); MG, Médecin-Généraliste (physician); PED, Pédiatre (pediatrician); SF, Sage-Femme (midwife).

Table 1 Projected availability of HRH as a percentage of the needs ("coverage") and gap between HRH needs and supply at the national level in Guinea – baseline scenario

	2014	2017	2020	2023
Coverage (supply/needs)				
IDE	44%*	38%*	35%*	34%*
SF	18%*	17%*	18%*	19%*
MG	124%	101%	80%*	61%*
GYN	254%	217%	166%	147%
PED	128%	144%	139%	138%
Gap (supply – needs)				
IDE	−1,485*	−1,776*	−1,994*	−2,143*
SF	−1,854*	−2,001*	−2,108*	−2,239*
MG	227	15	−220*	−444*
GYN	66	54	32	24
PED	17	27	26	28
ATS	3,939	3,513	3,014	2,592

Note: *HRH supply does not meet the need.
Abbreviations: ATS, Agent Technique en Santé (auxiliary nurse); GYN, Gynécologue (gynecologist); HRH, human resources for health; IDE, Infirmier Diplômé d'Etat (nurse); MG, Médecin-Généraliste (physician); PED, Pédiatre (pediatrician); SF, Sage-Femme (midwife).

change current in- and outflows. The gap or unmet need for IDEs and SFs will increase to, respectively, 658 and 385 FTE between 2014 and 2024.

Subsequently, we analyzed the geographical distribution of the HRH needs and supply in order to arrive at an estimate of current and future geographical accessibility. Figure 5 shows that all regions face suboptimal availability of HRH to ensure UHC in rural areas. In urban areas, the overall availability is aligned with needs, with the exception of the capital Conakry, where an oversupply of 1,263 HRH exists. This mismatch between HRH need and availability is most prominent in the rural areas the N'Zérékoré, Kankan, and Kindia regions.

Figure 6 shows that for all cadres except the SFs, HRH availability exceeds HRH needs in urban areas, while it does not meet the needs in rural areas. Only for SFs, the supply does not meet the needs in both urban and rural areas in Guinea.

Table 2 below shows the extent to which the staffing needs are being met by current and future projected supply. This is shown per cadre, and for urban areas (upper rows in red) and rural areas (lower rows in green). The relation between need and supply is shown in percentages (supply as a percentage of the need) and in absolute numbers of staff (supply minus the need). The results show that in rural areas, the supply is actually no more than 7% of the needs, irrespective of the cadre.

Health labor market interventions and their potential effects

The HRH analysis based on the projections described above provided input to a multisectoral HRH policy dialogue in which

evidence, lessons learned, and positive experiences from the local, national, and international level informed the formulation of several health labor market interventions in Guinea.[26]

During this policy dialogue and following discussions between stakeholders from various levels within the health system and from non-health sectors, participants selected the following interventions for further analysis, with the aim to improve the availability, accessibility, and acceptability of HRH:

1. Reorganization of the civil service recruitment process into an annual recruitment effort as of 2015, during which among other cadres, 111 IDEs and 51 SFs are recruited per year. The baseline scenario does not foresee recruitment in 2015, 2016, and 2017, so this would also impact positively on the availability of HRH. The 2015–2017 recruits should be deployed in the rural areas of the most deprived regions of N'Zérékoré and Kankan.

2. Integration of the possibility to rotate within and/or between regions in the deployment regulations, after having served at least 3 years in a rural area.

3. Housing and child education allowances for HRH in rural areas.

4. Transformation of the ATS training institutes in N'Zérékoré and Kankan into IDE and SF training institutes with a projected yearly 110 output of eligible ATSs who are upgraded to SF or IDE, starting with the ATSs from N'Zérékoré and Kankan, in order to increase the pool of skilled birth attendants by using the currently available and experienced stock. According to their civil service contract, ATSs have the right to upgrade their qualifications to IDE or SF after 10 years of experience. The 2009 HRH survey[22] showed that practically all SFs are female and around 60% of ATSs and IDEs are female. This needs to be taken into account in the further analysis or future implementation of this intervention, as a male birth attendant might be less acceptable to the population.

5. Include the decentralization of the payment mechanisms of HRH in ongoing decentralization efforts, in order to ensure payment at the level of the urban and rural communities, with the aim to increase presence of HRH at their posts.

Scenario modeling showed that the implementation of this package of interventions between 2015 and 2017, has the potential to increase the availability of HRH from 38% of the needs in the baseline scenario (reference year 2020) to 52% of the HRH needs in the policy rich scenario (in the same reference year). For IDEs, this would be an increase from 35% to 51%, while for SFs, the potential impact would be an increase from 18% to 36%.

Figure 5 Projected difference between HRH needs and supply in Guinea, per region and for both urban and rural areas (2014).
Notes: A value of 0 indicates an equilibrium in which the supply is aligned with the needs. A negative value indicates a shortage, whereas a positive value indicates a deficiency.
Abbreviation: HRH, human resources for health.

The package of interventions would particularly impact positively on the rural zones, where between 2015 and 2020, the HRH availability would increase to 20% of the needs by 2020, instead of 4% in the baseline scenario. For IDEs, this would be an increase from 6% to 26%, while for SFs, the potential impact would be an increase from 2% to 20%. This is shown in Table 3, which compares the coverage of HRH requirements in the baseline scenario A with the potential coverage of the HRH needs under the policy rich scenario B in which the package of interventions is implemented.

Discussion
A needs-based methodology for workforce planning in countries committed to UHC, using a health labor market perspective

In many low- and middle-income countries, the service demand approach is applied to estimate health workforce requirements – for example, through the use of the WISN methodology. This service demand method converts past service utilization rates into staffing requirements per health facility, using time standards and productivity rates per activity, which enables setting of staffing requirements ("establishment") and the identification of interventions to enhance efficiency and equity in the distribution of HRH across facility types. The methodology can be adapted by integrating population growth trends.[21,27] However, potential future changes in access and utilization rates are not included in this demand-based approach to inform

projections of future staff requirements. Therefore, we used a health needs method to project future workforce requirements in the Republic of Guinea, so as to establish long-term objectives which reflect the country's commitment to achieving UHC.

The government's budget allocation to HRH and regulatory mechanisms such as licensing of public and private providers play an important role in shaping health labor market forces.[17] These interventions need to be informed by projections of HRH requirements based on population health needs, in order to shape a health labor market that is aligned as much as possible with population needs.[6] After determining the HRH needs based on 85% coverage rates, the methodology allowed for setting more realistic service targets per service, in order to set more realistic short-, medium-, and long-term goals if needed, informed by current utilization rates and the budget available for the health sector and the workforce.

The methodology provided an excellent starting point for a new way of planning for HRH in Guinea in light of the UHC objective and the population needs, making use of latest insights from health labor market dynamics and technologies to project future distribution of the population. These health labor market dynamics differ per region, per setting, and per cadre, and projecting them through the development of the baseline scenario allowed for the development of targeted and relevant health labor market interventions which can be instrumental to increase the availability of HRH according to a detailed account of the needs, as a crucial step in achieving UHC.
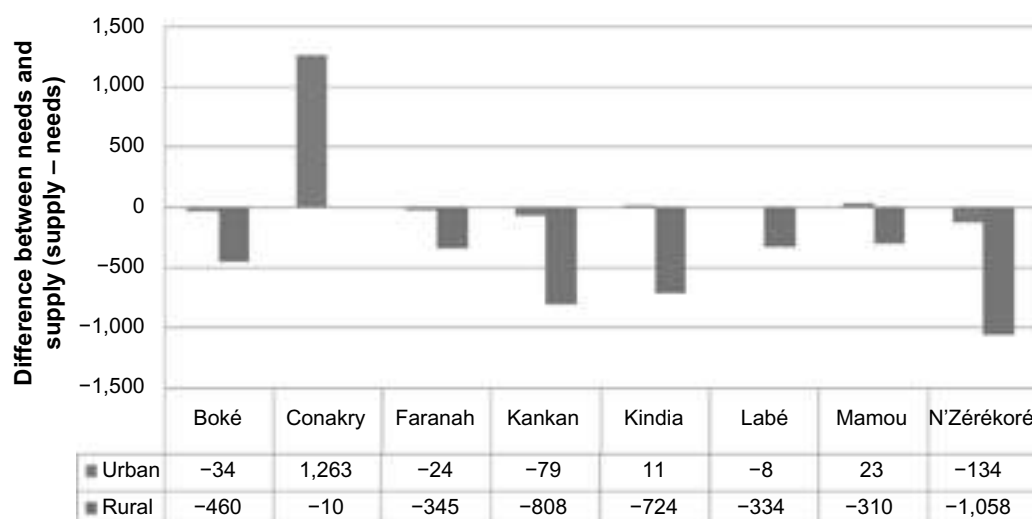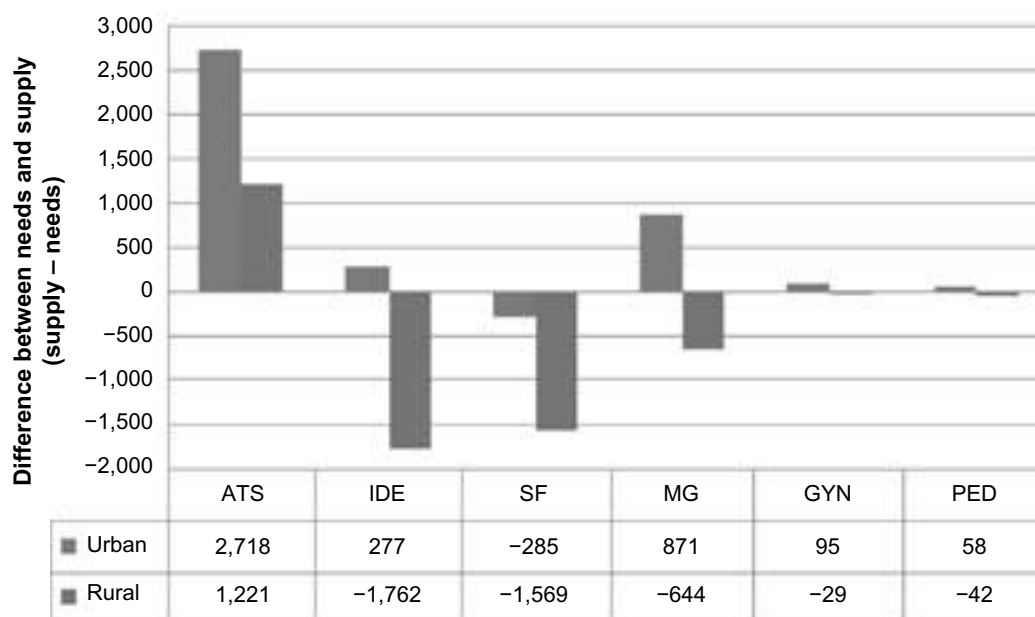
Figure 6 Projected difference between HRH needs and supply in Guinea, per cadre and for both urban and rural areas (2014).
Notes: A value of 0 indicates an equilibrium in which the supply is aligned with the needs. A negative value indicates a shortage, whereas a positive value indicates a deficiency.
Abbreviation: HRH, human resources for health; ATS, Agent Technique en Santé (auxiliary nurse); GYN, Gynécologue (gynecologist); IDE, Infirmier Diplômé d'Etat (nurse); MG, Médecin-Généraliste (physician); PED, Pédiatre (pediatrician); SF, Sage-Femme (midwife).

Table 2 Projected availability of HRH as a percentage of the needs (supply divided by the need, or "coverage") and in absolute figures (supply minus the need) in urban and rural settings in Guinea – baseline scenario

Coverage	2014	2017	2020	2023
Coverage (supply/needs; %) in urban areas				
IDE	135%	110%	96%	90%
SF	57%*	52%*	53%*	51%*
MG	416%	324%	243%	178%
GYN	862%	702%	512%	431%
PED	439%	469%	432%	410%
Coverage (supply – needs; number of staff) in urban areas				
IDE	277	89	−35*	−109*
SF	−1,762*	−1,866*	−1,959*	−2,034*
MG	871	694	495	302
GYN	95	84	64	58
PED	58	71	72	75
Coverage (supply/needs) in rural areas				
IDE	7%*	6%*	6%*	6%*
SF	2%*	2%*	2%*	2%*
MG	4%*	3%*	2%*	2%*
GYN	4%*	3%*	2%*	2%*
PED	0%*	0%*	0%*	0%*
Coverage (supply – needs) in rural areas				
IDE	−1,762*	−1,866*	−1,959*	−2,034*
SF	−1,569*	−1,646*	−1,718*	−1,784*
MG	−644*	−679*	−714*	−746*
GYN	−29*	−31*	−32*	−34*
PED	−42*	−44*	−46*	−47*

Note: *HRH supply does not meet the need.
Abbreviations: GYN, Gynécologue (gynecologist); HRH, human resources for health; IDE, Infirmier Diplômé d'Etat (nurse); MG, Médecin-Généraliste (physician); PED, Pédiatre (pediatrician); SF, Sage-Femme (midwife).

Methodological challenges

The model presented for the calculation of the population HRH needs departs from a clearly defined package of MNH services that is to be offered to a clearly defined population (pregnant women) within a clearly delineated period of time (10 months). The model becomes more complicated when the entire population, and the entire package of services is to be taken into account. We addressed this limitation by allocating a percentage of the working time per cadre to "non-MNH"

Table 3 Comparison between the availability of HRH as a percentage of the needs ("coverage") in the baseline scenario (A) and the intervention scenario (B)

Coverage	Scenario					
	A	B	A	B	A	B
	2017		2020		2023	
National level						
IDE	38%	49%*	35%	51%*	34%	48%*
SF	17%	28%*	18%	36%*	19%	33%*
Total	43%	52%*	38%	52%*	34%	46%*
Urban areas						
IDE	110%	No	96%	No	90%	No
SF	52%	change	53%	change	51%	change
Total	130%		109%		95%	
Rural areas						
IDE	6%	19%*	6%	26%*	6%	24%*
SF	2%	12%*	2%	20%*	2%	18%*
Total	4%	14%*	4%	20%*	4%	18%*

Note: *Improvements in scenario B in comparison to scenario A.
Abbreviations: HRH, human resources for health; IDE, Infirmier Diplômé d'Etat (nurse); SF, Sage-Femme (midwife).

services. This means that increasing the availability of HRH for MNH also implies increasing the time available for "non-MNH" services. However, the exact package of services that can be delivered within this time and to what extent it is truly aligned with the population needs for non-MNH services and changes in the burden of disease is not (yet) addressed in this model.

An added value of this flexible, context-specific, and needs-based methodology is that it moves from monitoring and analysis of the health workforce to strategic planning in which future changes in demographic contexts (population growth, urbanization and expected number of pregnancies) and future resource allocation to salaries of HRH in the public sector are included. However, the strategic planning could be improved by including trend analysis or horizon scanning on additional future developments in the areas of demographics (such as an aging population and an aging workforce), economics and financing (such as increases in the health sector budget or changes in health financing mechanisms), socio-cultural characteristics (such as changes in service delivery expectations or the introduction of gender-specific HRH strategies), or developments in the allocation and division of tasks, innovations in the organization of work processes, and productivity. These or other trends potentially change future workforce needs, demands, and supply.[15] At the same time, this would add to the complexity of the approach and make it less user-friendly.

Availability of data, competencies, and software at the national level

Various available data sources were consulted in order to inform the workforce projections in Guinea, but (reliable) information lacked on specific elements. Future public sector recruitment plans and budgets available for HRH appeared unknown and highly unpredictable. Information was lacking on voluntary and involuntary attrition rates and recruitment of contracted HRH in the public and private sector. Therefore, workforce projections must be re-evaluated and adjusted on a regular basis in order to 1) add data once new data becomes available and 2) update data in order to ensure that the projections remain accurate over time.

This regular re-evaluation and adjustment requires in-depth understanding of HRH planning methodologies and health labor market dynamics. At the same time, this requires practical, context-specific and easy-to-use software to produce the projections and calculations. The National Observatory for HRH could serve as the institution to safeguard these capacities.

The political side of workforce planning

Workforce planning is essential to rationalize decisions and guide investments, in order to ensure that the health workforce is able to meet future challenges within a context of limited resources.[10] However, improving the evidence-base does not necessarily imply that workforce decisions and investments are made in a more rational way from a technical point of view. During the first policy dialogue in Guinea, during which stakeholders from various sectors jointly worked on the identification of interventions to address the challenges highlighted by the projections, legal, political, financial-economic, social, and institutional barriers to technically ideal solutions became apparent. We found for example that it can be politically sensitive to use a planning methodology or design interventions that target a specific set of cadres (such as IDEs or SFs), specific services (such as maternal and newborn health services), or to develop interventions that target specific underserved regions, as other groups may feel their interests are not taken into account in the same way.

Increasing efficient use of resources also appeared difficult, as it can be perceived to conflict with interests of other groups, but also because resources saved on one budget line (such as pre-service training of health professionals) cannot easily become available for an intervention that is financed from another budget line (such as supervision). An example was the proposal to replace ATS training places by IDE and SF training places, as each year 670 ATSs are being trained without being recruited in the civil service scheme. Yet, stakeholders preferred to establish additional IDE and SF training places, without reducing the number of ATS training places. Another example was the proposal to reduce the number of students who enter medical training in the first year, as the attrition rate during the training is very high. When the entry criteria become stricter, resources for scholarships can be saved and reallocated, for example, to increase the number of faculty. However, this was not considered desirable by participants in the policy dialogue, as this would affect students' chances of being admitted to medical training, and was therefore politically sensitive.

The fact that most HRH are integrated in the civil service scheme also limits, on the grounds of equality, the possibilities of introducing selective retention measures such as continuous professional development or career advancement opportunities for specific cadres and/or for HRH who have served in rural areas. Another example of a regulatory context in Guinea is the fact that current legislation prescribes that ATSs can only receive training which upgrades them to IDE or SF after 10 years of serving in the public service.

Even in short-term operational plans, it is politically easier to formulate general strategies that are beneficial to all cadres, all services, and all regions and settings, rather than to make difficult reallocation choices which generate resistance from stakeholders who feel that their interest has not been taken sufficiently into account.

Therefore, the next phase of the policy dialogue should contain a further analysis of the feasibility of the various interventions. The aim of this analysis is to gather insight into the various positions and arguments against and in favor of the interventions and to provide stakeholders with evidence regarding the costs and impact of the proposed interventions, their financial, political, social, and operational feasibility, and consequently the trade-offs that need to be made.

Translation of planning to the operational level

The methodology assumes the availability of infrastructure, equipment, supplies, and other professional support in the locations where the need for HRH is identified. Therefore, the "authoritative national approach," which has the advantage of using a consistent methodology and national data,[16] needs to be discussed and agreed upon with the authorities of the targeted geographical areas. The central level planning process needs to be translated into planning at the regional or district level: where are facilities located, can they absorb additional staff, and are infrastructure, equipment, and supplies available to ensure productive and performing HRH in these underserved areas?

Conclusion

The analysis provided and quantified several major insights that need to be addressed by the interventions. First of all, national aggregates of HRH needs and supply mask important differences in dynamics between cadres, regions, and residence areas. Secondly, the dynamics change over time. Projecting workforce requirements and availability needs to take into account future dynamics of population growth and demographics,[28] as well as a trend analysis or horizon scanning regarding future resource allocation to HRH training and remuneration. And thirdly, important opportunities exist for improving efficiency in the training, recruitment, and deployment of HRH in Guinea in order to optimize the use of financial and human resources available. Examples are the fact that more HRH are being trained than deployed; that the irregular organization of the civil service recruitment process results in a potential supply of HRH who are being put on hold for a long period of time before

they are being used effectively; that an oversupply of staff exists in urban areas; and that a large pool of employed ATSs is available that is actually not considered to fully meet the competencies required for the provision of MNH services. A relative oversupply of specialists versus an absolute shortage of other cadres, and a concentration of health workers in urban areas are not unique to the health system in Guinea, but the quantification of these imbalances provides an opportunity for rationalizing and making more equitable the health workforce production and deployment in the country.

The use of existing evidence on the potential of a more diverse skills mix in rationalizing the health workforce configuration[29–31] and effective strategies to facilitate health workers' retention in rural and remote areas,[32] as well as multistakeholder involvement under the guidance of high-level decision makers within the government, appeared important facilitators in the identification of relevant and feasible interventions to be integrated in the health sector plans in Guinea.

The path toward UHC requires reforms in order to improve the availability, accessibility, and performance of HRH. This cannot be done without carefully estimating the population needs and the formulation of targeted interventions to train, recruit, deploy, retain, and manage the performance of HRH based on a good understanding of the dynamics of the health labor market. The case of Guinea has shown that projections of needs-based HRH requirements, in combination with projections of the HRH demand and supply, based on a good understanding of the health labor market, allow for the formulation of targeted interventions and the modeling of these interventions into scenarios in order to estimate their potential impact. This evidence-base has greatly supported the multistakeholder and multisectorial policy dialogue that took place in Guinea, indicating that improving health worker availability will require scaling up recruitment efforts in future.

However, political factors and the existing health system organization at the central and local level have to be acknowledged: evidence as a basis for a joint situational analysis is crucial in the design of interventions, but policy follows a path-dependent pattern, and therefore the background and context become of paramount importance in determining the political feasibility of alternative policy options and the ultimate choice of policy reforms.[33] Therefore, the policy dialogue in Guinea will need to reflect on the economic, political, social, and operational feasibility of the interventions in the Guinean

context, in order to increase the likelihood of successful implementation.

Acknowledgments

Disclosure

The authors declare that they have no competing interests.

References

1. Ministère du Plan – Direction Nationale de la Statistique. *Enquête Démographique et de Santé* [Demographic and Health Survey]. Conakry; 2012. French.
2. Ministère de la Santé Publique. *Plan National de Développement Sanitaire 2003–2012* [National Health Development Plan 2003–2012]. Conakry; 2003. French.
3. Health Focus GMBH. *Étude de cas de la situation des personnels liés à la pratique sage-femme en Guinee (rapport provisoire)* [Case study on the situation of the midwifery workforce in Guinea (provisional report)]. Conakry; 2013. French.
4. Global Health Workforce Alliance. *Human Resources for Universal Health Coverage: a template for eliciting commitments. Draft July 4, 2013*. Geneva: Global Health Workforce Alliance; 2013.
5. Delamou A, Dubourg D, Kolie J, et al. Impact de la gratuité de la césarienne sur le niveau des besoins obstétricaux non couverts dans le district sanitaire de Kissidougou, Guinée. In: *Presentation during the Meeting of the Community of Practice on Financial Access to Health Services: Politiques d'exemption pour les services de santé maternelle en Afrique: évaluation, expériences et partage des connaissances* [Exemption policies for maternal health services in Africa: evaluation, experiences and sharing of knowledge]. Ouagadougou: Community of Practice on Financal Access to Health Services; 2013. French.

6. Ministère de la Santé Publique. *Stratégie nationale de financement de la santé vers la couverture sanitaire universelle en Guinée – version provisoire* [National Health Financing Strategy towards Universal Health Coverage in Guinea - provisional version]. Conakry: Republique de la Guinee; 2014. French.
7. Sousa A, Scheffler RM, Nyoni J, Boerma T. A comprehensive health labour market framework for universal health coverage. *Bull World Health Organ*. 2013;91(11):892–894.
8. McPake B, Witter S, Ensor T, et al. Removing financial barriers to access reproductive, maternal and newborn health services: the challenges and policy implications for human resources for health. *Hum Resour Health*. 2013;11(1):46.
9. Jansen C, Dieleman M, Codjia L. *Les ressources humaines en santé maternelle et néonatale en Guinée de 2014 à 2023 – Planification stratégique*. [Human resources in maternal, newborn and child health inBenin: strategic planning for 2014 to 2024]. Amsterdam, Geneva, Conakry; 2013. French.
10. World Health Organization. Models and tools for health workforce planning and projections. *Hum Resour Heal Obs*. 2010;(3).
11. Senese F. Planning future human resources for health across EU: towards a common integrated framework and needs-based modeling. In: *Young Forum Gastein Poster Session*; October 2–4, 2013. Bad Hofgastein: International Forum Gastein (IFG); 2013.
12. Suphanchaimat R, Wisaijohn T, Thammathacharee N, Tangcharoensathien V. Projecting Thailand physician supplies between 2012 and 2030: application of cohort approaches. *Hum Resour Health*. 2013;11(1):3.
13. Matrix Insight. *EU level Collaboration on Forecasting Health Workforce Needs, Workforce Planning and Health Workforce Trends – A Feasibility Study*. Brussels: Matrix Insight; 2012.
14. Batenburg R, van der Lee I, Wiegers T, van der Velden L. *De arbeidsmarkt voor verloskundigen in 2012 en 2022/2027: een capaciteitsraming op basis van beleidsrijke scenario's* [The labor market for midwives in 2012 and 2022/2027: an estimate of capacity based on policy-rich scenarios]. Utrecht; 2013. Dutch.
15. McCarty MV, Fenech BJ. Towards best practice in national health workforce planning. *Med J Aust*. 2012;1(3):10–13.
16. Buchan J, Seccombe I. Using scenarios to assess the future supply of NHS nursing staff in England. *Hum Resour Health*. 2012;10(1):16.
17. Soucat A, Scheffler RM, Adhanom Ghebreyesus T, editors. *The Labor Market for Health Workers in Africa: a New Look at the Crisis*. Washington DC: World Bank; 2013.
18. HBCI Secretariat and Technical Working Group. *H4 + High Burden Countries Initiative National Assessments – midwifery workforce: operational guidance and assessment framework*. Geneva: HBCI Secretariat and Technical Working Group; 2012.
19. Tatem AJ, Campbell J, Guerra-arias M, Bernis L De, Moran A, Matthews Z. Mapping for maternal and newborn health: the distributions of women of childbearing age, pregnancies and births. *Int J Health Geogr*. 2014;13(2):1–11.
20. United Nations Population Division. World Population Prospects: The 2012 Revision – Total population. 2012. Available from: http://esa.un.org/wpp/Excel-Data/population.htm. Accessed October 14, 2014.
21. World Health Organization. *Workload Indicators of Staffing Need*. Geneva: World Health Organization; 2010.
22. Camara Y-B, Diallo AT, Bah AA. *Analyse de situation des ressources humaines pour la sante: rapport provisoire* [Situation analysis of human resources for health: provisional report]. Conakry; 2012. French.
23. Vujicic M, Ohiri K, Sparkes S, Martineau T. *Working in Health: Financing and Managing the Public Sector Health Workforce*. Washington DC: The World Bank; 2009.
24. Scheffler RM. The labour market for human resources for health in low- and middle-income countries. *Hum Resour Heal Obs*. 2012;(11). Available from: http://www.who.int/hrh/resources/Observer11_WEB.pdf. Accessed October 14, 2014.
25. Vijicic M, Zurn P. The dynamics of the health labour market. *Int J Health Plann Manage*. 2006;21(2):101–115.

26. Ministère de la Santé Publique. *Voies d'engagements en matière de RHS* [Human Resources for Health Commitments]. Presented at the Third Global Forum on HRH in Recife, Brazil. Conakry; 2013:1–4. French.

27. McQuide PA, Kolehmainen-Aitken RL, Forster N. Applying the workload indicators of staffing need (WISN) method in Namibia: challenges and implications for human resources for health policy. *Hum Resour Health*. 2013;11:64.

28. Campbell J, Dussault G, Buchan J, et al. A Universal truth: no health without a health workforce. In: *Forum Report, Third Global Forum on Human Resources for Health, Recife, Brazil*. Geneva: Global Health Workforce Alliance and World Health Organization; 2013.

29. Lassi ZS, Cometto G, Huicho L, Bhutta ZA. Quality of care provided by mid-level health workers: systematic review and meta-analysis. *Bull World Heal Organ*. 2013;91:824–833.

30. Lewin S, Munabi-Babigumira S, Glenton C, et al. Lay health workers in primary and community health care for maternal and child health and the management of infectious diseases. *Cochrane Database Syst Rev*. 2010;(3):CD004015.

31. Tulenko K, Møgedal S, Afzal MM, et al. Community health workers for universal health-care coverage: from fragmentation to synergy. *Bull World Health Organ*. 2013;91(11):847–852.

32. Dolea C, Stormont L, Braichet JM. Evaluated strategies to increase attraction and retention of health workers in remote and rural areas. *Bull World Health Organ*. 2010;88(5):379–385.

33. Nilsen P, Ståhl C, Roback K, Cairney P. Never the twain shall meet? A comparison of implementation science and policy implementation research. *Implement Sci*. 2013;8(1):63.

Health worker performance in rural health organizations in low- and middle-income countries: Do organizational factors predict non-task performance?

Rohan Jayasuriya [a,*], Upali W. Jayasinghe [b], Qian Wang [a]

[a] School of Public Health and Community Medicine, University of New South Wales, Sydney, NSW 2052, Australia
[b] Research Centre for Primary Health Care and Equity, University of New South Wales, Sydney, NSW 2052, Australia

CrossMark

A B S T R A C T

Health worker (HW) performance is a critical issue facing many low- and middle-income countries (LMICs). The aim of this study was to test the effects of factors in the work environment, such as organizational culture and climate, on HW non-task performance in rural health work settings in a LMIC. The data for the study is from a sample of 963 HWs from rural health centres (HCs) in 16 of the 20 provinces in Papua New Guinea. The reliability and validity of measures for organizational citizenship behaviour (OCB), counterproductive work behaviour (CWB) and work climate (WC) were tested. Multilevel linear regression models were used to test the relationship of individual and HC level factors with non-task performance.

The survey found that 62 per cent of HCs practised OCB "often to always" and 5 percent practised CWB "often to always". Multilevel analysis revealed that WC had a positive effect on organizational citizenship behaviour (OCB) and a negative effect on CWB. The mediation analyses provided evidence that the relationship between WC and OCB was mediated through CWB. Human resource policies that improve WC in rural health settings would increase positive non-task behaviour and improve the motivation and performance of HWs in rural settings in LMICs.

© 2014 Elsevier Ltd. All rights reserved.

PII: S0277-9536(98)00240-8

Pergamon

WHY DO NURSES ABUSE PATIENTS? REFLECTIONS FROM SOUTH AFRICAN OBSTETRIC SERVICES

RACHEL JEWKES*, NAEEMAH ABRAHAMS and ZODUMO MVO

CERSA, Women's Health, Medical Research Council, Private Bag X385, Pretoria 0001, South Africa

Abstract—Nurse–patient relationships are a substantially neglected area of empirical research, the more so in developing than developed countries. Although nursing discourse usually emphasises "caring", nursing practice is often quite different and may be more strongly characterised by humiliation of patients and physical abuse. This paper explores the question: why do nurses abuse patients, through presentation and discussion of findings of research on health seeking practices in one part of the South African maternity services. The research was qualitative and based on 103 minimally structured in-depth individual interviews and four group discussions held with patients and staff in the services. Many of the patients reported clinical neglect, verbal and physical abuse from nursing staff which was at times reactive, and at others, ritualised, in nature. Although they explained nurses' treatment of them in terms of a few 'rotten apples in the barrel', analysis of the data revealed a complex interplay of concerns including organisational issues, professional insecurities, perceived need to assert "control" over the environment and sanctioning of the use of coercive and punitive measures to do so, and an underpinning ideology of patient inferiority. The findings suggest that the nurses were engaged in a continuous struggle to assert their professional and middle class identity and in the process deployed violence against patients as a means of creating social distance and maintaining fantasies of identity and power. The deployment of violence became commonplace because of the lack of local accountability of services and lack of action taken by managers and higher levels of the profession against nurses who abuse patients. It also became established as "normal" in nursing practice because of a lack of powerful competing ideologies of patient care and nursing ethics. The paper concludes by discussing avenues for intervention to improve staff-patient relationships. © 1998 Elsevier Science Ltd. All rights reserved

Key words—nurses, South Africa, abuse of patients, obstetric care, nurse–patient relationships

OXFORD

The path dependence of district manager decision-space in Ghana

Aku Kwamie,[1,2,]* **Han van Dijk,**[2] **Evelyn K Ansah**[3] **and Irene Akua Agyepong**[1,4]

[1]Department of Health Policy, Planning and Management, University of Ghana, School of Public Health, PO Box LG 13 Accra, Ghana, [2]Wageningen University, Sociology and Development of Change, Hollandseweg 1, PO Box 8130, 6700 EW, the Netherlands, [3]Ghana Health Service, Research and Development Division, PO Box MB 190 Accra, Ghana and [4]Julius Global Health, University Medical Centre, HP STR.6.131, P.O. Box 85500, 3508 GA Utrecht, the Netherlands

*Corresponding author. Department of Health Policy, Planning and Management, University of Ghana, School of Public Health, PO Box LG 13, Accra, Ghana. E-mail: agkwamie@hotmail.com

Accepted on 1 July 2015

Abstract

The district health system in Ghana today is characterized by high resource-uncertainty and narrow decision-space. This article builds a theory-driven historical case study to describe the influence of path-dependent administrative, fiscal and political decentralization processes on development of the district health system and district manager decision-space. Methods included a non-exhaustive literature review of democratic governance in Ghana, and key informant interviews with high-level health system officials integral to the development of the district health system. Through our analysis we identified four periods of district health system progression: (1) development of the district health system (1970–85); (2) Strengthening District Health Systems Initiative (1986–93); (3) health sector reform planning and creation of the Ghana Health Service (1994–96) and (4) health sector reform implementation (1997–2007). It was observed that district manager decision-space steadily widened during periods (1) and (2), due to increases in managerial profile, and concerted efforts at managerial capacity strengthening. Periods (3) and (4) saw initial augmentation of district health system financing, further widening managerial decision-space. However, the latter half of period 4 witnessed district manager decision-space contraction. Formalization of Ghana Health Service structures influenced by self-reinforcing tendencies towards centralized decision-making, national and donor shifts in health sector financing, and changes in key policy actors all worked to the detriment of the district health system, reversing early gains from bottom-up development of the district health system. Policy feedback mechanisms have been influenced by historical and contemporary sequencing of local government and health sector decentralization. An initial act of administrative decentralization, followed by incomplete political and fiscal decentralization has ensured that the balance of power has remained at national level, with strong vertical accountabilities and dependence of the district on national level. This study demonstrates that the rhetoric of decentralization does not always mirror actual implementation, nor always result in empowered local actors.

Key words: Complexity, decentralization, decision-space, district health systems, Ghana, path dependence

METHODOLOGICAL MUSINGS

Action learning for health system governance: the reward and challenge of co-production

Uta Lehmann[1]* and Lucy Gilson[2,3]

[1]School of Public Health, University of the Western Cape, Bellville, Cape Town 7535, South Africa, [2]School of Public Health and Family Medicine, University of Cape Town, Cape Town, South Africa and [3]Department of Global Health and Development, London School of Hygiene and Tropical Medicine, London, UK

*Corresponding author. School of Public Health, UWC, Private Bag X 17, Bellville, Cape Town 7535, South Africa. E-mail: ulehmann@uwc.ac.za

Health policy and systems research (HPSR) is centrally concerned with people, their relationships and the actions and practices they can implement towards better health systems. These concerns suggest that HPS researchers must work in direct engagement with the practitioners and practice central to the inquiry, acknowledging their tacit knowledge and drawing it into generating new insights into health system functioning. Social science perspectives are of particular importance in this field because health policies and health systems are themselves social and political constructs. However, how can social science methodologies such as action research and narrative and appreciative enquiry enable such research, and how can methodologies from different disciplines be woven together to construct and make meaning of evidence for 'this' field?

This article seeks to present 'methodological musings' on these points, to prompt wider discussion on the practice of HPSR. It draws on one long-term collaborative action learning research project being undertaken in Cape Town, South Africa. The District Innovation and Action Learning for Health System Development project is an action research partnership between two South African academic institutions and two health authorities focused, ultimately, on strengthening governance in primary health care.

Drawing on this experience, the article considers three interrelated issues:
- The diversity and complexities of practitioner and research actors involved in co-producing HPSR;
- The nature of co-production and the importance of providing space to grapple across different systems of meaning;
- The character of evidence and data in co-production.

There is much to be learnt from research traditions outside the health sector, but HPSR must work out its own practices—through collaboration and innovation among researchers and practitioners. In this article, we provide one set of experiences to prompt wider reflection and stimulate engagement on the practice of HPSR for people-centred health systems.

Keywords Action learning, governance, HPSR, methodology, reflective practice

A HEALTH POLICY AND SYSTEMS RESEARCH READER ON HUMAN RESOURCES FOR HEALTH

PROFESSIONALISM AND THE KNOW-DO GAP: EXPLORING INTRINSIC MOTIVATION AMONG HEALTH WORKERS IN TANZANIA

KENNETH L. LEONARD[a,*] and MELKIORY C. MASATU[b]

[a]*University of Maryland College Park, MD, USA*
[b]*Centre for Educational Development in Health, Arusha (CEDHA), Arusha, TZ, Tanzania*

SUMMARY

Professionalism can be defined generally as adhering to the accepted standards of a profession and placing the interests of the public above the individual professional's immediate interests. In the field of medicine, professionalism should lead at least some practitioners in developing countries to effectively care for their patients despite the absence of extrinsic incentives to do so. In this study we examine the behavior of 80 practitioners from the Arusha region of Tanzania for evidence of professionalism. We show that about 20% of these practitioners behave professionally, and almost half of those who do so practice in the public sector. These professional health care workers provide high quality care even when they work in an environment that does not reward this effort, a finding that has important implications for the use of performance-based incentives. Copyright © 2009 John Wiley & Sons, Ltd.

Volunteer home-based HIV/AIDS care and food crisis in Addis Ababa, Ethiopia: sustainability in the face of chronic food insecurity

Kenneth C Maes,[1]* Selamawit Shifferaw,[2] Craig Hadley[1] and Fikru Tesfaye[3]

[1]Department of Anthropology, Emory University, USA [2]United Nations Office for Project Services, United Nations High Commissioner for Refugees, Ethiopia and [3]Addis Ababa University School of Public Health, Ethiopia

*Corresponding author. Department of Anthropology, Emory University, 1557 Dickey Drive, Atlanta, GA 30322, USA. E-mail: kennycmaes@gmail.com

Low-income volunteers constitute a major part of AIDS care workforces in sub-Saharan Africa, yet little research has been conducted to determine how poverty and insecurity among volunteers impact their wellbeing and the sustainability of the AIDS treatment programmes they support. This paper presents longitudinal ethnographic and epidemiological research documenting how the 2008 food crisis in Addis Ababa affected AIDS care volunteers' care relationships and motivations. Ethnographic results highlight the distress and demotivation that rising food costs created for caregivers by contributing to their own and their care recipients' experiences of food insecurity and HIV-related stigmatization. Epidemiological results underscore a high prevalence of food insecurity (approximately 80%) even prior to the peak of food prices. Rising food prices over the 3 years prior to 2008, underemployment and household per capita incomes averaging less than US$1/day, likely contributed to the very high prevalence of food insecurity reported by caregivers in our sample. We also show that new volunteers recruited in early 2008 by one of the non-governmental organizations (NGOs) involved in this study were more likely to be dependants within their households, and that these participants reported lower rates of food insecurity and higher household income. While this shift in volunteer recruitment may help sustain volunteer care programmes in the face of widespread poverty and underemployment, food insecurity was still highly prevalent (58–71%) among this sub-group. Given the inability of the local NGOs that organize volunteers to address the challenge of food insecurity for programme sustainability, our results raise important policy questions regarding compensation for volunteers' valuable labour and poverty reduction through public health sector job creation.

Keywords   Volunteerism, home-based care, HIV/AIDS, food insecurity, food crisis, Ethiopia

Human Resources for Health

RESEARCH

Open Access

CrossMark

A cross-sectional study of the income sources of primary care health workers in the Democratic Republic of Congo

Rishma Maini[1]* , David R. Hotchkiss[2] and Josephine Borghi[1]

Abstract

Background: In the Democratic Republic of Congo (DRC), the state system to remunerate health workers is poorly functional, encouraging diversification of income sources and corruption. Given the central role that health workers play in health systems, policy-makers need to ensure health workers are remunerated in a way which best incentivises them to provide effective and good quality services. This study describes the different sources and quantities of income paid to primary care health workers in Equateur, Maniema, Kasai Occidental, Province Orientale and Kasai Oriental provinces. It also explores characteristics associated with the receipt of different sources of income.

Methods: Quantitative data on the income received by health workers were collected through baseline surveys. Descriptive statistics explored the demographic characteristics of health workers surveyed, and types and amounts of incomes received. A series of regression models were estimated to examine the health worker and facility-level determinants of receiving each income source and of levels received. Qualitative data collection was carried out in Kasai Occidental province to explore perceptions of each income source and reasons for receiving each.

Results: Nurses made up the majority of workers in primary care. Only 31% received a government salary, while 75% reported compensation from user fees. Almost half of all nurses engaged in supplemental non-clinical activities. Receipt of government payments was associated with income from private practice and non-clinical activities. Male nurses were more likely to receive per diems, performance payments, and higher total remuneration compared to females. Contextual factors such as provincial location, presence of externally financed health programmes and local user fee policy also influenced the extent to which nurses received many income sources.

Conclusions: The receipt of government payments was unreliable and had implications for receipt of other income sources. A mixture of individual, facility and geographical factors were associated with the receipt of various income sources. Greater co-ordination is needed between partners involved in health worker remuneration to design more effective financial incentive packages, reduce the fragmentation of incomes and improve transparency in the payment of workers in the DRC.

Keywords: Remuneration, Income, DRC, Primary care, Health workers

* Correspondence: Rishma.Maini@lshtm.ac.uk
[1]London School of Hygiene and Tropical Medicine, 15-17 Tavistock Place, London WC1H 9SH, United Kingdom
Full list of author information is available at the end of the article

BioMed Central

Maini *et al. Human Resources for Health* (2017) 15:17

Page 2 of 15

Background

Health workers play a central role in the delivery of health care, and their remuneration influences their motivation and workplace performance [1–4]. Post conflict states present an interesting context for examining health worker remuneration as the state system of salary payment is often poorly functional, encouraging a diversification of income sources [5]. Donors may exacerbate income fragmentation by providing programme-related performance payments and per diems [6]. Evidence from these settings has shown that income received from different sources varies according to individual worker and health facility characteristics, with female workers receiving significantly less salary and total income than male workers of the same cadre in Sierra Leone [7], and rural workers having less access to user fee revenue and income from non-clinical activities to those in urban areas in Zimbabwe [8]. A study by Bertone et al. in four provinces in the Democratic Republic of Congo (DRC) identified individual, facility and provincial determinants of variation in total income received [9]. However, the Sierra Leone and Zimbabwe studies were descriptive and did not comprehensively examine the determinants of receiving each income source and none of these studies looked at how receipt of one income source affects the likelihood of receiving other sources, or compiled qualitative data to obtain more in-depth insights into remuneration practices. Moreover, Bertone and Witter have advocated for more empirical research on the overall revenue or "complex remuneration" of health workers, in order to devise effective incentive packages [10].

This study aims to address this gap by examining the remuneration structure of health workers in five provinces of the DRC,[1] assessing the determinants of receiving income by source and the inter-dependency of different sources of income, as well as the determinants of total income received. Qualitative methods are also used to substantiate the quantitative findings and help to discover the processes and mechanisms that underpin the quantitative results.

DRC context

In 2013, public investment in health was only 4.5% of the national budget falling far short of the Abuja commitment of 15% [11]. Although all public sector health workers should receive a salary and occupational risk allowance (or "prime de risque") from the government, not everyone receives these. Services therefore rely heavily on cost recovery through user fees, with no accepted standard national tariff for consultations. Health workers have also become dependent on performance-based payments and/or per diems from external partners.

The public care system accounts for about half of all facilities in the country [12]. The basic unit of the primary care health system is the health zone [13]. Health zones are divided into health areas serving 10,000 to 15,000 people. Each health area should have a health centre providing an essential package of primary healthcare activities. Health centres equipped to carry out certain minor surgical operations are termed reference health centres. In the absence of a health centre or reference health centre, there is a health post.

Methods

Health facility and health worker surveys were conducted as part of a baseline survey linked to an evaluation of a health systems strengthening programme funded by the Department for International Development (DfID) called ASSP (Accès Aux Soins de Santé Primaires) in April–May 2014 [Keating J, Hotchkiss D, Eisele T, Kitoto AT, Bertrand J. Evaluation of the impact of the ASSP project in the Democratic Republic of Congo, unpublished].

Data collection was carried out by data collectors hired from each of the provinces to ensure familiarity with the cultural context. Participation of health workers in the survey was voluntary. To minimise the potential for social desirability bias, the interviewer explained the purpose, confidentiality and anonymity of the study to each provider before seeking consent to begin the survey.

Surveys were carried out in Equateur, Kasai Occidental, Kasai Oriental, Province Orientale, and Maniema provinces in 105 intervention villages selected using probability proportional to size (PPS), and an equal number of control villages matched on geographic location and population size. In total, 210 facilities were selected and all workers providing clinical services and on duty the day of the survey were interviewed.

The health worker survey measured age, sex, cadre, marital status, educational attainment, number of years in their current position, and number of financial dependents. The survey identified income sources received and income levels adapted from the Health Worker Incentive Survey [14] for government payments (salaries, occupational risk allowances), performance payments and per diems from non-governmental partners, private clinical work, user fees from patients, informal payments[2] or "gifts", allowances, and income from non-clinical activities. Respondents were asked whether government payments were received on time, if there were delays receiving these payments, and amounts received compared to expectations. Income levels were recorded in Congolese Francs (FC). Recall was for "last month received" for all incomes with the exception of per diems which was for the "last year". A facility

Maini *et al. Human Resources for Health* (2017) 15:17

Page 3 of 15

survey was also carried out to measure the total number of staff, distance of the facility from the village, and the number of primary healthcare services provided. Both surveys were piloted in two health facilities in Kinshasa and one facility in Bas Congo.

Qualitative research was carried out in November 2014 in four urban and four rural health zones supported by ASSP in the province of Kasai Occidental that were not included in the survey. Two nurses (one female and one male) were purposively selected from a health centre in each health zone, making a total of 16 nurses. Interviews examined the sources and amounts of income received, and factors influencing their receipt and were audio recorded in French by RM and a local researcher. Hand written notes were also taken.

Data analysis

Survey data were double entered into CSPro and imported into STATA 13.0 for analysis. Income data were converted into United States dollars (USD) using the exchange rate of 923 FC to 1 USD.[3] Grubb's test was applied to detect outliers in the income data, which were removed prior to analysis. Descriptive statistics were generated for health worker characteristics, receipt of income by source and mean and median income levels. The frequency of receipt of government payments and income compared to expectations are also reported. Logistic regressions examined facility and health worker characteristics associated with receiving a given income source and linear regressions identified determinants of the level of income received, measured as the log of income. Presence of the ASSP programme was included as an explanatory variable in all of the models. Health worker explanatory variables were health worker age, marital status, sex, cadre, education, years worked in position, and the number of financial dependents; facility-level factors were provincial location, urban-rural status, facility type, number of staff, distance from the nearest village, and the number of services offered. We also examined whether receipt of certain income sources affected the receipt of others. The hypothesised relationships between the independent variables and income sources are given in Appendix 1.

In total, 18 models were run and regression diagnostics applied and adjustments made to produce unbiased coefficients (Appendix 2). A general to specific regression specification method was used, excluding explanatory variables in a stepwise manner. All regressions were performed excluding any missing values (list-wise deletion) with clustering at the facility level.

Audio recordings of the interviews were transcribed and a coding system was developed by RM

from the initial research themes and concepts that emerged during data collection. Data was managed using NVivo 10 and content analysis was used to identify key themes.

Results

Sample characteristics

Three facilities were private clinics and so did not meet the inclusion criteria of being public sector primary care facilities. This left 207 facilities for analysis.

Twenty three health workers did not meet the inclusion criteria, leaving 453 respondents for analysis. No health workers declined to participate in the survey.

Health workers were mainly located in rural facilities (80.6%) and were based in health centres (81.7%) (Table 1). Most workers were in Kasai Occidental followed by Maniema and Equateur. Most of the workers were in facilities located within 5 km of the nearest village (79.9%), and over 75% offered between six and nine services.

Most respondents were male and between 30 and 45 years old (Table 2). Ninety percent of staff were nurses, and only four doctors were identified across all facilities. The majority had some secondary level education and a third had been to university. Most workers were married and had worked a median of 6 years in their current position.

The analysis of income sources and levels focuses on nurses.

Income sources and levels

Only one third of nurses reported receiving a salary while over half received the occupational risk allowance (Table 3, Fig. 1). A third of nurses did not receive any form of government payment and 18% received both an occupational risk allowance and a salary (Fig. 1). Of non-governmental payments, the most frequently reported were user fees, followed by per diems. Just under half of the sample (47%) reported receiving income from supplementary nonclinical activities. Of these most worked in agriculture (68%), followed by trade (28%). A minority of nurses (7%) reported receiving allowances for uniforms, housing or transport. Less than 10% of workers (*n* = 29) reported receiving income from private clinical practice, mostly practising at home (*n* = 24).

The highest median monthly income was for nonclinical work outside the facility ($119), followed by the government salary ($58). The lowest median monthly income came from per diems ($9) and informal payments ($9). The median monthly income across all sources was $85 but the mean was almost double at $165.

Maini *et al. Human Resources for Health* (2017) 15:17

Page 4 of 15

Table 1 Facility characteristics of sampled respondents

Facility characteristics of sampled (*n*) workers	Proportion of workers
	%
Facility location (*n* = 453)	
Rural	80.6
Urban	19.4
Province (*n* = 453)	
Equateur	23.0
Kasai Occidental	29.8
Kasai Oriental	5.7
Maniema	27.6
Province Orientale	13.9
Type of facility (*n* = 453)	
Health centre	81.7
Reference health centre	17.2
Health post	1.1
Distance of facility from the village (*n* = 443[a])	
Less than 1 km	31.6
Between 1 and 5 km	48.3
Between 5 and 10 km	12.0
Greater than 10 km	8.1
Number of services provided by facility (*n* = 435[a])	
3 to 5 services	12.2
6 to 9 services	76.1
Over 10 services	3.0
Total clinical staff present on the day (*n* = 453)	
1	13.3
2	34.0
3	23.8
4	16.8
5	6.6
6	4.0
7	1.6
Population catchment for area (*n* = 430[a])	
Less than 5000	48.9
5000 to 10,000	21.6
10,001 to 15,000	17.4
Greater than 15,000	12.1

[a]Less than 453 due to missing values for those variables

Table 2 Characteristics of health workers

Characteristics	Proportion of all workers interviewed	Proportion of nurses
	%	%
Sex	(*n* = 453)	(*n* = 407)
Male	69.3	70.3
Female	30.7	29.7
Age	(*n* = 453)	(*n* = 407)
<30 years	11.5	12.3
30–44 years	59.7	60.7
45–60 years	26.1	24.6
>60 years	3.1	2.5
Marital status	(*n* = 447[a])	(*n* = 407)
Married	90.4	91.8
Single	3.8	3.5
Widowed	3.4	2.5
Separated/divorced	2.2	2.0
Other	0.2	0.3
Education	(*n* = 453)	(*n* = 407)
Primary school	0.4	0.3
Secondary school	60.3	62.9
University/post-secondary school	33.1	35.1
Not specified	6.2	1.7
Position	(*n* = 453)	N/A
Doctor	0.9	
Nurse	89.8	
Laboratory worker	1.1	
Pharmacy worker	1.3	
Traditional birth attendant	2.9	
Auxiliaries, medical and nursing assistants (other non-qualified personnel)	4.0	
	N, mean, SE (median, IQR)	*N*, mean, SE (median, IQR)
Number of financial dependents	437[a], 9, 4.56. (8, 6–12)	393[a], 9, 4.63. (8, 6–12)
Years worked in current position	446[a], 9, 8.72. (6, 3–12)	403[a], 9, 8.68. (6, 3–11)

[a]Less than 453 for all workers or less than 407 for nurses due to missing values for those variables

Over two thirds of nurses receiving the salary and the occupational risk allowance payments reported they were paid on time. Seventeen percent of nurses reported receiving salaries between 1 and 3 months in arrears and 24% reported doing so for occupational risk allowances. Only 2% reported receiving salaries and/or occupational risk allowances more than 3 months in arrears (Fig. 2).

Despite the overall timeliness of payments, the amounts received from government were less than expected (Fig. 3).

Nurses complained more about the frequency of salary payments, than of occupational risk allowances, stating irregular salary payment with no set day of the month. Many had to regularly request an advance from the

Maini *et al. Human Resources for Health* (2017) 15:17

Page 5 of 15

Table 3 Proportion of nurses receiving sources of income and mean and median values of income received

Source of income	Overall proportion of workers who received source of income	Median income per month among those receiving income in USD (IQR)	Mean income per month among those receiving income in USD (standard error)
Payments from government			
Salary from government (*n* = 407)	31.2%	52.76 (23–75)	58.06 (60.45)
Occupational risk allowance from government (*n* = 407)	53.8%	12.46 (11–16)	36.57 (73.38)
Payments from other sources			
Performance pay (*n* = 407)	24.1%	16.25 (9–46)	35.79 (48.81)
User fees (*n* = 406)	74.6%	19.50 (11–38)	71.02 (157.95)
Gifts/informal payments from patients (*n* = 406)	16.8%	4.60 (2–11)	8.73 (10.43)
Per diems (*n* = 406)	51.7%	4.06 (2–8)	8.56 (26.35)
Income from private clinical practice (*n* = 407)	7.1%	21.67 (11–54)[a]	34.02 (34.05)[a]
Income from supplemental (non-clinical) activities (*n* = 400)	46.8%	65.01 (33–114)[a]	119.27 (154.62)[a]
Total income (*n* = 300[a])	N/A	85.05 (36–176)[a]	165.26 (227.55)[a]

N.B. For the occupational risk allowance, one outlier income was dropped from the analysis; no outliers were detected for any other income amount
[a]Greater than 10% of data missing as respondents had missing values for some of the amounts of income

facility as they usually ran out of money before their next pay day. It was also common for nurses to borrow from their family or friends to pay the rent or school fees. Nurses reported huge variability in user fee revenue as it was dependent on the number of patients seen at the facility.

None of the in-depth interview respondents reported engaging in private practice or receiving performance payments from partners. A few reported receiving per diems for training or vaccination campaigns. Informal payments or gifts from patients were often in the form of soap, fabric, or food. All nurses were dissatisfied with total compensation received.

Income determinants

The likelihood of receiving a salary increased with every year worked at the facility (OR 1.06, *p* < 0.000) and was greater for staff working in urban facilities

(OR 2.48, *p* = 0.021). Nurses were more likely to receive a salary if they were in Equateur than Maniema (0.22, *p* = 0.014).

The odds of receiving the occupational allowance were greater if the nurse had more years of experience (OR 1.20, *p* < 0.000) and a higher number of dependents (OR 1.12, *p* = 0.001. The odds of receiving the occupational allowance were highest in Province Orientale (OR 9.58, *p* = 0.001) compared to Equateur, but lower in Kasai Occidental (OR 0.17, *p* < 0.000) or Kasai Oriental (OR 0.05, *p* < 0.000) (Table 4).

In the in-depth interviews, nurses who did not get a salary stated it was because they started working after the last census of workers in 2006, which was used as a basis for payroll. Some nurses felt health zone officials discriminated against workers from certain tribal or ethnic backgrounds in the payment of the occupational risk allowance.
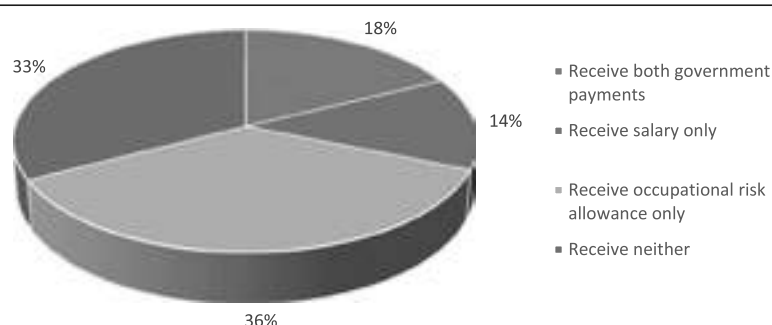
Fig. 1 Proportion of nurses receiving: both government payments, one government payment only, or no government payments
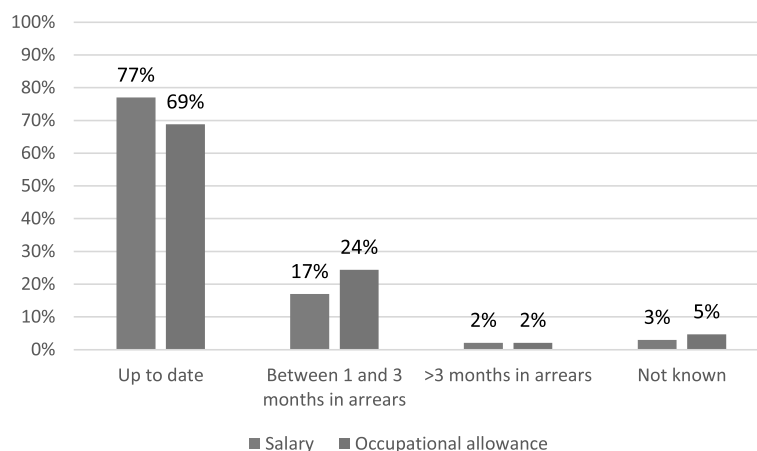
Fig. 2 Frequency of government payments to nurses

According to the quantitative analysis, compared to Equateur, nurses in Maniema were more likely to receive all other sources of income, with the exception of per diems (Table 5). Only those with a higher number of dependents were significantly more likely to receive user fees (OR 1.07 *p* = 0.038).

During in-depth interviews, all nurses reported receiving income from user fees. The process for allocating user fees within the facility was usually overseen by the head of the facility. However, record keeping was often poor meaning the total revenue generated from user fees and allocation process was unclear to some nurses.

The way in which we divide (user fees)…I don't know if I receive the same thing. The IT (head nurse) and IA (assistant nurse) and me, I don't know if they give the same thing. They give it to me, I sign, that is all.

Female, 60 years

As shown in Table 5, nurses were more likely to receive informal payments if they were not based in Equateur. Staff at facilities with a higher number of personnel were less likely to report receiving informal payments (OR 0.67, *p* = 0.07) and facilities supported by ASSP reported a lower likelihood of informal payments (OR 0.48, *p* = 0.039). Older workers were less likely to receive informal payments (OR 0.96, *p* = 0.08).

The qualitative findings revealed that many nurses were reluctant to charge informal fees, as patients were usually so poor that they struggled to pay user fees. Nurses were less likely to charge informal fees where communities were well informed about the facility user fee tariff, for example, in ASSP areas where community health committees (CODESAs) and facilities were involved in setting and publicising tariffs, meaning nurses could be chastised by the public for asking for informal payments.
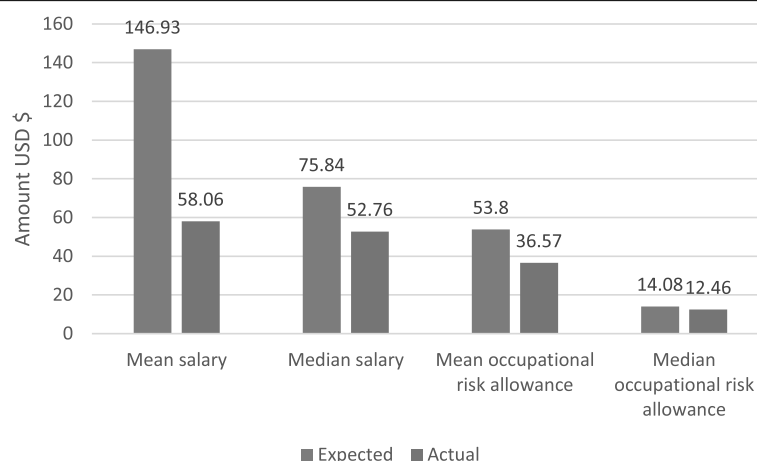
Fig. 3 Median and mean amounts of expected and actual salary and occupational risk allowance for nurses

Maini *et al. Human Resources for Health* (2017) 15:17

Page 7 of 15

Table 4 Logistic regressions for salary and occupational risk allowance

Explanatory variables	Odds ratio for dependent variables (SE)			
	Salary		Occupational risk allowance	
	Full model	Reduced model	Full model	Reduced model
Years in position	1.06 (0.02)***	1.06 (0.02)***	1.19 (0.04)***	1.20 (0.04)*** ($p < 0.001$)
Kasai Occidental (vs Equateur)	1.48 (0.69)	1.46 (0.64)	0.17 (0.07)***	0.17 (0.07)*** ($p < 0.001$)
Kasai Orientale (vs Equateur)	1.02 (0.89)	0.71 (0.48)	0.03 (0.02)***	0.05 (0.04)*** ($p < 0.001$)
Maniema (vs Equateur)	0.20 (0.13)**	0.22 (0.14)*** ($p = 0.014$)	1.56 (0.76)	1.30 (0.63)
Province Orientale (vs Equateur)	0.69 (0.43)	1.05 (0.52)	11.07 (7.28)***	9.58 (6.33)*** ($p = 0.001$)
Population served	1.00 (0.00)**	1.00 (0.00)** ($p = 0.043$)	1.00 (0.00)	
Total personnel	1.43 (0.25)**		0.94 (0.19)	
Urban (vs rural)	1.90 (0.86)	2.48 (0.97)** ($p = 0.021$)	2.42 (1.33)	2.10 (0.91)*
Number of services	1.08 (0.12)		0.84 (0.09)	
Distance of facility from village	1.00 (0.03)		1.07 (0.04)*	
Reference heath centre (vs heath centre)	0.74 (0.36)		0.49 (0.24)	0.39 (0.20)*
Age	1.02 (0.02)		1.03 (0.02)	
Male (vs female)	0.92 (0.31)		0.66 (0.24)	
Number of dependents	0.97 (0.03)		1.11 (0.04)**	1.12 (0.04)*** ($p = 0.001$)
Married (vs not married)	1.10 (0.14)		0.67 (0.12)**	0.75 (0.12)*
University (vs school education)	0.77 (0.27)		1.07 (0.41)	
ASSP programme	0.70 (0.28)		0.58 (0.23)	
Received occupational allowance (salary model only)	1.03 (0.35)		–	–
Received salary (occupational risk allowance model only)	–	–	1.06 (0.39)	
Constant	0.04 (0.05)**	0.09 (0.04)***	0.37 (0.41)	0.21 (0.08)***
Pseudo R^2	0.17	0.14	0.35	0.33
Model χ^2	50.90***	46.98***	91.22***	77.56***
Number observations (n)	337	383	318	318

*$p \leq 0.1$; **$p \leq 0.05$; ***$p \leq 0.01$

...everyone knows, that if you are going to ask for something someone will tell on you, you will be humiliated all the same, instead of asking, you must leave it.

Male, 42 years

Receiving income from private practice was more common in urban than rural areas (OR 2.44, $p = 0.029$) and facilities close to the village. Older workers were also less likely to receive income from private practice (OR 0.92, $p < 0.000$) and staff receiving government payments were more likely to receive income from private practice (OR 2.76, $p = 0.036$). Workers in Kasai Occidental and Maniema were more likely to work privately compared to those living in Equateur.

Reasons given by nurses for not engaging in private practice during interviews included being based far from private clinics, a perceived reduction in job security, and risks of losing the chance of becoming registered with the state and therefore receiving future government pay. However, some admitted that those currently receiving government pay may have been more likely to work privately to supplement their income, which is consistent with the quantitative analysis. Some nurses voiced that the private sector was superior to the public sector, as it was better resourced, staff were better paid and more motivated. However, many criticised the private sector for poor management and a lack of accountability, with patients not being treated according to best practice, and no focus on preventative care.

Maini *et al. Human Resources for Health* (2017) 15:17

Page 8 of 15

Table 5 Logistic regressions for determinants of non-governmental sources of income

Explanatory variables	User fees		Informal payments		Private payment		Non-clinical activities		Performance payments		Per diems	
	Odds ratio (SE)											
	Full	Reduced	Full	Reduced	Full	Reduced	Full	Reduced	Full	Reduced	Full	Reduced
Years in position	1.02 (0.02)		1.03 (0.03)		1.02 (0.05)		0.97 (0.02)		1.02 (0.04)		0.99 (0.02)	
Kasai Occidental (vs Equateur)	0.52 (0.23)	0.87 (0.32)	3.13 (2.13)*	2.34 (1.17)*	8.72 (10.09)*	8.42 (8.88)**	0.69 (0.25)	0.65 (0.23)	2.62 (3.02)	2.69 (3.13)	1.29 (0.48)	1.24 (0.41)
Kasai Orientale (vs Equateur)	3.22 (3.86)	3.81 (2.94)*	5.84 (4.64)**	3.77 (2.37)**	1	1	0.99 (0.91)	0.46 (0.37)	1	1	3.67 (3.50)	2.02 (1.35)
Maniema (vs Equateur)	2.65 (1.58)	3.76 (1.73)***	23.82 (18.79)***	12.49 (7.39)***	21.87 (25.97)***	14.53 (16.24)**	3.59 (1.68)***	4.02 (1.81)***	158.86 (191.31)***	132.02 (147.97)***	0.50 (0.26)	0.56 (0.25)
Province Orientale (vs Equateur)	1.54 (0.89)	1.08 (0.47)	9.18 (5.93)***	5.76 (3.00)***	1	1	3.99 (2.27)**	4.42 (2.17)***	1	1	0.41 (0.20)*	0.37 (0.15)**
Population served	1.00 (0.00)		1.00 (0.00)		1.00 (0.00)		1.00 (0.00)		1.00 (0.00)**	1.00 (0.00)**	1.00 (0.00)	
Total personnel	1.12 (0.20)		0.69 (0.11)**	0.67 (0.10)**	0.83 (0.16)		0.79 (0.11)*	0.83 (0.12)	0.98 (0.21)		0.68 (0.11)**	0.72 (0.10)**
Urban (vs rural)	0.63 (0.32)		0.95 (0.48)		2.81 (1.85)	2.44 (0.99)**	0.51 (0.18)*	0.51 (0.15)**	1.17 (0.82)		1.37 (0.55)	
Number of services	0.98 (0.14)		0.96 (0.14)		0.90 (0.10)		1.35 (0.12)***	1.24 (0.11)**	1.71 (0.26)***	1.51 (0.22)***	1.24 (0.11)**	1.24 (0.09)**
Distance of facility from village	0.98 (0.03)		0.97 (0.05)		0.78 (0.07)**	0.88 (0.06)**	0.99 (0.03)		0.78 (0.05)***	0.79 (0.06)***	0.99 (0.03)	
Reference heath centre (vs heath centre)	0.49 (0.25)	0.64 (0.26)	0.54 (0.38)		2.53 (1.27)*		0.89 (0.36)		0.45 (0.28)		0.41 (0.16)**	0.50 (0.16)**
Age	0.97 (0.02)*	0.97 (0.01)*	0.94 (0.03)**	0.96 (0.02)**	0.89 (0.04)***	0.92 (0.02)***	1.03 (0.02)		0.96 (0.03)		1.01 (0.02)	
Male (vs female)	0.82 (0.27)		0.80 (0.32)		1.32 (0.68)		1.03 (0.32)		3.37 (1.62)**	2.36 (1.01)**	1.57 (0.47)	1.74 (0.44)**
Number of dependents	1.08 (0.05)*	1.07 (0.04)**	0.99 (0.05)		1.01 (0.08)		1.06 (0.03)*	1.08 (0.03)***	1.09 (0.04)**		1.05 (0.03)	1.04 (0.03)
Married (vs not married)	0.92 (0.11)		0.95 (0.17)		0.88 (0.20)		1.08 (0.13)		1.34 (0.24)		0.84 (0.10)	
University (vs school education)	0.83 (0.33)		0.84 (0.38)		1.32 (0.79)		0.93 (0.27)		1.02 (0.43)		1.28 (0.36)	
ASSP programme	1.55 (0.64)		0.41 (0.17)**	0.48 (0.17)**	2.47 (1.13)**		1.51 (0.44)		1.74 (1.05)			

Table 5 Logistic regressions for determinants of non-governmental sources of income *(Continued)*

Receives any government pay[a]	0.20 (0.08)***		0.95 (0.39)		4.11 (2.37)**		0.55 (0.17)*	0.51 (0.15)**	b		1.98 (0.64)**	1.80 (0.49)**
Receives user fees	–	–	0.89 (0.41)	–	2.76 (1.33)**	–	1.32 (0.41)	–	–	–	1.68 (0.47)*	1.92 (0.50)**
Receives informal payments	–	–	–	–	–	–	1.32 (0.48)	–	–	–	–	–
Receives payment from private practice	–	–	–	–	–	–	3.00 (1.56)**	2.64 (1.21)**	–	–	–	–
Receives performance payments	–	–	–	–	–	–	0.67 (0.21)	–	–	–	–	–
Constant	14.87 (20.39)**	4.24 (2.58)**	2.54 (3.75)	0.77 (0.65)	0.12 (0.13)*	0.27 (0.48)	0.03 (0.03)***	0.18 (0.13)**	0.00 (0.00)***	0.00 (0.00)***	0.15 (0.14)**	0.19 (0.13)**
Pseudo R^2	0.15	0.07	0.15	0.10	0.18	0.24	0.16	0.15	0.46***	0.44***	0.13	0.11
Model χ^2	44.56***	21.42***	35.55**	29.59***	29.19***	42.99***	53.16***	44.09***	77.28	47.64	47.41***	52.87***
Number observations (*n*)	333	391	332	405	329	286	326	367	266	266	333	372

*$p \leq 0.1$; **$p \leq 0.05$; ***$p \leq 0.01$
[a]Government pay = salary and/or occupational risk allowance
[b]The small number of observations meant receipt of government payments could not be included in the model for performance payments

Maini *et al. Human Resources for Health* (2017) 15:17

Page 10 of 15

In the private (facilities) the staff are self-directed but they do not have any sanctions, they behave as they want. But with us here, the hierarchy demands explanations, there is monitoring

Female, 38 years

Staff at facilities with a higher number of personnel were less likely to report receiving per diems (OR 0.72, $p = 0.019$). Nurses in reference health centres were less likely to receive per diems (OR 0.45, $p = 0.032$) than those in health centres, while nurses in facilities far from the village were less likely to earn performance payments (OR 0.79, $p = 0.001$) than those near to the village. Facilities supported by ASSP reported a higher chance of receiving per diems (OR 1.80, $p = 0.031$) as well as workers receiving government payments (OR 1.92, $p = 0.012$). Males and workers in facilities offering a higher number of services were also more likely to receive performance payments and per diems.

During interviews, nurses indicated a preference for government payments over performance payments from development partners as they saw these as more stable and less transient sources of income.

Because the state, I could stay with the state until death. But the partner, will always be there for a term of 5 years

Male, 30 years

Some of the nurses interviewed felt that per diems were not allocated fairly.

Ah, it is not well managed (per diems), if someone tells us there is maternity training, it is one person who can go, from the other side it is the IT (head nurse) and IA (assistant nurse), so we others… nothing!

Female, 37 years

Workers reporting income from non-clinical activities were more likely to report income from private practice (OR 2.64, $p = 0.035$), be based in rural areas (OR 0.51, $p = 0.025$) and have a higher number of dependents (OR 1.08, $p = 0.008$). However, workers receiving government payments appeared to be less likely to receive income from non-clinical work (OR 0.51, $p = 0.02$).

Some nurses reported in interviews that those receiving government payments were actually more likely to undertake non-clinical activities, as they knew they would receive their government payments whether they worked in the facility or not but this was inconsistent with the quantitative findings. One worker admitted not coming to work to enable cultivation of crops to earn more income. Nurses who did not engage in supplementary non-clinical activities indicated this was due to a lack of time or an absence of the necessary resources or start-up capital.

They become negligent…you see, at the end of each month, you go to the bank, you see (them) but you go to the office and there is no-one working. They end up perhaps going to sell things, but at the end of the month, they will go to get their money.
Female, 30 years

Total remuneration

In Province Orientale ($\beta = -0.47$, $p = 0.032$) and Maniema ($\beta = -1.26$, $p < 0.000$), nurses had lower levels of total income than nurses in Equateur. Males earned more income overall than females ($\beta = 0.21$, $p = 0.05$). Receipt of each income source was associated with a higher overall total income, with the exception of informal payments and payments from private clinical work (Table 6).

Discussion

Nurses constituted the majority of personnel in both primary and secondary care and were the main focus of the study. The high variability in the amounts earned from each income source may be due in part to the fact that nurses make up a fairly heterogeneous group of different grades and levels of educational attainment.

Only a minority of nurses received a government salary, and a higher proportion received occupational allowances, with uncertainty regarding the timing and extent of payments. Part of the reason for the difference between government payments is that they are managed by two different Ministries; the Ministry of Public Sector Reform is responsible for the payroll while the occupational risk allowance is issued using the "declarative list" controlled by the Ministry of Health. Several bottlenecks have also been identified in the budget process which can result in a low execution rate of the allocated funds [15].

The extent to which either type of government payment was received varied across the provinces, likely due to differences in the available government budget for remuneration and a lack of transparency in the allocation of funds by provinces; the majority of the executed funds by province are usually untraceable (H Colquhoun, pers comm). A recent study of Katanga, South Kivu and Kasai Oriental provinces found the allocation and execution of the health budget was inequitable and not based on any pre-defined criteria (e.g. per capita and health indicators) [16]. The occupational allowance also constitutes a lower amount than the salary, potentially allowing more nurses to be paid within the allocated

Maini *et al. Human Resources for Health* (2017) 15:17

Page 11 of 15

Table 6 OLS model for total remuneration

Explanatory variables	Coefficient (SE)	
	Full model	Reduced model
Years in position	−0.01 (0.01)	
Kasai Occidental (vs Equateur)	−0.37 (0.19)*	−0.27 (0.17)
Kasai Orientale (vs Equateur)	−0.11 (0.30)	−0.07 (0.28)
Maniema (vs Equateur)	−1.27 (0.26)***	−1.26 (0.18)*** (*p* < 0.001)
Province Orientale (vs Equateur)	−0.74 (0.24)***	−0.47 (0.22)** (*p* = 0.032)
Population served	0.00 (0.00)	
Total personnel	−0.01 (0.08)	
Urban (vs rural)	0.22 (0.26)	
Number of services	0.06 (0.04)	
Distance of facility from village	0.01 (0.02)	
Reference heath centre (vs heath centre)	−0.26 (0.21)	
Age	0.01 (0.01)	
Male (vs female)	0.26 (0.13)**	0.21 (0.12)*
Number of dependents	−0.01 (0.02)	
Married (vs not married)	−0.03 (0.04)	
University (vs school education)	0.11 (0.12)	
Supported by ASSP programme	−0.13 (0.18)	
Receives salary	0.73 (0.14)***	0.79 (0.12)*** (*p* < 0.001)
Receives occupational risk allowance	0.81 (0.15)***	0.70 (0.12)*** *p* < 0.001
Receives performance payment	0.59 (0.18)***	0.77 (0.15)*** *p* < 0.001
Receives user fees	0.65 (0.20)***	0.75 (0.17)*** *p* < 0.001
Receives informal payments	0.01 (0.17)	
Receives income from private clinical work	−0.01 (0.25)	
Receives supplemental income	1.03 (0.13)***	1.00 (0.10)*** *p* < 0.001
Receives per diems	0.20 (0.13)	0.20 (0.11)*
Constant	2.45 (0.42)***	2.91 (0.22)***
R^2	0.48***	0.44***
Number observations (*n*)	268	328

*$p \leq 0.1$; **$p \leq 0.05$; ***$p \leq 0.01$

budget. A greater proportion of the allocated health budget goes towards the occupational risk allowance than salaries [11]. A repeat census of workers is also needed in order to identify nurses who have more recently started working in facilities and ensure they are paid. Nonetheless, the study found that receiving government payments sometimes had the unintended consequence of giving workers the freedom to work in private practice or non-clinical activities, potentially displacing them from their duties in public facilities.

User fees were commonly reported, representing a substantial share of total income consistent with Bertone et al. [9], but were also highly variable, depending on tariffs and case load. Informal payments appeared infrequent and small, particularly in the ASSP area which aims to improve health service accountability in relation to charges levied and payments received. Where paid, performance payments tended to be comparable in their amount to the occupational risk allowance and income from user fees, and vary by geographic area depending on donor and NGO presence. Health workers in Maniema were more

Maini *et al. Human Resources for Health* (2017) 15:17

Page 12 of 15

likely to receive performance payments as they were still receiving payments from the ASSP programme at the time of the survey, although this was being phased out. Nurses in Maniema were also less likely to receive salaries. As the government budget is fungible, it is possible that the government prioritises the allocation of salaries on areas not supported by donor programmes. Health workers may also be less likely to push for inclusion on the payroll if they are receiving an income which substitutes their salary [17]. Nonetheless, workers tended to value government payments more than performance payments, similar to the findings of Fox et al. [6].

Per diems were received by just over half of nurses but contributed little to total income, consistent with Bertone et al. [9]. Per diems were sometimes perceived to be unfairly managed. We found evidence of gender discrimination in the allocation of per diems as well as performance payments, with male nurses being significantly more likely to receive these. Several studies in low-income countries have demonstrated how the mismanagement and abuse of per diems and performance payments can contribute to a negative organisational culture, on account of the tensions they create [18–20]. Care is needed to ensure such payments are distributed equitably across facility personnel and the same staff are not benefitting each time. Payments for overtime were not examined here but were found to be largely irrelevant by Bertone et al. in this context [9].

Less than 10% of workers conducted private clinical work, which corresponds with Bertone et al. [9] and this was more common in facilities close to villages and in urban areas similar to evidence from other countries [8, 10]. Nurses were more likely to engage in dual practice if they received income from the government. Nurses not receiving government payments thought it would be too risky to work in private facilities as it could jeopardise their chances of gaining registration.

Almost half of all workers engaged in non-clinical activities to supplement their income, higher than observed by Bertone et al. [9]. Agricultural practices were the most common which may be because the survey sampled predominantly in rural areas. These activities were sometimes carried out during working hours, which would impact on service delivery.

In terms of the total amount of income gained, differences were driven by both individual and provincial characteristics, again similar to Bertone et al. [9]. Males were more likely to receive a higher total income than females, indicating a gender inequity in receipt of income [21], while workers in Equateur were more likely to earn more than those in Province Orientale or Maniema. Unlike Bertone et al. [9], we did not find any association between facility characteristics and total income; however, their study included a wider variety of facilities.

This study attempts to shed some light on the complex puzzle of how to incentivise vital health workers in hard-to-reach areas in the context of a fragile state. Future policies should try to address some of the unacceptable inequalities related to gender or provincial location. There is low satisfaction with the amount received from formal sources, necessitating an increase in the current wage allowance, as well as perhaps the provision of non-financial incentives such as training and opportunities for career progression in order to effectively retain the workforce.

There were several limitations to this study. Firstly, the health worker survey was limited to those available on the day of the survey and does not capture the views of those absent. Secondly, workers may have under-reported or inaccurately recalled their income [22]. As robust documentation of health worker incomes does not exist in the DRC, it was not possible to validate estimates. Due to resource constraints, qualitative interviews could only be conducted in one of the five provinces and so we were unable to identify reasons for the provincial variation observed. The qualitative interviews preceded the analysis of the quantitative data, and so the quantitative findings could not be discussed during the interviews. A further study which uses the findings of the quantitative analysis as a basis for interviews may allow for more nuanced views. Finally, the facilities sampled represent 2.3%[4] of the overall number of state primary care health centres and therefore the results are not necessarily representative of the provinces as a whole.

Conclusions

In this study, we found that few workers received a government salary but a larger proportion received government payment through the occupational risk allowance. Often, there was a mixture of individual, facility and geographical factors associated with the receipt of various income sources. Greater co-ordination is therefore needed between all partners involved in the remuneration of workers in order to design more effective financial incentive packages, reduce the fragmentation of incomes and improve transparency in the payment of workers in the DRC.

Endnotes

[1]At the time of the study, DRC was composed of 11 provinces which have since been divided into 26 provinces.

[2]Informal payments defined as payments made by patients outside of official channels

[3]Exchange rate as of 26 June 2015 using FOREX currency converter.

[4]Calculated using population data obtained from the Direction d'Etudes et Planification, Ministère de la Santé Publique in October 2013.

Maini *et al. Human Resources for Health* (2017) 15:17

Page 13 of 15

Appendix 1

Table 7 Hypothesised relationship of independent variables with income sources

Variables	Hypothesised relationship with income sources
Age	The older the worker, the more likely they are to gain income as elders are respected in DRC (Oppong & Woodruff, 2007). In addition, older workers will have been working for longer and may be paid more based on their experience.
Sex	Globally, while women comprise the majority of employees in the formal health system, they are usually less likely than men to hold senior roles, which tend to receive more pay (World Health Organization, 2010). In a study in Sierra Leone, for certain cadres, women received significantly less salary than males (Witter et al., 2015). In addition, according to the latest Gender Equality Index, DRC was ranked near the bottom (United Nations Development Programme, 2014). Therefore, it will be interesting to examine whether gender inequality also exists in the receipt of certain sources of income (e.g. user fees) when health worker position and education is controlled for. A study in Tajikistan has shown that women are equally as likely as men to charge informal payments once other factors have been controlled for but this has not been explored in other contexts (Dabalen & Wane, 2008). The same study also showed that women were less likely to work outside of the health facility than men.
Number of dependents	There is some evidence that in DRC, those that earn more have a higher number of dependents and so the number of dependents may increase as overall income increases (Weijs, Hilhorst, & Ferf, 2012).
Urban-rural status	Urban areas have a higher population density and so income from user fees may be higher. There are also large discrepancies in access to healthcare between urban and rural areas, with access being higher in urban areas, which may also affect income gained from user fees (World Bank, 2008). Opportunities to receive income from dual practice may be greater in urban areas compared to rural areas, as was observed in Zimbabwe (Chirwa et al., 2014). In addition, a study in Malawi revealed that urban health workers had higher monthly household incomes compared to their rural counterparts (Bowie, Mwase, & Chinkhumba, 2009).
Province	There are large differences in poverty between provinces in the DRC which may have implications for both formal and informal fees charged to patients (Moummi, 2010; United Nations Development Programme, 2009). Equateur is comparatively poorer than the other provinces that have been sampled. According to a recent study, there are wide provincial disparities in domestic public spending on health services, which may affect the amount of government payments received by workers (UNICEF, 2015; World Bank, 2008).
Total number of staff delivering healthcare present on the day	There is some evidence that facilities with more staff receive more income than understaffed facilities (Murro & Pavignani, 2012). On the other hand, income from user fees may be reduced as they are usually divided among workers at the end of the month. Having a high number of personnel may result in lower amounts being received by each staff member (Bertone & Lurton, 2015).
Number of services offered	Increasing the number of services available to a population is one way of improving access (Gulliford et al., 2002). This improved access may be reflected in increased utilisation rates resulting in higher incomes from user fees.
Distance of the facility from the village	Evidence has shown that distance travelled by patients is a key determinant of the utilisation of health services, and so may impact on the amount of user fees collected at facilities (Shannon, Bashshur, & Metzner, 1969).
Education	The level of education will vary by position and within positions. Doctors should hold a seven-year university degree, while the education of nurses depends on their grade; it varies between two years of secondary school to a three year university degree (Yngfors & Andersson, 2010). The difference in grade (and therefore education) is reflected in the payment of salaries.
Marital status	Several wage determination studies have found a positive wage effect of marriage even when other variables such as productivity and hours worked have been controlled for (Korenman & Neumark, 1991; Pfeffer & Ross, 1982; Kalachek & Raines, 1976; Hill, 1979).
Years in position	The longer a worker has been in their position, the more likely they are to receive a salary as they may have been identified in the last comprehensive health worker census in 2006. This census aimed to ensure workers were correctly registered on the government payroll.
Type of facility	Reference facilities are bigger, offer more services and serve a greater population compared to health centres. Therefore, income opportunities may be different within each.
Total population of village	User fees and therefore total income are influenced by demand factors such as the total population eligible to access healthcare.

Maini *et al. Human Resources for Health* (2017) 15:17

Page 14 of 15

Table 7 Hypothesised relationship of independent variables with income sources *(Continued)*

Presence of ASSP programme	The programme implemented a subsidised user fee policy which would have influenced the amount of income gained from this source. In addition, the programme does not supply performance payments and was even phasing out performance payments in the province of Maniema provided by a previous health programme at the time of the survey. Finally, the programme has a mandate to strengthen the accountability of health services to the community; it would therefore be expected that informal payments would be less common in ASSP sites.

Appendix 2

Table 8 Regression diagnostics

Model	Income sources	Regression diagnostics	Assumptions tested
Logit model	All sources of income	Ramsey RESET test	Functional misspecification
		Hosmer-Lemeshow test	Goodness of fit
Ordinary least squares*	Total income, salary, occupational risk allowance and user fees	Shapiro-Wilk test	Normality of residuals
		Ramsay RESET test	Functional misspecification
		Breusch-Pagan/Cook Weisberg test	Homoskedasticity
		VIF test	Multicollinearity

*For OLS, log of positive values was used

Abbreviations
ASSP: Accès Aux Soins de Santé Primaires (Access to Primary Health care); CODESA: Community health committees; DFID: Department for International Development; DRC: Democratic Republic of Congo; FC: Congolese Francs; NGO: Non-governmental organisation; OR: Odds ratio; PPS: Probability proportional to size; USD: United States dollars

Availability of data and materials
The datasets used for the current study are available from the corresponding author on reasonable request.

Authors' contributions
RM analysed and interpreted the survey data. RM also designed, collected, analysed and interpreted the qualitative data of the study and drafted the manuscript. JB and DRH helped to design the study and write the manuscript. All authors read and approved the final manuscript.

Competing interests
The authors declare that they have no competing interests.

Consent for publication
Not applicable.

Ethics approval and consent to participate
The study received human subjects review and approval from the Tulane University Institutional Review Board (Reference number: 14–633280), the Kinshasa School of Public Health Ethics Committee (Reference number: ESP/CE/024/2014), and the London School of Hygiene and Tropical Medicine Research Ethics Committee (Reference number: 8475). Informed consent was obtained from all participating healthcare providers.

Author details
[1]London School of Hygiene and Tropical Medicine, 15-17 Tavistock Place, London WC1H 9SH, United Kingdom. [2]School of Public Health and Tropical Medicine, Tulane University, 1440 Canal Street, New Orleans, LA 70112, United States of America.

References
1. Prendergast C. The provision of incentives in firms. J Econ Lit. 1999;37(1):7–63.
2. Robinson JC. Theory and practice in the design of physician payment incentives. Milbank Q. 2001;79(2):149–77.
3. Howard B, Kutzin J, Saxenian H. Incentives and provider payment methods. Int J Health Plann Manage. 1995;10(1):23–45.
4. Gosden T, Forland F, Kristiansen I, Sutton M, Leese B, Giuffrida A, Sergison M, Pedersen L. Capitation, salary, fee-for-service and mixed systems of payment: effects on the behaviour of primary care physicians. Cochrane Database Syst Rev. 2000;(Issue 3):Art. No.: CD002215. doi:10.1002/14651858.CD002215.
5. Macrae J, Zwi AB, Gilson L. A triple burden for health sector reform: 'post'-conflict rehabilitation in Uganda. Soc Sci Med. 1996;42(7):1095–108.
6. Fox S, Witter S, Wylde E, Mafuta E, Lievens T. Paying health workers for performance in a fragmented, fragile state: reflections from Katanga Province, Democratic Republic of Congo. Health Policy Plan. 2014;29(1):96–105.
7. Witter S, Bertone MP, Wurie H, Samai M, Edem-Hotah J, Amara R. Health worker incentives: survey report, Sierra Leone. Rebuild Consortium. 2015. https://rebuildconsortium.com/resources/research-reports/health-worker-incentives-survey-report-sierra-leone/. Accessed: 7 June 2016.
8. Chirwa Y, Mashange W, Chandiwana P, Buzuzi S, Shungu W, Chandiwana B, Witter S. Understanding health worker incentives in post-crisis settings: policies to attract and retain health workers in rural areas in Zimbabwe since 1997, a document review. Rebuild Consortium. 2014. http://rebuildconsortium.com/media/1010/understanding-health-worker-incentives-in-post-crisis-settings-a-document-review-of-zimbabwe.pdf. Accessed 7 June 2016.
9. Bertone MP, Lurton G, Mutombo PB. Investigating the remuneration of health workers in the DR Congo: implications for the health workforce and the health system in a fragile setting. Health Policy Plan. 2016;11:czv131 [Epub ahead of print].

Maini *et al. Human Resources for Health* (2017) 15:17

Page 15 of 15

10. Bertone MP, Witter S. The complex remuneration of human resources for health in low-income settings: policy implications and a research agenda for designing effective financial incentives. Hum Resour Health. 2015;13(1):1.

11. Ministère de la Santé Publique, & Programme National des Comptes de la Santé. Comptes Nationaux de la Santé 2010 et 2011 RDC: Rapport d'Analyse des Resultats. 2013a. http://www.minisanterdc.cd/new/images/Documents/CCM/CNS_RD_Congo_Rapport_final_2010_2011.pdf. Accessed 7 June 2016.

12. Africa Region Human Development & The Ministry of Health, Democratic Republic Of Congo. Democratic Republic of Congo Health, Nutrition and Population. World Bank Country Status Report. 2005. http://siteresources.worldbank.org/INTAFRREGTOPEDUCATION/Resources/444659-1212165766431/H_CSR_DRC.pdf. Accessed: 6 June 2016.

13. Johnson JA, Stoskopf CH. Comparative health systems: global perspectives. 1st ed. Sudbury: Jones & Bartlett Publishers; 2010.

14. Ensor T, Witter S. Health Worker Incentives Survey (HWIS). Manual. Immpact, University of Aberdeen. 2007. http://eresearch.qmu.ac.uk/id/eprint/3380. Accessed: 4 May 2016.

15. Le Gargasson JB, Mibulumukini B, Gessner BD, Colombini A. Budget process bottlenecks for immunization financing in the Democratic Republic of the Congo (DRC). Vaccine. 2014;32(9):1036–42.

16. UNICEF. Study on Public and Donor Expenditure in the Health and Education Sectors at Provincial Level in the Democratic Republic of the Congo (DRC): Development (DFID) reporting period : 8 November 2013–31 October 2014. Reference number: SC 130738.

17. Bertone MP, Lurton G. Availability and remuneration of Human Resources for Health in the DR Congo—final report. Kinshasa: Ministry of Public Health and World Bank; 2015.

18. Vian T, Miller C, Themba Z, Bukuluki P. Perceptions of per diems in the health sector: evidence and implications. Health Policy Plan. 2013;28:237–46.

19. Ridde V. Per diems undermine health interventions, systems and research in Africa: burying our heads in the sand. Trop Med Int Heal. 2010. doi:10.1111/j.1365-3156.2010.02607.

20. Paul E, Sossouhounto N, Eclou DS. Local stakeholders' perceptions about the introduction of performance-based financing in Benin: a case study in two health districts. Int J Health Policy Manage. 2014;3:207–14.

21. Weijs B, Hilhorst DJ, Ferf A. Livelihoods, basic services and social protection in Democratic Republic of the Congo. Secure Livelihoods Research Consortium; Overseas Development Institute. 2012. http://www.biosafety.nl/upload_mm/c/b/e/60d44cf4-1838-46bb-b4ea-51e36a00b82a_SLRC%20WP2.pdf. Accessed: 4 May 2016.

22. McPake B, Asiimwe D, Mwesigye F, Ofumbi M, Ortenblad L, Streefland P, Turinde A. Informal economic activities of public health workers in Uganda: implications for quality and accessibility of care. Soc Sci Med. 1999;49:849–65.

Coherence between health policy and human resource strategy: lessons from maternal health in Vietnam, India and China

Tim Martineau,[1] Tolib Mirzoev,[2] Stephen Pearson,[2] Bui Thi Thu Ha,[3] Qian Xu,[4] K V Ramani[5] and Xiaoyun Liu[6]*

[1]Department of International Public Health, Liverpool School of Tropical Medicine, L3 5QA, UK [2]Nuffield Centre for International Health and Development, University of Leeds, LS2 9LJ, UK [3]Hanoi School of Public Health, 138 Giang vo - Ba Dinh,Vietnam [4]School of Public Health, Fudan University, Shanghai 200032, P.R. China [5]Public Systems Group, Centre for Management of Health Services, Indian Institute of Management, Ahmedabad 380 015, Gujarat, India and [6]China Centre for Health Development Studies, Peking University, Beijing 100191, P.R. China

*Corresponding author. China Centre for Health Development Studies, Peking University, Mailbox 505, 38 Xueyuan Road, Haidian District, Beijing 100191, P.R. China. E-mail: xliu@bjmu.edu.cn

The failure to meet health goals such as the Millennium Development Goals (MDG) is partly due to the lack of appropriate resources for the effective implementation of health policies. The lack of coherence between the health policies and human resource (HR) strategy is one of the major causes. This article explores the relationship and the degree of coherence between health policy—in this case maternal health policy—processes and HR strategy in Vietnam, China and India in the period 2005–09. Four maternal health policy case studies were explored [skilled birth attendance (SBA), adolescent and sexual reproductive health, domestic violence and medical termination of pregnancy] across three countries through interviews with key respondents, document analysis and stakeholder meetings. Analysis for coherence between health policy and HR strategy was informed by a typology covering 'separation', 'fit' and 'dialogue'. Regarding coherence we found examples of complete separation between health policy and HR strategy, a good fit with the SBA policy though modified through 'dialogue' in Vietnam, and in one case a good fit between policy and strategy was developed through successive evaluations. Three key influences on coherence between health policy and HR strategy emerge from our findings: (1) health as the lead sector, (2) the nature of the policy instrument and (3) the presence of 'HR champions'. Finally, we present a simple algorithm to ensure that appropriate HR related actors are involved; HR is considered at the policy development stage with the option of modifying the policy if it cannot be adequately supported by the available health workforce; and ensuring that HR strategies are monitored to ensure continued coherence with the health policy. This approach will ensure that the health workforce contributes more effectively to meeting the MDGs and future health goals.

Keywords   Health policy, human resources, maternal health, policy analysis

CH 2

How do dual practitioners divide their time? The cases of three African capital cities

Barbara McPake [a,b], Giuliano Russo [c,d,*], Fu-Min Tseng [b]

CrossMark

[a] Nossal Institute for Global Health, University of Melbourne, Carlton, Vic. 3010, Australia
[b] Institute for International Health Development, Queen Margaret University, Edinburgh, UK
[c] Instituto de Higiene e Medicina Tropical, Universidade Nova de Lisboa, International Health and Biostatistics Unit, Rua da Junqueira 100, 1349-008, Lisbon, Portugal
[d] Centro de Malária e Outras Doenças Tropicais, Instituto de Higiene e Medicina Tropical, Rua da Junqueira 100, 1349-008, Lisbon, Portugal

ARTICLE INFO

ABSTRACT

Health professionals dual practice has received increasing attention, particularly in the context of the universal health coverage movement. This paper explores the determinants of doctors' choices to become a dual practitioner and of dual practitioners' choices to allocate time to the private sector in the capital cities of Mozambique, Guinea Bissau and Cape Verde. The data are drawn from a survey conducted in 2012 among 329 physicians. We use a two-part model to analyse the decision of both public and private practitioners to become dual practitioners, and to allocate time between public and private sectors. We impute potential earnings in public and private practice by using nearest-neighbour propensity score matching.

Our results show that hourly wage in the private sector, number of dependents, length of time as a physician, work outside city, and being a specialist with or without technology all have a positive association with the probability of being a dual physician, while number of dependents displays a negative sign. Level of salaries in the public sector are not associated with dual practice engagement, with important implications for attempts aimed at retaining professionals in the public sector through wage increases. As predicted by theory that recognises doctors' role in price setting, earnings rates are not significant predictors of private sector time allocation; personal characteristics of physicians appear more important, such as age, number of dependents, specialist without technology, specialist with technology, and three reasons for not working more hours in the private sector. Answers to questions about the factors that limit working hours in the private sector have significant predictive power, suggesting that type of employment in the private sector may be an underlying determinant of both dual practice engagement and time allocation decisions.

Living through conflict and post-conflict: experiences of health workers in northern Uganda and lessons for people-centred health systems

Justine Namakula[1] and Sophie Witter[2]*

[1]ReBUILD Project, School of Public Health, Makerere University, Kampala, Uganda and [2]ReBUILD Project, Queen Margaret University Edinburgh, Musselburgh, Edinburgh EH21 6UU, UK

*Corresponding author. Institute for International Health and Development, Queen Margaret University Edinburgh, Musselburgh, Edinburgh EH21 6UU, UK. E-mail: sophiewitter@blueyonder.co.uk

Providing people-centred health systems—or any systems at all—requires specific measures to protect and retain healthcare workers during and after the conflict. This is particularly important when health staff are themselves the target of violence and abduction, as is often the case. This article presents the perspective of health workers who lived through conflict in four districts of northern Uganda—Pader, Gulu, Amuru, and Kitgum. These contained more than 90% of the people displaced by the decades of conflict, which ended in 2006. The article is based on 26 in-depth interviews, using a life history approach. This participatory tool encouraged participants to record key events and decisions in their lives, and to explore areas such as their decision to become a health worker, their employment history, and their experiences of conflict and coping strategies. These were analyzed thematically to develop an understanding of how to protect and retain staff in these challenging contexts. During the conflict, many health workers lost their lives or witnessed the death of their friends and colleagues. They also experienced abduction, ambush and injury. Other challenges included disconnection from social and professional support systems, displacement, limited supplies and equipment, increased workload and long working days and lack of pay. Health workers were not passive in the face of these challenges, however. They adopted a range of safety measures, such as mingling with community members, sleeping in the bush, and frequent change of sleeping place, in addition to psychological and practical coping strategies. Understanding their motivation and their views provides an important insight how to maintain staffing and so to continue to offer essential health care during difficult times and in marginalized areas.

Keywords   Health workers, conflict, post-conflict, retention, motivation, participatory research

---

KEY MESSAGES

- People-centred health systems have to start with listening to staff, especially those who provide the backbone of services on the ground. Life histories can be a powerful participatory research tool to elicit health worker experiences, views and motivation.

- Health workers' coping strategies in this context were impressive. Personal faith, commitment to community and sheer fatalism were amongst their psychological defences. Many took pride in their inventiveness in managing in difficult conditions and evading rebels.

- The findings suggest the importance of selecting and favouring those with higher intrinsic motivation, especially in difficult times, when formal structures of promotion and recognition cannot function well, when pay is low and erratic and when working conditions are hard. During the conflict in northern Uganda, some health workers were equipped with and demonstrated values like empathy, professionalism and selflessness. This is an opportunity that can be seized after the conflict. Local employment, gender-sensitive policies, entry routes for people from poorer households and development of strong community links are all likely to be effective in attracting staff that will stay.

- The research also highlights the need for specific policies to protect health staff during conflict and to recognize and reward them for continued service in dangerous conditions.

Introduction

This study is part of the ReBUILD health worker incentives research project.[1] The project aims to understand the evolution of incentives for health workers post-conflict, and to derive policy recommendations for improving retention in those areas (Witter *et al*. 2011). The challenges in relation to recruitment, retention, distribution and management of health workers are recognized worldwide, but these can be exacerbated in conflict-affected areas (Macrae *et al.* 1996; Pavignani and Colombo 2001; Pavignani 2003; Witter *et al.* 2011). Although there is a legitimate focus on re-establishing services after conflict, the perspective of those who provide those services is often overlooked. It is an important part of responsive health systems that they are able to listen to and recognize the contribution of staff who have undergone trauma during conflict and yet, in many cases, continued to serve during and after that conflict. Understanding their perspective can contribute to improved policies and more effective healthcare services. This is an important challenge as more than 1.5 billion people live in countries affected by violent conflict. According to World Bank estimates, fragile and conflict-affected countries account for half of child deaths and will contain around a third of the world's poor by 2015.[2]

Previous literature on conflict and fragile states has tended to focus on the effects of conflict on the health system in general. Documented effects have included human and capital flight, infrastructure destruction, and increased mortality and morbidity (Ohiorhenuan and Steward 2008). Country case studies on human resources for health for Cambodia, Mozambique, Liberia and Rwanda have indicated that health workers were targets for violence (Pavignani 2003). However, there is limited participatory research or research which seeks to understand why health workers stay in conflict-affected areas and how they cope.

For 20 years (1986–2006), the Acholi sub-region in northern Uganda experienced violent conflict as a result of fighting between the government and the Lord's Resistance Army (LRA). This conflict claimed a lot of lives and displaced many people from their homes, besides devastating the social services and physical infrastructure in the region (Kindi 2010; Rowley *et al.* 2006; World Vision 2009). In some districts, such as Pader and Kitgum, displacement was massive, accounting for 95% and 90%, respectively, of the district populations (MoFPED 2002). The displaced populations were forced to seek refuge in internally displaced camps (World Vision 2009). Following the peace negotiations in June 2006, a period of tranquillity began (ARC 2007; Kindi 2010). The displaced population in camps was shifted into a number of unplanned satellite/transit camps. By 2010, more than 85% of internally displaced persons living in camps had returned to their villages of origin (USAID 2010) or moved to transit/satellite camps closer to their homes. However, some populations continued living in camps (Namakula *et al.* 2011). Some of the reasons for the slow return process included worries about the presence of land-mines and unexploded ordinance, presence of bandits, the lack of services and limited access to their former villages (NRC and IDMC 2010; Namakula *et al.* 2011).

During the conflict, the health system in northern Uganda was divided into two: on the one hand, there was a functional camp-based health system run by international agencies and non-governmental organizations (NGOs). The government health service delivery was confined largely to towns where referral hospitals are located (WHO 2006). Post-conflict, movement of population from camps to original villages raised issues of access and equity as well as the need for health system reconstruction. Reconstruction efforts—including of health services—are now underway, with 1 billion dollars pledged by government and donors since 2006 to contribute to the peace and recovery development plan (PRDP 2007). There is a growing participation of the private sector (though with an urban bias). In terms of human resources for health, there has been a decline in expatriate health workers, with a few remaining in advisory or training posts, and a concern that projects may not be sustainable due to diminishing funds. It continues to be difficult to attract health workers to public health facilities in rural areas of the region (MOH *et al.* 2012).

This article presents a case study from northern Uganda, Acholi sub-region, where a participatory life history approach was used to understand the experiences and perceptions of health workers who had lived and worked through conflict in the region. It presents their experiences of conflict, how they coped, and what motivates them to stay in service, as well as recommendations for retaining staff in future. The concept of people-centred systems implies health care that is responsive to individual differences, cultural diversity and the preferences of people receiving care, which enables the patient to take as much control as possible over their own care, and which places the highest importance on individual dignity, respect and shared humanity (Robinson *et al.* 2008; Victorian Department of Health services 2006; WHO 2013). People-centred health systems therefore need staff who are not only adequate in

number and competence, but also motivated and provided with an enabling environment to provide sensitive care (Victorian Department of Human Services 2006; WHO 2013). This is a major challenge for many countries even in peacetime, but presents particular difficulties in times of conflict and in the post-conflict period. The challenge is to understand what enabled some people to stay in service during the period of conflict to be able, where possible, to support those factors in other conflict situations, where these might be absent. In addition, one can learn from the resilience of health workers during the conflict period to better retain them in the post-conflict period. Not only will this knowledge help in other conflict and post-conflict situations, but also in peaceful countries that are experiencing difficulties in retaining staff, and thus failing at the first hurdle of the provision of people-centred health systems.

Research methods

Site and sample selection

Twenty-six life history interviews were conducted with health workers from Pader, Gulu, Amuru and Kitgum—as these were most affected by the LRA conflict, and contained more than 90% of the displaced people. Participant selection was purposive, based on district, sector [public and private not-for-profit (PNFP)] and number of years spent working in the Acholi region. The rationale for choosing health workers who had spent at least 10 years in the region was to enable us understand how their lives have changed since the war—a subject that could be discussed only by health workers with longer experiences in the region.

Although the study had aimed at interviewing equal numbers by gender, sector, level of health facility and district, the final distribution varied (Table 1), as few staff were found working at health centre II levels who had been in the region for 10 years or more. The distribution of interviews by district was seven for three of the districts and five for Amuru. Nineteen of the participants were female and seven male. The distribution across sectors was 17 in the public sector and 9 PNFP. These distributions reflect the pattern of staffing at facility level in this region. Two additional interviews were included with

district officials who had worked in the region for the requisite period.

Data collection

The process of tool development was a participatory one between team members from Uganda and the UK. A generic topic guide was produced by the UK lead researcher and was then adapted by the local team during training and pretesting. Field work was conducted in October 2012.

During the interview, a horizontal line was drawn on a piece of paper and participants were encouraged to record key events and decisions in their lives along the line. In this study, the lifeline was used to probe the decision to become a health worker, training experiences, their employment history, why they had stayed or moved between jobs, their job satisfaction, experience of conflict, coping strategies during and after conflict, and experience of different policies. The life line was used as a tool to guide discussion (as a useful prompt and cross-checking source during the interview) and emerged as a visual representation/summary of key events, as perceived by the participant at the end of the interview.

The potential strength of this tool is that it permits a holistic analysis of health workers' lives, taking into account personal and contextual factors. Although life histories have been used in the health sector for research into patient groups (Cole and Knowles 2001; Miller 1994), the nursing profession (Cole and Knowles 2001; Leininger 1985) as well as poverty and well-being (Bird 2008), it has not been used, to our knowledge, to probe the perceptions of health workers in low- and middle-income settings before.

Ethical approval

Ethical approval to conduct the study was granted by Makerere University School of Public Health Higher Degrees Research and Ethics Committee; the Uganda National Council for Science and Technology and the University of Liverpool in 2012.

Data analysis

Data analysis was guided by the framework analysis approach of Ritchie and Spencer (1994) and analysis framework stages provided by Richie and Lewis (2003) and ATLAS TI software version 5.0 as described later. The analysis framework involved

Table 1 Summary of participant characteristics

	Average
Age	42 years average (range: 30–60 years)
Time spent working in region	17 years average (range: 7–38 years)
Sex	23% M; 77% F
Cadres	Clinical officers (15.38%); nurses (57.68%); nursing assistants (7.69%); midwives (11.53%); others (7.68)
Districts	27% Pader; 27% Kitgum; 19% Amuru; 31% Gulu
Sectors	65% Public; 35% PNFP
Level of facility	Hospitals (31%); HC IV (15%); HC III and II (46%); others (8%)
Highest level of education (formal)	69% O' level; 12% A' level; 15% Diploma; 4% Degree

the following stages: familiarization, listening to the audio recordings, reading field notes, coding and identification of key themes, merging themes, searching for key findings under each theme, comparing and finding associations, and provision of explanations/meaning (Ritchie and Lewis 2003).

Audio tapes were listened to and compared with notes taken during interviews to fill in the gaps in information that could have been left out or miss-recorded during note taking. Audio recordings were transcribed verbatim so that original meanings are not lost. Transcripts were read several times to get an overall picture and then recurring preliminary themes were identified and used to create codes (see Supplementary File for a summary of the coding tree).

A code book was generated and agreed upon between team members in Uganda and in the UK. Data were then prepared for entry into ATLAS Ti by filing transcripts using identifiers such as district, ownership, type of facility, cadre and gender. Filed transcripts and codes then uploaded into ATLAS TI Software version 5.0 and coding nodes were attached to quotations in each. ATLAS query reports were generated and printed out for each code and further familiarized to identify more sub-themes. Similar sub-themes were merged together to create themes, whereas in some cases sub-themes were created. Finally, quotations that epitomized the emerging themes were identifies and agreed upon by the research team.

Study limitations

The main limitation to be noted is that by selecting those who had worked in the region for 10 years or more, this study effectively adopts a 'positive deviance' approach: it cannot illuminate the situation or choices of health workers who left, but can provide in-depth insights into those who stayed. It is also based on a cohort of workers who experienced the conflict—how their experiences map on to those of younger workers now joining the workforce is a matter for further investigation. As with all research, the translation of the findings of this study to other settings has to be done sensitively, with careful consideration of contextual differences.

Results

Experiences of conflict

The effects of the LRA-generated conflict can be categorized into two: effects on health workers' health and security, and effects on health workers' working conditions. Effects on health workers' security and health included abduction, ambush, injury and death. Conflict-related challenges in relation to the health worker's working conditions included disconnection from social and professional support systems, displacement, limited supplies and equipment, increased workload and long working days, and lack of pay. Breakdown in transportation and dangerous roads led to their physical, professional and social isolation.

During the conflict many health workers lost their lives or witnessed the death of their friends and colleagues. Those who survive death remained traumatized and in constant fear for their lives.

"I lost so many friends; we lost even some of our staff during the ambushes on our way to Gulu" (Female participant, Kitgum)

"Then you could hear gunshots, someone shooting just very near at times you feel like you are going to be shot at that time, that fear was there" (Male participant, Amuru)

Participants noted that as health workers, they were a particular target for abduction, as the rebels needed medical attention. Almost all respondents witnessed traumatic events, being abducted themselves or witnessing the abduction or near-abduction of colleagues. Many of the participants who were abducted were lucky to have been set free after a period of time which ranged from hours to days and months.

"In 1986, I was abducted by rebels for 2 days because they expected me to help them. They said, 'this is the right man to help us in the bush' [...] but a rebel who was born in Mucwini, where I also come from saved me and released me and then I found my way back home in Mucwini" (Male participant, Kitgum)

Health workers experienced a number of ambushes by rebels and they had vivid memories of them. Ambushes were common along the roads connecting districts or at particular road junctions. Many of them survived death or got lasting physical injuries.

"In 1999 after I qualified, I went to Kitgum to do an interview. We were five clinical officers from Pader. On our way back, we were ambushed, one of our colleagues was shot in the chest but he survived narrowly. The rest of us survived as well" (Male participant, Pader)

Infrequent travel due to fear of ambushes and landmines created disconnection from professional support, medical supplies and equipment and from monthly salaries, which were often paid in the other districts. Although in some cases security was provided in terms of convoys to escort vehicles with supplies and patients, health facilities in remote areas remained disconnected from supplies. Health workers in such areas had to endure shortages, to innovate, or lobby for some buffer supplies from NGOs. Where there was no security from the army, health workers were forced to travel to other districts at risk to their lives.

"Yeah I walked from there up to the health centre where I had been posted because the vehicle that was taking me was stopped by the army men, not to continue ahead because of the insecurity, landmines had been planted on the way" (Female participant, Gulu)

During the conflict, there was limited supply of medical equipment, as a result of raids by rebels, and inability to move to bring in new stock from the other districts due to the insecurity. In addition, the overwhelming number of casualties during the time rendered the available supplies inadequate.

"Yes they even went with some vaccines, they went with drugs, they went with very many things" (Female participant, Gulu)

''In Adilang, [...] I remember struggling to help a woman kneeling with no bed but just on the floor so that was the worst experience I had. I was also pregnant and I got a miscarriage'' (Female participant, Pader)

The conflict also resulted in increased work load and long working days for those health workers who worked in facilities that remained functional during the war (mainly the private not for profit facilities and those facilities located in camp settlements). War casualties, high rates of illnesses and epidemics such as cholera (2000–2001) and Ebola (2005–2006) all contributed. As a result, health workers were emotionally and physically affected.

''The number of clients overwhelmed us because we could get about 700 to 800 cases. You could be on night duty but are required to report at 7.30 every morning. During that one year I lost weight and became very thin because the work was too hectic'' (Female participant, Kitgum)

As a result of conflict many health workers fled to safer areas within the same districts, usually urban areas, or to other areas within or outside Acholi sub-region. In many cases, they moved to facilities elsewhere or abandoned health work for some time.

Coping strategies

In light of all the above challenges, health workers were not docile; they actively created coping strategies to deal with the context. These included practical safety measures, such as mingling with community members, sleeping in the bush, frequent change of sleeping place or staying stationary. To mingle with patients, they underlined the need to build trusting relationships with the community. At this point, their uniforms changed from being a symbol of smartness to a cause of vulnerability to abductions by the rebels.

''Other staff who feared staying in the nurses quarters again could run and sleep with the patients in the hospital because when you are abducted as a nurse you will not escape! So at least when the rebels find you among the patients they will leave you thinking you are also a patient and at night we could not put on uniform so that you are not detected'' (Female participant, Kitgum)

Localized conflict such as cattle rusting from Karimojong warriors also created insecurity for some of the respondents. One responded by befriending some soldiers, doing military training, acquiring a gun and becoming a fighter, in addition to his health work.

In addition to practical measures, participants reported important psychological coping strategies, including getting support from their managers, elders and communities, getting strength from their faith and from a sense of service to the community, being fatalistic about their situation, and, conversely, taking pride in their resilience and inventiveness in adverse circumstances.

''As a human being you have to persevere with the pain because there was nothing I could do because these people could come any time they want. We would just leave all those problems to God.

Nothing as a human being you do apart from praying to God'' (Male participant, Kitgum)

''If we were to run away who would now help them? So we persisted and slowly the fear disappeared'' (Female participant, Amuru)

''[...] we would work until our gloves were over, because of too many injuries and at times we would use kavera [polythene bags], because you cannot leave a person to die, so we used 'kavera''' (Male participant, Pader)

''We just continued surviving like that. One good thing that I saw was health workers became committed and I remember there was a strike during that time also, where the health workers were striking and did not want to work, but for us we continued working. Prior to the strike day, we sat down and said 'our people have suffered enough and we cannot go back, we cannot join them or the rest of the country in the strike'. Let's remain and continue to work'' (Male participant, Kitgum)

To cope with the increased workload, health workers had to take on more complex cases (higher levels of responsibility than those they were qualified to do) and work in shifts. They were motivated by a sense of vocation.

''[...] this is not my role, it was a role of a doctor, and you know it very well but we don't want to bury the foetus in the dead mother's womb - so I had to separate these people. I had to struggle with the knowledge I had'' (Female participant, Pader)

''There was a time when there was an outbreak of meningitis and the nurses were helping a lot, because when somebody comes you just do a lumbar puncture, which we are not supposed to do, but you know there are settings when there are no doctors'' (Female participant, Amuru)

Health workers also coped with the aid of external support and through income generation strategies, such as alcohol brewing and selling foodstuff, or relying on the community. External support came from the army, though its protection was only partially effective. In addition, NGOs and external donors, including missionaries, provided important practical and moral assistance during the conflict period. The support of expatriate doctors was also important in encouraging some to continue working in difficult conditions.

''[...] Aah!, It was too much for us but only that [...] professor [an Italian expatriate] told us that 'supposing you were the one who is, you put yourself as if you were the person?' So that taught people to work [...]'' (Male participant, Pader)

''[...] around 1986–87, there was no salary so I brewed alcohol to survive'' (Female participant, Kitgum)

Motivators and de-motivators to stay in service

There were a number of factors which emerged as motivators (or de-motivators, if absent) for health staff, during and after the conflict. These included the following:

(1) *Community support* and practical assistance of various sorts, provided by the district, external agencies and small gifts from patients.

''In the first place I was motivated by community of Lira Kato, the present Apono sub-county. They were in total support of my well being, they were able to provide food for me. Another motivation was the district which was able to provide for me means of transport. UN High Commission for Refugees (UNHCR) gave us food and also good things like blankets and mattress because we had children'' (Male participant, Pader)

(2) *Appreciation* by supervisors and the community.

''You know motivation is not physical things only and that particular in-charge could motivate even through thanking you when you have done some work'' (Female participant, Amuru)

(3) *Effective working conditions* such as having access to equipment, referral transport, among others.

''One thing that I would like to see in place is having a facility with good settings with all the equipments, which is number one. I would want to have the outpatient department (OPD) fully equipped. That would make me happy. Another thing is get me accommodation and settle me down there. Then whenever am moving to the headquarters, I need a motorcycle to help me move. Then the last one which important but last is that I should have good co-ordination between the members of the community and the health centre'' (Male participant, Pader)

(4) Being able to *learn and develop one's skills* and roles were important motivators for many, even those in relatively lowly posts. They were eager for further training and certificates to demonstrate their advancing skills.

''I liked my job because of the experience I got while in the children's ward [which] helped me gain a lot of experience and I knew a lot of things beyond my training'' (Female participant, Kitgum)

''Because you are there and sometimes you may not be allowed to do some things. So you don't have time to learn [...] In fact I was not happy. The little knowledge I had, if I did not use it, it would disappear'' (Male participant, Amuru)

(5) *Formal promotion* that corresponds with one's qualification, and is reflected in a corresponding salary, was perceived as recognition of their contribution during the conflict and as a (missing) motivator that affects performance in the post-conflict period.

''Up to now I have not been promoted I must tell you. I am earning a salary of an enrolled nurse! I qualified in 1998 and up to now no promotion. So I feel that burden and it has discouraged me from doing the best of my capacity'' (Female participant, Kitgum)

(6) *Employment benefits*, such as food, accommodation, transport, free health care, uniforms, and other occasional additions, such as sponsorships for their children.

''I want to go to a place where the leader, the manager is good, a very conducive environment, within the working area and accommodation has to be there'' (Female participant, Amuru)

(7) *Good leadership and communication* in the workplace (staff encouraged to express themselves). Poor relationships with supervisors, lack of recognition and absentee managers were a cause of dissatisfaction, sometimes causing people to leave their posts.

''You should talk to the health workers and get their views. It should not be this push method, they should call them, have open discussion'' (Female participant, Gulu)

''We were never given freedom of speech and whenever you talked something they would say you are not respectful; they never wanted anyone to talk the truth about them'' (Female participant, Kitgum)

(8) *Regular and adequate pay*, especially after the end of the war and for staff reaching the expensive time of life (with children at secondary school).

''[...] also top up their salaries and also be able to recognize – because actually the nurses are never recognized in spite of the work that they do'' (Female participant, Kitgum)

(9) *Flexible working*—ability to augment salaries and build up some assets. The public sector tended to offer higher pay for many cadres (though not for all), with fewer restrictions on outside earning opportunities, and greater access to training opportunities and pension rights. Some participants also felt that formal employment policies, such as the right to paid leave, were more respected in the public, compared to the PFNP, sector.

''If you're in government, you have a very big chance of going for workshop [...] there are very many scholarships [...] you know if you go higher you are going to do less work and you will be getting more money'' (Male participant, Pader)

Discussion

Reflection on the methods

The life history tool was found to be an effective participatory approach to understand the embedded experiences of health workers in the Acholi sub-region. People-centred health systems have to start with listening to staff, especially those who provide the backbone of services on the ground. Some aspects which arose—such as motivation to join the profession, and how this affected subsequent career trajectories—are described elsewhere (Namakula *et al.* 2013). This article has focused on their experiences of conflict, how they coped and what motivated them to stay in service. As noted in the Methods section, by selecting health workers with more than 10 years of experience in the region, we were able to focus on a group of largely mid-level health cadres who stayed in service. Understanding their motivation and their views provides an important insight into how to maintain staffing during difficult times and in marginalized areas. Moreover, by taking a retrospective perspective over the period of their lifetime, we were able to understand how their personal history affects current motivation and retention.

How the findings link to context

The majority of those interviewed were mid-level cadres, with an average time of 17 years spent working in the region. On

one hand, this reflects the existing staffing mix, which is dominated by mid-level cadres, whereas on the other hand it is indicative of the difficulties of attraction and retention of more qualified cadres such as clinical officers, doctors, and medical officers in hard to reach areas, including those in conflict (Matsiko 2010; MOH 2006).

Personal factors, including gender, appear to have played an important role: the staffing of the facilities is predominantly female, which may reflect a number of factors, including role models of service by female relatives, the ties of family commitments in the area, greater resilience, and higher female attraction to the mid-level cadre roles. Gender roles were cited as a hindrance to upgrading, particularly for the female participants.

In relation to contextual factors, the long period of conflict and its aftermath was enormously significant for the respondents. Hardship, fear and direct or indirect casualties (injury to them or to those near to them) were reported by all respondents, who had nevertheless stayed in the areas.

Their recommendations, which link closely to factors which motivate and demotivate, are however not substantially different from those in non-conflict settings (Rourke 2010; UNFPA 2011; WHO 2010). They reflect a range of needs, from basic and material (adequate money to live on) to social (good relationships) and self-actualizing (the ability to be effective in your role and develop yourself). The main difference may be a greater sense of vocation—of serving God and the local community, which was demonstrated in their career history as well as their comments on motivation.

Lessons arising and links to existing literature

In this context, some policy levers emerge as significant in boosting recruitment and retention. Recruiting from local areas is likely to be productive—these respondents tended to stay in their districts, and ties of family and land were part of their 'stick' factors. They were also loyal to the sector (and often facility) which first sponsored their training, suggesting that is also effective at retaining them. Offering training routes which favour those with lower levels of education also appears to be important, allowing incremental steps which may include volunteering, on the job training and access to in-service training so that those who have less access to education can nevertheless enter and progress. These people are more likely to be motivated to stay in hardship areas.

In general, the findings suggest the importance of selecting and favouring those with higher intrinsic motivation, especially in difficult times, when formal structures of promotion and recognition cannot function well, when pay is low and erratic and when working conditions are hard. During the conflict in northern Uganda, some health workers were equipped with and demonstrated values like empathy, professionalism and selflessness. This is an opportunity that can be seized after the conflict.

Our findings are consistent with those of a study by Serra *et al.* (2010) in Ethiopia which showed that intrinsic motivation may be developed right at the entry of the health profession and is propagated throughout one's career. Such motivation is common among those who started their career in not for profit facilities. Those with intrinsic motivation were found to be satisfied even when they were getting lower salary than their colleagues (Serra *et al.* 2010).

This does not imply that remuneration and promotions should be neglected, however, for people in hardship areas. Pay is not the main motivator but matters, as does flexibility about other activities, assuming that pay remains low relative to living costs. Other benefits in kind are highly valued (and perhaps also reflect the recognition to which health workers aspire). As conflict wanes and as they advance in their career and face the most expensive phase of family life (having children at secondary school), mid-level workers require pay and other opportunities (such as training and promotions), which recognize their contribution. This matches existing literature on health worker motivation and retention (Hertzberg *et al.* 1959; Ssengooba and Rutebemberwa 2005).

One observation relates to the relationship between satisfaction and retention. Our respondents were asked about their satisfaction with their job at different points in their career and while satisfaction varied according to work, personal and contextual factors, low satisfaction had not led to a career change or even necessarily less willingness to work. For those who have strong internal motivation—'I work for God and my country' as one respondent put it—lower satisfaction may not cause lower effort or achievement. Some studies have found that satisfaction was a result of being able to handle health problems, acknowledgement by the community, and being able to make a change in the community (VSO 2011). In some literature it is argued that that there is no significant link between intrinsic and extrinsic satisfaction and retention, rather that satisfaction is generated as a result of career commitments and organizational commitment, which could also have a link to leadership strategies (Land 2003; Peace 1994). This was raised specifically for the not-for-profit sector.

Conclusion and lessons

Our study adds to the existing literature on health workers in conflict by focusing on the experiences and motivation of a group of health workers who stayed during and after conflict. It provides details on their coping strategies and compares experiences across public and PNFP sectors. It uses health workers' voices and reflects their agency in these difficult circumstances. To our knowledge, it is the first time that life histories have been used to understand the situation of health workers in low- and middle-income countries.

The interviews raise questions on how best to protect health workers during conflicts. In some cases, health workers may be protected under an agreed policy of not disrupting services; however, in northern Uganda health workers were specifically targeted as being of use to the rebel forces. In this context, or in conflict-affected areas where this may occur, training in how to react (and agreed procedures with the local community) might be advisable. The trauma that health workers who stayed through conflict have undergone is also rarely recognized. Health services should recognize and celebrate the contribution of those who continued to serve on the front line during conflict-affected times. In times of conflict, alternative mechanisms for getting pay direct to workers should be developed.

Insecurity means that opportunities to move or access services such as banks will very likely be limited.

More generally, and in the post-conflict period, the findings suggest that incentive policies need to target continued motivation and commitment of mid-level cadres because they are more likely to stay in these areas, while also putting in place programmes to upgrade their skills to be able to handle complications effectively. Although local employment can aid retention, the reverse of this coin may be discrimination against people born out of the area, particularly in a decentralized system. This should be controlled through sensitization of the local leaders and communities. Gender was an also an important factor, influencing issues such as joining the profession, upgrading, coping strategies and roles at work. Gender-sensitive policies are needed—for example, supporting women to be trained and promoted without compromising their wider roles in the household.

Human resource management policies should focus on maintaining the intrinsic motivation which many health workers bring when they join the profession through practices which foster good communication, support professional pride, and develop the links with the community—all of which are motivators to stay in service, especially in remote situations and in conflict affected areas.

Supplementary Data

Supplementary data are available at *HEAPOL* online

Acknowledgements

Funding

Endnotes

[1] See: www.rebuildconsortium.com
[2] http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:20042303~menuPK:34480~pagePK:64257043~piPK:437376~theSitePK:4607,00.html

References

ARC. 2007. Knowledge, attitudes and practices relating to youth and conflict in northern Uganda. *A report for Uganda Country Programme*. American Refugee Committee International.

Bird K. 2008. *Using life history research as part of a mixed methods strategy to explore resilience in conflict and post conflict settings*. http://www.chronicpoverty.org/uploads/publication_files/bird_mixed_methods.pdf, accessed March 2012.

Cole LA, Knowles LG (eds). 2001. *Lives in Context: The Art of Life History Research*. Oxford, United Kingdom: Altamira Press.

Herzberg F, Mausner B, Snyderman B (eds). 1959. *The Motivation to Work*. New York, John Wiley & Sons.

Kindi FI. 2010. Challenges and opportunities for women's land rights in the post-conflict northern Uganda. A micro level analysis of violent conflict (MICROCON). *MICROCON Research Working Paper no. 26*. Institute of Development Studies, University of Sussex, Brighton.

Land D. 2003. Identifying strategic leadership practice motivators of non-profit employee retention. *MA disertation*. University of Phoenix. http://www.library.auckland.ac.nz/databases/record/?record=ABI, accessed 24 October 2013.

Leininger M (ed). 1985. *Qualitative Research Methods in Nursing*, New York: Grune & Straton Publishers.

Macrae J, Zwi A.B., Gilson L. April 1996. A triple burden for health sector reform: post conflict rehabilitation in Uganda. *Social science and Medicine*, Vol. 42. pp. 1095–1108.

Matsiko WC. 2010. *Positive Practice Environments in Uganda: Enhancing Health Worker and Health System Performance*. Kampala: For International Council of Nurses, International, Pharmaceutical Federation, World Dental Federation, World Medical Association, International Hospital Federation, World Confederation for Physical Therapy.

Miller PJ. 1994. Narrative practices: Their role in socialisation and self construction. In: Neisser U, Fivush R (eds). *The Remembering Self: Construction and Accuracy in the Self-Narrative*. Cambridge: Cambridge University Press, pp. 158–190.

MoFPED. 2002. Challenges and prospects for poverty reduction in northern Uganda. *Discussion Paper Number 5*. Kampala, Government of Uganda, Ministry of Finance, Planning and Economic Development.

MOH. 2006. *Human Resources for Health Policy*. Uganda, Kampala: Government of Uganda, Ministry of Health.

MOH, Health Systems 20/20, Makerere University School of Public Health. 2012. *Uganda Health System Assessment 2011. Ministry of Health Uganda, United States Agency for International development (USAID) and Makerere University school of Public Health*. Kampala, Uganda and Bethesda, MD: Health Systems 20/20 Project, Abt Associates Inc.

Namakula J, Ssengooba F, Ssali S. 2011. *Research for Building Pro-Poor Health Systems during Recovery from Conflict; Country Situation Analysis*. Northern Uganda, Kampala: ReBUILD Consortium and Makerere University School of Public Health.

Namakula J, Witter S, Ssengooba F, Ssali S. 2013. Health workers' career paths, livelihoods and coping strategies in conflict and post-conflict northern Uganda. *A Research Report*. Kampala, Uganda: ReBUILD Consortium and Makerere University School of Public Health.

NRC, IDMC. 2010. Peace, recovery and development: challenges in northern Uganda. *A Briefing Paper*. Norwegian Refugee Council (NRC) and Internal Displacement Monitoring Centre (IDMC). http://www.internal-displacement.org/8025708F004CE90B/%28httpDocuments%29/C69CA27E72D2716DC1257558004609B0/$file/Uganda+briefing+paper+-+Feb+2009.pdf, accessed 15 July 2012.

Ohiorhenuan J, Steward F. 2008. *Crisis Prevention and Recovery Report 2008: Post-Conflict Economic Recovery, Enabling Local Ingenuity*. New York: United Nations Publications.

Pavignani E. 2003. Mozambique 1990–2002: restructuring the health workforce after the war. WHO (ed). *Health in Emergencies*. Vol 18. Geneva, Switzerland: WHO.

Pavignani E, Colombo A. 2001. Providing Health services in countries disrupted by conflict: A comparative analysis of Mozambique and Angola 1975-2000. WHO(ed). Geneva, Switzerland.

Peace D. 1994. Employee retention in the non-profit sector: An appreciative inquiry into why employees stay at McMan youth, family, and community services in Calgary Alberta. *M.A. dissertation*. Royal Roads University, Canada.

PRDP. 2007. *Peace and Recovery Development Plan (PRDP)*. Kampala: Government of Uganda.

Ritchie J, Lewis J (eds). 2003. *Qualitative Research Practice. A Guide to Social Scientists and Researchers*. Wiltshire, UK: The Cromwell Press Ltd. Trowbridge.

Ritchie J, Spencer E. 1994. Qualitative data analysis for applied policy research. In: Bryman A, Burgess RG (eds). *Analysing Qualitative Data*. London, UK: Routledge.

Robinson JH, Callister LC, Berry JA, Dearing KA. 2008. Patient-centered care and adherence: definitions and applications to improve outcomes. *Journal of American Academy of Nurse Practioners* **20**: 600–7.

Rourke J. 2010. WHO 2010 recommendations to improve retention of rural and remote health workers: important for all countries. An editorial. *The International Electronic Journal of Rural and Remote Health Research, Education, Practice and Policy* **10**: 1654.

Rowley E, Robin A, Huff K. 2006. Health in fragile states, country case study: northern Uganda. Arlington, VA: Basic support for institutionalising child survival (BASICS) for the United States Agency for International Development (USAID).

Serra D, Serneels P, Barr A. 2010. Intrinsic motivations and the non-profit health sector: Evidence from Ethiopia. *Special Issue on Personality and Economics, Personality and Individual Differences* **51**: 309–14.

Ssengooba F, Rutebemberwa E. 2005. *Human resources for health in decentralized Uganda: Developments and implications for health systems research. WHO Forum 9, 12-16 September 2005*. Mumbai, India.

UNFPA. 2011. *State of Midwifery Report 2011: Delivering Health, Saving Lives, United Nations Population Fund (UNFPA)*. New York, USA. http://www.unfpa.org/sowmy/resources/docs/main_report/en_SOWMR_Full.pdf, accessed 4 November 2013.

USAID. 2010. *Stability peace and reconcilliation in Northern Uganda (SPRING): Northern Uganda Conflict Assessment Report Conflict and Recovery Briefing Report No. 6*. USAID.

Victorian Department of Human Services. 2006. *What Is Person-Centred Health Care? A Literature Review*. http://www.mednwh.unimelb.edu.au/pchc/downloads/PCHC_literature_review.pdf, accessed 28 January 2014.

VSO. 2011. Ugandan health workers speak: the rewards and realities. *Sharing Skills Changing Lives*. London, UK. Voluntary Services Overseas (VSO). http://www.vsointernational.org/Images/ugandan-health-workers-speak_tcm76-30142.pdf, accessed 6 November 2013.

WHO. 2006. Reducing avoidable loss of life and burden of disease due to crises in Uganda: Health Actions in crises (HAC) Programme. *Uganda Annual Report*. http://reliefweb.int/report/uganda/health-action-crises-hac-programme-uganda-annual-report-2006, accessed 25 May 2011.

WHO. 2010. *Global Policy Recommendations: Increasing Access to Health Workers in Remote and Rural Areas through Improved Retention*. Geneva, Switzerland: World Health Organization. http://www.who.int/hrh/retention/guidelines/en/, accessed 4 November 2013.

WHO. 2013. *ROADMAP: Strengthening People-Centred Health Systems in the WHO European Region. A Framework for Action towards Coordinated/Integrated Health Services Delivery (CIHSD)*. World Health Organization (WHO) Health services delivery programme, Division of Health Systems and Public Health. http://www.euro.who.int/__data/assets/pdf_file/0005/231692/e96929.pdf, accessed 28 January 2014.

Witter S, Sok S, Samai M, Namakula J, Chirwa Y. 2011. *Understanding Health Worker Incentives in Post Conflict Settings: Research Summary, Project 2, Health Worker Incentives*. ReBUILD Consortium. http://www.rebuildconsortium.com, accessed 18 October 2013.

World Vision. 2009. *Annual End of Project Report: Livelihood Recovery Project, Pader District*. Uganda: World Vision.

HUMAN RESOURCES
FOR HEALTH

RESEARCH

Open Access

Workplace violence and gender discrimination in Rwanda's health workforce: Increasing safety and gender equality

Constance J Newman[1*†], Daniel H de Vries[2], Jeanne d'Arc Kanakuze[3†] and Gerard Ngendahimana[4†]

Abstract

Background: Workplace violence has been documented in all sectors, but female-dominated sectors such as health and social services are at particular risk. In 2007-2008, IntraHealth International assisted the Rwanda Ministries of Public Service and Labor and Health to study workplace violence in Rwanda's health sector. This article reexamines a set of study findings that directly relate to the influence of gender on workplace violence, synthesizes these findings with other research from Rwanda, and examines the subsequent impact of the study on Rwanda's policy environment.

Methods: Fifteen out of 30 districts were selected at random. Forty-four facilities at all levels were randomly selected in these districts. From these facilities, 297 health workers were selected at random, of whom 205 were women and 92 were men. Researchers used a utilization-focused approach and administered health worker survey, facility audits, key informant and health facility manager interviews and focus groups to collect data in 2007. After the study was disseminated in 2008, stakeholder recommendations were documented and three versions of the labor law were reviewed to assess study impact.

Results: Thirty-nine percent of health workers had experienced some form of workplace violence in year prior to the study. The study identified gender-related patterns of perpetration, victimization and reactions to violence. Negative stereotypes of women, discrimination based on pregnancy, maternity and family responsibilities and the 'glass ceiling' affected female health workers' experiences and career paths and contributed to a context of violence. Gender equality lowered the odds of health workers experiencing violence. Rwandan stakeholders used study results to formulate recommendations to address workplace violence gender discrimination through policy reform and programs.

Conclusions: Gender inequality influences workplace violence. Addressing gender discrimination and violence simultaneously should be a priority in workplace violence research, workforce policies, strategies, laws and human resources management training. This will go a long way in making workplaces safer and fairer for the health workforce. This is likely to improve workforce productivity and retention and the enjoyment of human rights at work. Finally, studies that involve stakeholders throughout the research process are likely to improve the utilization of results and policy impact.

Background

Workplace violence–which includes physical assault, verbal abuse, sexual or racial harassment, bullying or mobbing–affects occupational health worldwide. In 2002, the International Labour Organization, International Council of Nurses, World Health Organization, and Public Services International (ILO/ICN/WHO/PSI) Joint Programme on Violence in the Health Sector defined workplace violence as "Incidents where staff are abused, threatened or assaulted in circumstances related to their work, including commuting to and from work, involving an explicit or implicit challenge to their safety, well-being or health" [1]. The publication of this report officially brought the issue to the attention of public health researchers and practitioners [2]. This and other contemporaneous studies demonstrated the various effects and consequences of violence at the individual,

* Correspondence: cnewman@intrahealth.org
† Contributed equally
[1]IntraHealth International, 6340 Quadrangle Dr. Suite 200, Chapel Hill, North Carolina, 27517, USA
Full list of author information is available at the end of the article

organizational, and societal levels, noting that such incidents disrupt fundamental freedoms and rights in the workplace and often lead to depression, anxiety, physical disability, resignation, dismissal, transfer, absenteeism, lowered quality of care, decreased workplace productivity, increased costs to health systems, or even death [3].

In 2007-2008, IntraHealth International collaborated with the Rwandan Ministries of Health, Public Service and Labour, Gender and Family Protection, and Justice, as well as the Rwanda Health Workers union and other stakeholders, to conduct a study of workplace violence in the Rwandan health sector [4]. The study yielded findings about the relative importance of individual, organizational and societal factors that contributed to the emergence of workplace violence, and highlighted existing policies and programs that might be expanded to respond to the prevalent violence. The study report did not include information on the actions agreed upon to address the situation by each of the study stakeholders.

In this article, the authors analyze a subset of those study data to examine gender patterns of violence perpetration and victimization in conjunction with other data linking gender and workplace violence. Further, the authors examine other gender-related research from Rwanda to illuminate the connections between societal violence against women and workplace violence. Finally, the authors document stakeholders' recommendations for action and examine the effects that the study findings had on the policy environment within Rwanda, in order to offer suggestions that may assist human resources (HR) leaders and managers to improve the working conditions for and the productivity and retention of the health workforce.

Relevant literature

Incidents of violence in the workplace occur in all sectors, but employees in female-dominated sectors such as health and social services are particularly vulnerable [5][6]. Experts in the field acknowledge the role of gender and apparently consider acts of workplace violence to be "gender-based," i.e. directed specifically against a woman because she is a woman, derived from unequal power relationship, or affecting women disproportionately [7]. For example, a fact sheet from the International Council on Nursing (ICN) noted that "[n]inety-five percent of nurses around the world are women. Attitudes towards women are often reflected in interactions with the profession," and particularly, that women were subjected to both domestic and workplace violence [8]. This makes explicit the link between violence experienced at home and at work. The ILO/ICN/WHO/PSI Joint Programme Report pointed out that, while both men and women seemed to be at risk, women were the victims in the majority of cases of workplace violence simply because the majority of workers in the health sector are women [9].

At the time of the Rwanda study, the researchers had difficulty finding research on workplace violence that linked gender-based violence or gender discrimination to workplace violence (beyond sexual harassment). Most works touched only the surface of a deeper relationship between gender and violence in the health workplace [10]. Baines' 2006 qualitative research, an exception to this, explored the link between women's vulnerability to violence and the gendered division of labor, where women are concentrated in tasks with greater risk of exposure to violence–such as social service workers who must provide intimate care and support to clients who are angry, frightened or in distress. Baines' results revealed that male social service workers were insulated from violence and stress by the types of tasks they took on (e.g. recreation rather than counseling), that violence against female workers was sexualized, and that clients appeared to know whom they could and could not attack with impunity. Like the ICN, Baines' study also drew parallels between the gender dynamics of professional care-giving and intimate partner violence [11].

The foregoing work suggested that a cause of workplace violence might be gender-based violence or discrimination in the larger society. As of 2007, there had been no human resources (HR) assessment in Rwanda, and little was known about the health workers' experience of workplace violence or any form of discrimination, including gender discrimination (defined as "[a]ny distinction, exclusion or restriction made on the basis of socially constructed gender roles and norms that prevents a person from enjoying full human rights" [12]). However, there existed gender policy guidance in Rwanda and some relevant local research on gender-based violence. The original impetus for the study was found in Rwanda's 2004 Gender Policy, which acknowledged that sexual harassment was a problem for girls in school and that it could nevertheless constitute a significant form of oppression and discrimination for Rwandan women at work [13]. In addition, there was research evidence suggesting that violence against women in Rwanda was a societal problem that might find its way into health workplaces. For example, the 2005 Rwanda Demographic and Health Survey found high levels of physical and sexual violence against women in the population [14]. There were also results from local studies demonstrating that domestic workers in Rwanda had experienced physical battery, sexual and emotional, economic deprivation and various forms of marginalization [15], and that expectant mothers attending Prevention of Mother to Child Transmission (PMTCT) services had experienced several forms of violence, but did not disclose it because of cultural norms of discretion, secrecy, modesty and fatalism

in the face of violence (especially regarding sexual violence). These PMTCT clients also mentioned fear of retaliation by the perpetrator and of failure to act by law enforcement as reasons for remaining silent [16]. A study conducted by Rwanda's Ministry of Gender and Family Promotion in 2004 documented that over a third of women interviewed had been targets of "obscene discourse" in public places, including workplaces [17]. Rwandan proverbs also provide insight into the value placed on women's docility, the lack of weight carried by women's opinion, and the role of harshness and violence in controlling women's behavior [18]. Violence against women in Rwanda seems to have been enshrined in traditional sayings and buttressed by *de facto* and *de jure* discrimination in all spheres of life (though Rwanda now may be said to have put in place strong laws and policies to promote gender equality [19][20][21]).

Study rationale

If organizational culture "neither erases nor diminishes national culture" [22], then it seemed reasonable to suppose that violence and discrimination occurring in the larger Rwandan society might manifest itself at work. It has been contended that discrimination can lead to the targeting or increased vulnerability to violence of girls and women [23] and that both problems should be addressed simultaneously [24], but the link between gender discrimination and workplace violence in the health sector needed further delineation through research. A better understanding of gender discrimination in health workplaces and its linkages to violence could hold promise for making working conditions safer and more equitable for Rwanda's largely female health workforce. More specificity would help HR leaders and stakeholders develop appropriate, proactive, and targeted policies and programs to increase workplace safety, security, and gender equity. Rwanda's Gender Policy and gender-based violence (GBV)-related research evidence indicated a need for workplace research. On the basis of this, IntraHealth International assisted Rwanda's Ministries of Health, Public Affairs and Labor, Gender, and the Health Workers' Union to explore and respond to violence in health workplaces.

Methods

Formative research was conducted in early 2007 and consisted of interviews with policy makers, a focus group with health personnel, and a review of national labor and gender policies to assess interest and the extent to which various forms of violence were recognized in Rwanda. This formative research informed the development of data collection instruments; the identification of avenues of data analysis; and the generation of culturally appropriate descriptions of workplace violence and gender discrimination, including associated behaviors.

Data collection for the study took place in July 2007, and combined qualitative and quantitative approaches to determine the prevalence of workplace violence and its forms, victims, and perpetrators; identify contributing factors to workplace violence, including gender-related factors; describe victims' reactions and consequences; and describe any existing workplace violence policy and programs that could be reinforced or extended to address the issue. The study made use of six data collection tools: a health workers survey, facility manager and key informant interviews, patient focus groups and a facility risk assessment inventory (NB: This article draws only from a subset of health worker survey, key informant and facility manager interview, and facility audit results, in addition to information collected following dissemination of the study report). The forms of violence studied were verbal abuse, bullying, physical attack and sexual harassment. Exploration of the influence of gender on workplace violence focused on individual, organizational, facility-specific and societal factors contributing to workplace violence. The health workers survey included open and closed-ended questions covering forms of gender discrimination not measured in previous studies of workplace violence (e.g. workers' self report on equal access to jobs, training and career advancement; equal treatment of men and women; pregnancy and family responsibility discrimination; the "glass ceiling" or vertical segregation; task segregation; and perceptions of women and men at work).

After the study report results were disseminated, the researchers conducted new analyses of health worker survey data to better understand the perpetrator/victim dyad, documented the recommendations made by the Rwandan study stakeholder institutions and reviewed the content of three versions of the national code regulating labor in Rwanda, to identify any policy impact the study may have had.

Sampling

The health workers survey was carried out in fifteen of Rwanda's 30 administrative districts, which were selected at random. Within each district, three health facilities were then selected at random. The facility sample included referral hospitals, district hospitals, health centers, clinics, and public health units or health posts, each of which were managed either by the government (public) or by non-governmental organizations authorized by the government (accredited facilities) or, in some cases, by the private sector. The health worker sample consisted of those who were in the randomly selected facilities on the day data collectors arrived at the targeted sites. Wherever possible, female and male health workers were selected to reflect the proportion of men and women believed to be in the population of Rwandan health workers (i.e. seven female and three male, yielding a stratified

sample). A total of 297 health workers were surveyed; 205 were women and 92 men. Of the total number, 158 were from urban sites and 139 from rural sites. Among the 44 health facilities' directors, 20 were selected at random to be interviewed. When the director was not available, his/her assistant was interviewed. Table 1 shows the distribution of health cadres in the sample.

The researchers faced some challenges in documenting gender discrimination. First, de facto discrimination may exist, but may not be perceived or admitted if official policy and public rhetoric strongly promote gender equality and nondiscrimination (as they do in Rwanda), or when discrimination–like violence–is normalized. Second, de facto gender discrimination may exist, but may not be appraised because subjects of discrimination may lack direct evidence. An example of this was seen in the case of vertical segregation in top health facility management, where study respondents did not have access to objective data on the extent of male overrepresentation in the highest health management tier. Third, discrimination may be perceived but hard to substantiate because it is not always possible to access administrative records that contain objective, gender-disaggregated data on training and promotion opportunities or salary. Because of this, future researchers should, whenever possible, try to capture manifestations of gender discrimination and violence through both qualitative and quantitative means. This is not meant to discredit self-reports of discrimination experienced by health workers. However, in some cases it might be possible to link perceptions of discrimination to objective measures such as gender disaggregated data on salary, training attendance or promotions, gender composition of top management positions, or analysis of the allocation of work tasks and workloads.

Data analysis

Qualitative data were analyzed for content and trends. Survey, interview, and facility data were collated by Rwandan consultants in a database using Excel. Generally, quantitative data were analyzed using a basic statistical package for cross-tabulation of the various prevalence types by variables of interest (such as 'equal treatment at work' and 'violence'), and conducting chi-square analyses to determine if distributions deviated significantly from the expected (alpha below 0.05). Trends were further analyzed using bivariate correlation analyses. Logistic regression was used to relate the chance of something happening (i.e. workplace violence) to a set of associated factors (e.g. sex, education or cadre of health worker, location or sector of facility, facility security, culture of respect, gender equality), allowing the researchers to assess the strength of the association of the various factors with the chance of workplace violence being experienced. Based on exploration of variables which showed trends toward significance, a logistic regression model was created with the variable "experience of violence" as dependent variable with no-prevalence as the reference category and eleven independent variables. A significant overall model (Chi2(33)-99.95,P = 0.00) was found which explained 25% of the variation (Pseudo R-sq = 0.25) and which had an adequate fit. The odds ratio was calculated to determine the chances of workplace violence being experienced. When the odds were above one, the variable increased the odds of violence relative to a variable. Below one, the odds declined relative to a variable. Finally, some graphics may include a denominator that is not the same as the sample size of 297, which indicates the number of responses to that question.

Limitations

The planned sample size of 450 was not achieved, because the data available for health worker postings were not up to date, and because of health worker unavailability on the day of the survey, resulting in a smaller sample of 297 survey respondents. About 20% of those sampled were either line managers or senior managers (i.e. facility director), with 3% of the total being senior managers. This could potentially impact the results, but the research team nevertheless kept these staff in to have a sample size big enough for statistical analysis. However, since the senior managers comprised so small a percentage, their influence on the trends is relatively small. Because the data were based on a retrospective survey of self-ascribed respondent behavior over the past year, findings should be taken with some caution, as a response bias is likely to be of some influence. To minimize response bias, culturally appropriate tools in the local language were used and data were obtained by experienced and trained data collectors. The process of informed consent was rigorously followed for each respondent and, if needed, referrals were provided to psychological support services.

Stakeholder processes

Studies have shown that those in charge of making policy-related decisions rarely use evaluation findings as the

Table 1 Distribution of cadres in the sample

Cadre	Frequency	%
Physician	12	4.0
Auxiliary nurse	29	10
Nurse	157	53
Midwife	14	5
Technician	45	15
Social worker	40	14
Total	**297**	**100.0**

basis for those decisions, and this is likely to apply to research findings as well. In light of this, the research team applied principles of utilization-focused evaluation [25], to increase the relevance of study results for the primary users and application in subsequent HR policy-making and planning. The approach involved wide consultative processes from the study's inception to find out what various stakeholders thought was worth knowing about workplace violence. The researchers then worked over two years with a steering committee comprised of "focal points" from primary stakeholder institutions such as the Rwanda Ministries of Health, Public Service and Labour, Gender and Women's Promotion, Justice, and the Rwanda Health Workers' Union. The institutional focal points met at various stages to review the research proposal and tools; provide input on data sources; identify their data analysis priorities; assist in interpretation of results; and identify their institutions' future roles in dissemination and use of results. Stakeholder priorities were key to the content of the tools and data analysis. These priorities directed the questions; for example, questions about the victim's marital status and the impact of violence on families were included in the health workers survey tool, while other questions or response options were not. The research also included activities to build focal points' technical capacity, provide opportunities to engage in policy dialogue, plan stakeholder institutions' internal briefings and prepare presentations for a national multisectoral results dissemination workshop, which consisted of concrete institutional recommendations to reduce workplace violence in the health sector.

Results
Prevalence
Violence was a real problem in Rwandan health workplaces and was perceived as such. Approximately 39% of health workers reported experiencing at least one form of workplace violence in the twelve months prior to the study: 27% of respondents had experienced verbal abuse, 16% were bullied, 7% encountered sexual harassment and 4% were physically assaulted. Verbal abuse was the most prevalent form, and physical violence the least prevalent. Sexual harassment was not the most prevalent form but it was the most frequent for those who experienced it. The prevalence of psychological violence (including bullying, verbal abuse and sexual harassment) was greater than that of physical assault.

Patterns of perpetration and victimization
Health worker survey data on the relationship of perpetrator to victim by type of perpetrator and type of violence were sufficiently robust to demonstrate perpetrator-victim patterns, especially for verbal abuse and bullying. Survey

respondents were asked what type of perpetrator was involved in the last instance of violence experienced. Figure 1 shows these data, where male respondents who answered this question reported that they were verbally abused most by other staff, manager/supervisors, and then by an unidentified "other" category. Female respondents likewise reported being verbally abused most by other staff and managers/supervisors, followed by members of the general public. Managers/supervisors and other staff were implicated most often in bullying, though managers/supervisors were far more often reported to have perpetrated bullying. Managers/supervisors appeared to bully female respondents more than male respondents (however, while these observed patterns are meaningful, there were not statistically significant using a Pearson chi-square test).

Respondents of the health workers survey were also asked the following multiple choice question for each type of violence (noting that a respondent possibly could choose multiple types of violence): *"Please think of the last time you experienced (X form of) violence at work. 1) How many people perpetrated the violence? 2) Was (were) the perpetrator(s): a) male; b) female; or c) both?"* Table 2 shows instances of perpetration by type of workplace violence and sex of perpetrator (or perpetrators) and victim. The percentages in Table 2 represent the perpetrator(s) identified at the last instance of violence which was experienced, for the four types of violence, giving an idea of the frequency of the types of violence experienced by the sample of health workers.

Tables 3, 4, 5 and 6 have been broken out to illustrate patterns of perpetration and victimization for each form of violence.

Patterns of perpetration and victimization for verbal abuse (Table 3)
In response to the survey question, *"Please think of the last time (instance) you were verbally abused at work,"* respondents said that they had been verbally abused by a man in 22% of the instances and by a woman in 55% of the instances. Respondents reported that that they had been verbally abused by both men and women in 23% of the instances. Both male and female health workers were more like to be verbally abused by women, at 58% and 54% respectively, with the exception that female victims were more likely to be abused by men and women together. Slightly more than two thirds (68%) of the victims were female health workers, and slightly under one third (32%) were male health workers, which mirror their proportions in the stratified sample.

Patterns of perpetration and victimization for bullying (Table 4)
In response to the survey question, *"Please think of the last time you were bullied at work,"* health workers
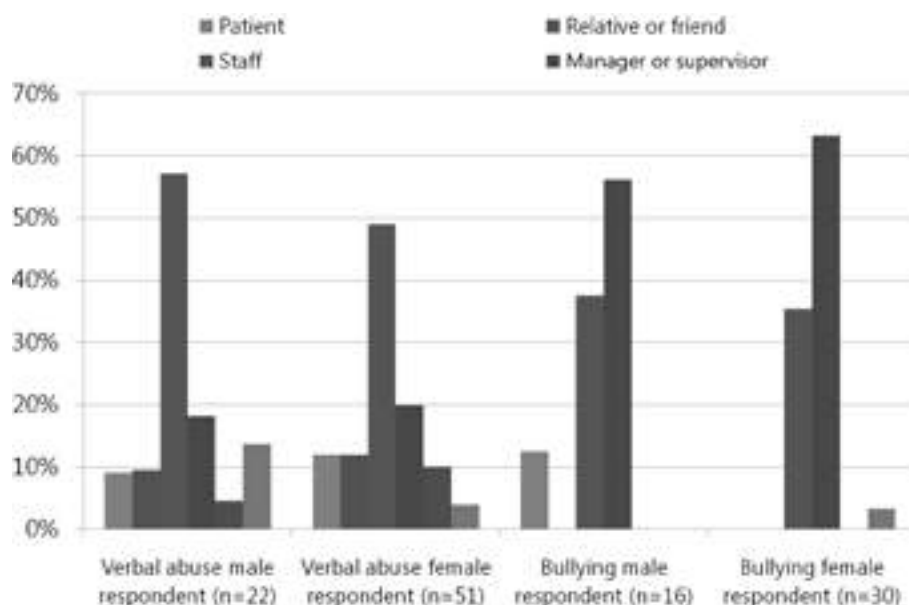
Figure 1 Type of perpetrator of verbal abuse and bullying by sex of respondent (n = 119).

reported that they had been bullied by a man in 55% of the instances and by a woman in 30% of the instances, with the remainder bullied by both. A sizeable majority of male health workers reported they had been bullied by a man (69%) and slightly less than one fifth (19%) had been bullied by a woman at the last instance of bullying. In somewhat less than half (48%) of the last instances of bullying, female health workers reported that the bully was a man, and slightly more than a third (35%) reported the bully had been a woman. Female health workers also reported they had been bullied by both men and women in 16% of the last instances of bullying. Two thirds (66%) of the victims were female health workers and one third (34%) of the victims were male health workers at the last instance of bullying. In terms of a pattern of bullying, we see that men perpetrated bullying in most instances and that the bullying was experienced by men and women according to their proportion in the study sample.

Patterns of perpetration and victimization for sexual harassment (Table 5)

In response to the survey question, *"Please think of the last time you were sexually harassed at work,"* health workers reported that they had been sexually harassed by a man in 65% of the instances, by a woman in 20% of the instances, and by both in 15% of the instances. Of the health workers who reported being sexually harassed, one quarter (25%) were men and three quarters (75%) were women, which does not mirror the proportions in the sample. This means that female health workers in this sample were disproportionately victims of sexual harassment. There was a strong pattern for the perpetrator to be the opposite sex of the victim.

Patterns of perpetration and victimization for physical attack (Table 6)

In response to the survey question, *"Please think of the last time you were physically assaulted/attacked at work,"* we see (even though the overall number of

Table 2 Instances of perpetration by type of workplace violence and sex of victim

Perpetrator identified as:	Verbal abuse experienced by		Bullying experienced by		Sexual harassment		Physical attack experienced by experienced by		
	Male victim	Female victim	Male victim	Female victim	Male victim	Female victim	Male victim	Female victim	Total
Male	26%	20%	69%	48%	0.0%	88%	50.0%	57%	**58**
Female	58%	54%	19%	36%	80.0%	0.0%	25.0%	43%	**55**
Both male and female	16%	27%	13%	16%	20.0%	13%	25.0%	0.0%	**25**
Total (100%)	**19**	**41**	**16**	**31**	**5**	**15**	**4**	**7**	**138**

A HEALTH POLICY AND SYSTEMS RESEARCH READER ON HUMAN RESOURCES FOR HEALTH

Table 3 Patterns of perpetration and victimization for verbal abuse

	Male victim	Female victim	Total
Male perpetrator	(5) 26%	(8) 20%	(13) 22%
Female perpetrator	(11) 58%	(22) 54%	(33) 55%
Male and female	(3) 16%	(11) 27%	(14) 23%
Total	(19) 32%	(41) 68%	60

Table 5 Patterns of perpetration and victimization for sexual harassment

	Male victim	Female victim	Total
Male perpetrator	(0) 0%	(13) 87%	(13) 65%
Female perpetrator	(4) 80%	(0) 0%	(4) 20%
Male and female	(1) 20%	(2) 13%	(3) 15%
Total	(5) 25%	(15) 75%	20

instances is only eleven) that health workers reported that they had been physically attacked by a man in 55% of the last instances, and by a woman in 36% of the instances. Male health workers were more likely to be physically attacked by a man than otherwise; while female health workers were almost equally likely to be physically attacked by either a man or a woman, though slightly more by a man. At the last instance of physical attack, close to two thirds (64%) of the victims were female health workers, and slightly more than one third (36%) of the victims were male health workers, in keeping with the sample proportions.

Summary

In this study, gender appeared to be implicated in patterns of perpetration and victimization. Taken together, the Tables 3 through 6 suggest that men were mentioned as perpetrators in the most instances of bullying, physical attack, and sexual harassment, while women were more likely to be mentioned as perpetrators in most instances of verbal abuse. Male and female health workers were equally victims of verbal abuse, bullying, and physical attack. Only in sexual harassment did the proportion of male and female victims *not* reflect their proportions in the stratified sample, making sexual harassment the form of violence of which female health workers were disproportionately the victims. Female health workers were also more likely to be verbally abused by both women and men. In the pattern of bullying, male health workers were much more likely to be victimized by men. With respect to physical attack, female health workers were more likely to be attacked by a woman or a man, whereas male health workers were more likely to be attacked by men (although the number of reports was small).

Reactions to workplace violence

Table 7 displays health workers' reactions to the experience of workplace violence. In response to the question *"Have you ever left, or considered leaving the health care sector, or this job, due to your experience of (x form of) violence?"* most respondents reported that they either did nothing or only considered leaving their (health sector) job. Only 4% of male workers reported that they had ever actually quit a job as a result of verbal abuse. Of female workers, 10% and 7% reported that they had ever actually left a job because of bullying and sexual harassment, respectively. These findings suggest that workplace violence is an occurrence that most health workers may feel they can or must live with, almost as a normal part of the job, but that the experiences of bullying and sexual harassment are more likely to result in a female health worker leaving a job.

The health worker survey data also showed that health workers' disclosure of incidents varied with the type of violence. In most cases–especially those of verbal abuse, bullying, and physical violence–subjects disclosed the incident to colleagues, friends and family. However, in 40% of sexual harassment cases, the victim did not disclose the occurrence to anyone. This was not surprising given the norms of silence around sexual violence in Rwanda. Fewer than 20% of victims of most forms of violence reported the incident to their supervisor. This low overall reportage rate is also not surprising, given that hierarchical superiors (i.e. managers or supervisors) were reportedly involved in the perpetration of all types of violence (and especially bullying, see Figure 1). When asked if the supervisor or the director of the facility took measures to help the victim or to respond to violence, only 30% of health workers agreed. These findings become more important in conjunction with the health workers' self-reports of feeling a loss of dignity, trauma,

Table 4 Patterns of perpetration and victimization for bullying

	Male victim	Female victim	Total
Male perpetrator	(11) 69%	(15) 48%	(26) 55%
Female perpetrator	(3) 19%	(11) 35%	(14) 30%
Male and female	(2) 13%	(5) 16%	(7) 15%
Total	(16) 34%	(31) 66%	47

Table 6 Patterns of perpetration and victimization for physical attack

	Male victim	Female victim	Total
Male perpetrator	(2) 50%	(4) 57%	(6) 55%
Female perpetrator	(1) 25%	(3) 43%	(4) 36%
Male and female	(1) 25%	(0) 1%	(1) 9%
Total	(4) 36%	(7) 64%	11

Table 7 Reactions to workplace violence

Reaction	Male HCWs (N = 48)				Female HCWs (N = 111)			
	Verbal abuse (n = 24)	Physical violence (m = 4)	Bullying (n = 16)	Sexual harassment (n = 4)	Verbal abuse (n = 36)	Physical violence (n = 7)	Bullying (n = 31)	Sexual harassment (n = 17)
Did nothing	61%	40%	50%	80%	50%	83%	39%	47%
Considered leaving	35%	60%	50%	20%	46%	17%	52%	47%
Left the job	4%	0%	0%	0%	4%	0%	10%	7%

lower productivity and actual absenteeism following the experience of violence.

Gender discrimination and workplace violence

In this section, we examine the influence of gender discrimination and violence. To what extent is gender discrimination a feature of, or a context in which, violence occurs? The qualitative and quantitative data from the health workers survey and key informant interviews suggested that female health workers experienced problems at work which are recognized forms of gender discrimination and that these problems co-occurred with violence.

Discrimination based on pregnancy and family responsibilities

The researchers asked health workers if they agreed or disagreed that various forms of discrimination occurred at work. Forty-nine per cent of (male and female) respondents agreed that women did not encounter the same problems as men at work, and 41% agreed that women were more exposed to violence. Sixty-eight per cent of respondents pointed to pregnancy, childbirth, and family and child care responsibilities as factors that prevented women from fully participating at work. Qualitative data from the health workers' survey also suggested that female workers perceived their career progress to have been adversely affected by the unique problems faced by women at work. Some female workers reported that performance evaluations or opportunities for promotion had been influenced by their maternity status; others reported that they had been demoted after pregnancy without cause, or were not hired for a position because of presumed future pregnancy. One respondent noted that "When I had not yet delivered, I was deputy director; after delivery, I was demoted for no reason but I think it was because of my pregnancy."

Occupational segregation

The study revealed vertical segregation of the facility director's job by sex (i.e. the 'glass ceiling'). Survey data were analyzed with attention to the number of men and women who occupied the top management (facility director) jobs. While only 16% of health workers in the survey sample believed that women did not have the same chance as men of being hired for jobs for which they are qualified, women actually *did not* appear in the top management jobs at the same rates as men. Even though men made up only about 31% of the sample, they constituted 60% of directors in the sample facilities. These findings suggested that vertical segregation (a form of discrimination) may exist but is not necessarily perceived. However, about one out of four service providers agreed that task assignments for male and female workers occupying the same job differed either in types or volume, suggesting some (horizontal) gender segregation of tasks that was observable to respondents. As a female study participant noted, "Some people seem to think that certain activities are reserved only for men."

Negative stereotypes of female workers

Sexual harassment, problems at work related to pregnancy and family responsibilities, and occupational segregation co-occurred with negative stereotypes about female health workers, such as an unwillingness to speak up, weakness, indecisiveness and incompetence. One survey respondent observed that women at work "just don't know how to make decisions in a sure and certain way." Another noted that women "are not even capable of pulling out a tooth." These negative stereotypes may be the foundation on which violence (as well as other forms of workplace discrimination) rest. Indeed, according to a key informant, beliefs about Rwandan women in the health workplace rationalize violence: "There is a tendency to say that women are weak in the broadest sense... and, in some cases, the violence that women are subjected to stems from this situation."

Gender equality and reduced odds of workplace violence

In this section, we consider the relationship between gender equality in the workplace as one of several variables influencing health workers' experience of violence. The study considered several types of factors as possible contributors to workplace violence: individual factors (e.g. sex, age, marital status, seniority, education); general factors (e.g. sector, facility location, staff workload); facility security; and behavioral factors (e.g. a culture of respect and gender equality).

Table 8 shows that, after the general factor of facility sector and location and the facility security factor of building entrance visibility, the most important contributing factors to the experience of violence in Rwandan health workplaces were gender inequality and the lack of a culture of mutual respect. Rather than the characteristics of individual workers (such as age or seniority), and after sector and geographical location and visibility of a facility entry, gender equality comes to the fore: when men and women have an equal chance to get hired for jobs for which they are qualified, the odds of violence were calculated to be about *six times lower* (at 0.2), compared to a setting where there is no equal chance. Further, when men and women receive equal treatment at work, the odds of workplace violence were about *five times lower* (at 0.2), compared to a setting in which there is no equal treatment. The culture of respect variables are of lesser importance compared to the gender equality variables, though respect between supervisors and staff also especially lowers workplace violence. The gender equality variables are thus considered as the more influential behavioral contributor to reduced workplace violence.

Figure 2 graphically depicts that perceived equal treatment at work was associated with a reduced percentage of health workers experiencing workplace violence.

Sixty per cent of respondents who perceived unequal treatment also indicated that they had experienced some form of workplace violence, compared to 36% of those who perceived equal treatment (Pearson chi2(1) = 9.388, P = 0.002).

Further, Figure 3 shows that the perception of an equal chance to get hired for jobs for which the worker is qualified is associated with a reduction in the percentage of health workers experiencing workplace violence. Of respondents who perceived inequalities in the hiring process, 62% indicated that they had experienced some form of workplace violence, contrasted with 35% of respondents who had perceived equal chances for both men and women (Pearson chi2 (1) = 11.639, P = 0.001).

Stakeholders' use of results and study impact

The participatory, capacity-building approach oriented to relevance of results for stakeholders appeared to increase use of the study results and the impact of the study. Table 9 shows the actions recommended by focal points from the Rwandan stakeholder institutions, which demonstrated a desire for a multilevel, multisectoral response to violence in the health sector, as well as awareness of the need to address gender discrimination and violence together.

Impact

The study appears to have had impact on the national policy environment in particular, having contributed to the revision of the national Law Regulating Labour in Rwanda and to plans to revise the national GBV policy. First, analysis of Rwanda's three labor laws between 2001, 2007 and 2009 showed an evolution in language, wherein no mention is made of violence in 2001 and 2007, but in the 2009 version (one year after the study results were nationally

Table 8 Logistic regression result: odds of experiencing violence

| Variable	Variables of significance in the aggregated model of violence both at work and during travel to and from work	Sign. (p)	Odds Ratio (Exp(B))	*Inverse of Odds Ratio (if decline)*
General (Sector and location)	Religious sector (compared to Government)	.017	4.7	
	City (compared to Rural)	.012	11.8	
	Southern Province (compared to the North)	.002	0.1	(11)
	Kigali City (compared to North)	.009	0.1	(14)
Facility security	People loitering in neighborhood adjacent to or surrounding facility	.099*	2.7	
	Signs posted to indicate staff-only break areas (as compared to no signs)	.043	2.7	
	Building entrance is visible from the street and free of heavy shrub growth (as compared to entrance not being visible)	.002	0.1	(12)
Culture of respect	High level of perceived respect which patients show to staff at workplace (compared to low level of respect)	.066*	0.7	(1.4)
	High level of perceived respect that supervisors and staff show to each other at the workplace (compared to low level of respect)	.028	0.6	(2)
Gender equality	Perceived equal chance for men and women to get hired for jobs for which they are qualified in the health sector (as compared to unequal chance)	.009	0.2	(6)
	Perception of equal treatment at work received by men and women (as compared to unequal treatment)	.017	0.2	(5)

*Not highly significant
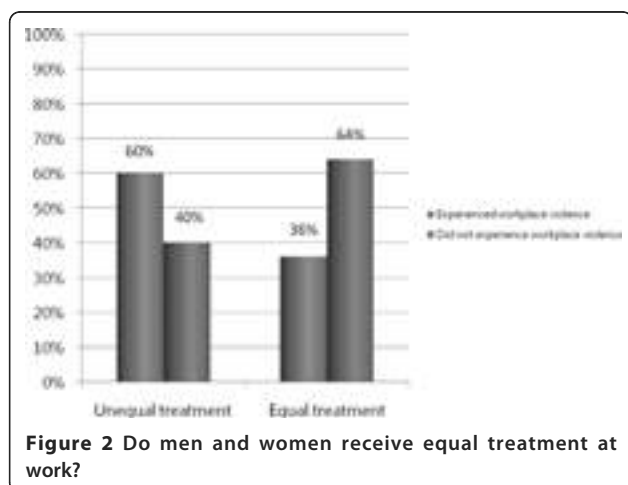
Figure 2 Do men and women receive equal treatment at work?

disseminated), there appears in the national labor law a definition of GBV, and the following Articles [26]:

"Section 3: Protection of workers against violence or harassment

    Article 9: Prohibition of gender-based violence
    Article 10: Resignation in case of violence
    Article 11: Prohibition of punishment [for reporting violence]

Section 4: Prohibition of discrimination in work matters."

The study report, which was subsequently disseminated in other stakeholder meeting venues (e.g. to the Rwanda Medical Association and Nursing Council) was also one of three to be included as a resource for the Ministry of Gender and Family Promotion's revision of the 2010 GBV policy [27].
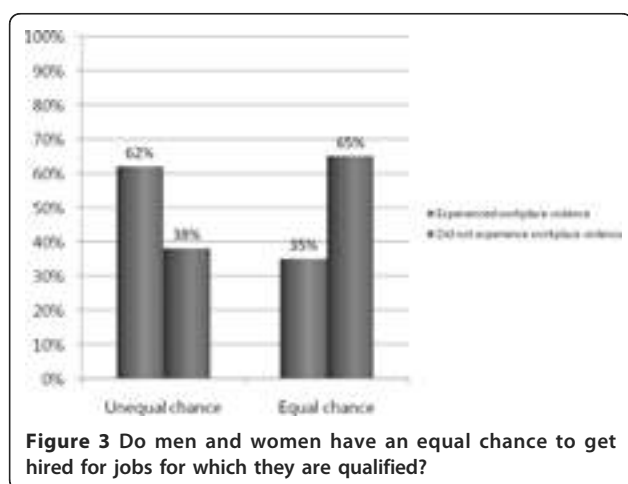

Figure 3 Do men and women have an equal chance to get hired for jobs for which they are qualified?

Discussion

The study shed light on the types, reactions and contributing factors to, and consequences of, workplace violence. Workplace violence is a real phenomenon within the health sector in Rwanda with individual, organizational, and societal impacts experienced by 39% of the health workers sampled. Male and female staff experienced violence, and mostly did nothing or only thought of leaving the job after the experience, even though the experience of violence was personally traumatic, interpersonally disruptive and organizationally depleting in terms of self-reports of absenteeism and lower productivity.

The study identified ways gender appears to influence workplace violence. The first was in patterns of violence perpetration and victimization. Sexual harassment was a particular problem for female health workers. In light of results from studies on violence against women in Rwanda described earlier, a culture of silence and resignation *vis a vis* violence against women, and the finding about nondisclosure of sexual harassment, it is probable that the prevalence of sexual harassment in Rwandan workplaces is a low estimate. It should be noted, nevertheless, that female workers appeared more likely to leave a job because of bullying and sexual harassment experienced at work, a finding that should be of interest to human resource managers who want to retain female health workers.

The second way gender appears to influence violence in health workplaces is in the forms of discrimination faced by female health workers. Sexual harassment co-occurred with problems related to managing pregnancy, motherhood and work, and negative stereotyping of women at work, the latter perhaps rationalizing violence against women in Rwanda's health workplaces. The findings on the over-representation of men in top management jobs and gender-based task assignment point to occupational segregation, a ubiquitous form of gender discrimination that typically results from multiple and accumulating discriminations during childhood, schooling, and entry into a career. The fact that female health workers appear to have experienced more than one type of discrimination and bias suggests a systemic substratum of gender discrimination in the health workplace that also deserves serious attention from HR policy makers and managers, because discriminatory working conditions, along with the experience of violence, can weaken female health workers' ties to the workforce. The finding that male perpetrators are overwhelmingly implicated in bullying male health workers may qualify as a form of gender-based violence worthy of further study. The role of the manager/supervisor in bullying also suggests a need to address the use and abuse of power in HR manager training.

Table 9 Multilevel, multisectoral actions recommended to eliminate workplace violence and discrimination in Rwanda's health sector

By the Ministry of Health	By the Ministry of Labor	By the Ministry of Gender	By the Rwanda Health Workers Union
• Conduct a study on pregnancy discrimination	• Disseminate the Labor Law	• Train men and women to disclose violence	• Document and translate relevant texts into Kinyarwanda
• Develop and enact a health sector policy on workplace violence	• Develop a labor sector policy on worker safety and security	• Share information about, monitor and evaluate workplace violence	• Conduct information, sensitization and training campaign on legal texts
• Develop and enact a program to fight violence in health workplaces	• Build the capacity of labor inspectors	**Recommendations to the Ministry of Health:**	• Disseminate and enforce ILO standards on maternity protection and workers with family responsibilities
• Develop partnerships with MOH, MOL, MOG, Police, donors.	• Diffuse information on labor standards	• Train health workers on ethical behavior	• Develop a system to manage cases
	• Put in place workplace safety and security policies that address discrimination.	• Establish Ethics Committee at health centers	• Develop networks with other unions and human rights groups
		• Sensitize and train all health workers on violence and sanctions.	• Conduct a study on human rights at health workplaces.

Most striking was the finding that gender equality lowers the odds of experiencing violence at work. Put another way, this means that gender inequality at work (as illustrated by unequal treatment and unequal access to jobs) increases the odds of violence.

The study results suggest that violence against female health workers in Rwandan health workplaces may come about from a "category bias" [28] in which violence against female health workers is but one component of the wider problem of gender discrimination that denies women the opportunity to exercise employment rights and economic freedoms based on their biological and social roles. The link between gender inequality and workplace violence bore out the contentions that discrimination contributes to violence and that both should be dealt with simultaneously when planning and supporting a largely female workforce. Even in cases where male and female workers both experience workplace violence, it might have a greater or different impact on female workers if gender bias or discrimination limits their options, including the freedom to disclose and seek redress [29].

Finally, the gender-sensitive, multisectoral recommendations made by the stakeholder institutions and recent changes in Rwanda's labor law to address workplace violence are promising steps towards a goal of making the health sector safer and more gender-equitable for its workforce. It is hoped that the elimination of sexual harassment and other forms of gender discrimination will figure in Rwanda's new (2010) draft of the national GBV policy.

Conclusions

Gender discrimination and inequality contribute to violence against women in the health sector. Because the key factors contributing to the emergence of violence in Rwandan health workplaces were institutional and behavioral rather than individual, it is likely that improved HR policy–and management practices that enact and enforce improved policy–could decrease some of the risks for violence. First, workplace violence research and workforce assessments should routinely measure the extent of systemic gender discrimination at work. Second, eliminating gender inequality, bias, and specific forms of discrimination should be a special concern in the development of both HR and workplace violence policies and programs, including reporting systems. HR policies should protect women against violence as well as against losing seniority, promotion prospects, or a job as a result of pregnancy or caring for children and family members. Countries that are signatories to international consensus documents on gender equality, such as the International Labour Organization's (ILO's) four gender equality labor standards, already have a policy context for policy and legal reform (i.e. See Conventions 111, 100, 156 and 183) [30]. Sectoral strategies should challenge gender stereotypes, discriminatory behavior, and all forms of violence against women. Finally, HR managers should institute nondiscrimination and antiviolence policies in workplace guidelines and codes of conduct and should vigorously enforce them. Training HR managers to be good stewards of the power vested in them, to identify gender discrimination when it is occurring and to manage the risks of violence in the workplace all should be high on the list of HR management priority actions. Taking action on the foregoing will go a long way in making health systems safer and more gender-equitable for its workforce, especially in increasing the enjoyment of human rights at work. This is in turn may increase the productivity and retention of the health workforce. Finally, studies that involve stakeholders through the research process are

likely to improve the utilization of results and policy impact.

Author details

[1]IntraHealth International, 6340 Quadrangle Dr. Suite 200, Chapel Hill, North Carolina, 27517, USA. [2]University of Amsterdam, Amsterdam Institute for Social Science Research, Amsterdam, the Netherlands. [3]Public Service Commission, P.O. Box 6913, Kigali, Rwanda. [4]USAID HIV/AIDS Clinical Services Program–Northern Zone, BP 6199 Centenary House, Parcel #16 4th floor, Kigali, Rwanda.

Authors' contributions

CN conducted the formative research, conceptualized the study and designed, oversaw or gave input to all aspects of methodology, data analysis, interpretation, dissemination, report writing and French to English translation. JK reviewed instruments, results and reports, oversaw data collection and coordinated dissemination. GN gave input into formative research, study design, gave policy guidance, and reviewed results and the report. DdV reviewed the tools, developed the data analysis and sampling plans, analyzed data, and reviewed drafts of the study report. All authors reviewed and approved the final manuscript.

Competing interests

The authors declare that they have no competing interests.

References

1. International Labour Office, International Council of Nurses, World Health Organization, Public Services International: **Framework Guidelines for Addressing Workplace Violence in the Health Sector.** Geneva, International Labour Office; 2002.
2. di Martino V: **Workplace violence in the health sector: country case studies Brazil, Bulgaria, Lebanon, Portugal, South Africa, Thailand and an additional Australian study: synthesis report.** *Working paper* Geneva, Switzerland: ILO/ICN/WHO/PSI Joint Programme on Workplace Violence in the Health Sector; 2002 [http://www.who.int/violence_injury_prevention/violence/activities/workplace/WVsynthesisreport.pdf], First accessed 29 Dec 2005.
3. Stanko EA: **Knowledge about the impact of violence at work in the health sector.** Royal Holloway and Bedford College, University of London, United Kingdom. In *Workplace Violence in the Health Sector: State of the Art. Working paper.* Edited by: Cooper, CL, and Swanson, A. Geneva, Switzerland; 2002:.
4. Newman C, Kanakuze J, de Vries DH, Ngendahimana G: **Study on Workplace Violence within the Health Sector in Rwanda.** *Capacity Project* Chapel Hill, NC: IntraHealth International; 2008 [http://www.capacityproject.org/images/stories/files/workplace_violence_health_sector_rwanda.pdf].
5. Cooper C, Swanson N: **Workplace violence in the health sector: State of the art.** *Working paper* Geneva, Switzerland: ILO/ICN/WHO/PSI Joint Programme on Workplace Violence in the Health Sector; 2002 [http://www.who.int/violence_injury_prevention/violence/activities/workplace/WVstateart.pdf].
6. International Council of Nurses: **ICN Nursing Matters Fact Sheet.** *Violence: a world-wide epidemic [website].* ICN; n.d [http://www.icn.ch/images/stories/documents/publications/fact_sheets/19k_FS-Violence.pdf], First accessed 5 October 2005.
7. **Population Reference Bureau: Gender Based Violence–An Impediment to Reproductive Health.** 2010 [http://www.prb.org/Articles/2010/genderbasedviolencerh.aspx].
8. International Council of Nurses: **ICN Nursing Matters Fact Sheet.** *Violence: a world-wide epidemic [website].* ICN; n.d [http://www.icn.ch/images/stories/documents/publications/fact_sheets/19k_FS-Violence.pdf], First accessed 5 October 2005.
9. di Martino V: **Workplace violence in the health sector: country case studies Brazil, Bulgaria, Lebanon, Portugal, South Africa, Thailand and an additional Australian study: synthesis report.** *Working paper* Geneva, Switzerland: ILO/ICN/WHO/PSI Joint Programme on Workplace Violence in the Health Sector; 2000 [http://www.who.int/violence_injury_prevention/violence/activities/workplace/WVsynthesisreport.pdf], First accessed 29 Dec 2005.
10. Mayhew C, Chappell D: **Prevention of occupational violence in the health workplace.** *Discussion paper no. 2; Working paper series no. 140* Sydney, Australia: New South Wales Department of Health; 2001, First accessed 29 Dec 2005.
11. Baines D: **Staying with people who slap us around: gender, juggling responsibilities and violence in paid (and unpaid) care work.** *Gender, Workand Organization* 2006, **13(2)**:129-51.
12. World Health Organization: **Transforming health systems: gender and rights in reproductive health.** Geneva, Switzerland: WHO; 2001.
13. **Rwanda Ministry of Gender and Family Promotion: National Gender Policy.** 2004.
14. **Rwanda DHS, 2005-Final Report.** Institut National de la Statistique; Ministère des Finances et de la Planification Economique, Kigali, Rwanda and ORC Marcro, Calverton, Maryland, USA; 2006.
15. Muramutsa F: **Gender-based violence on housegirls in Rwanda.** *ActionAid International* Kigali, Rwanda; 2007.
16. Newman C, Kabagwira A, Scislowicz J, Salentine S, Muramutsa F: **Study on the readiness of the political, legal, health and community systems to respond to gender-based violence in three districts of the city of Kigali.** Chapel Hill, NC: IntraHealth International; 2008.
17. Ministry of Gender and Family Promotion, International Rescue Committee: **A Determination of Sexual and Gender Based Violence in Rwanda.** 2004.
18. Crepeau P, Bizimana S: *Proverbes du Rwanda* Tervuren; 1979 [http://womeninproverbsworldwide.com].
19. Government of Rwanda: Ministère de la Sante: Politique National de Sante de la Reproduction, Kigali; 2003.
20. **Ministère du Genre et de Promotion de la Femme: Politique Nationale sur la violence à l' égard des femmes et des enfants.** Mai; 2007.
21. Government of Rwanda: **Law on the Prevention and Punishment of Gender-Based Violence.** 2009.
22. Adler NJ: **[24] International dimensions of organizational behavior.** Boston, MA: Kent Publishing Company; 1986.
23. United Nations Human Rights Council: **Resolution 7/24.** *Elimination of violence against women. N.d.* .
24. di Martino V: **Workplace violence in the health sector: country case studies Brazil, Bulgaria, Lebanon, Portugal, South Africa, Thailand and an additional Australian study: synthesis report.** *Working paper* Geneva, Switzerland: ILO/ICN/WHO/PSI Joint Programme on Workplace Violence in the Health Sector; 2002 [http://www.who.int/violence_injury_prevention/violence/activities/workplace/WVsynthesisreport.pdf], First accessed 29 Dec 2005.
25. Patton MQ: **Utilization Focused Evaluation: The New Century Edition.** Thousand Oaks, CA: Sage Publications;, 3 1997.
26. **Law Regulating Labour in Rwanda.** [http://www.mifotra.gov.rw/documents/Laws/NEW%20LABOUR%20LAW%20N13.2009%20OF%2027.5.2009.pdf], No. 13/2009 of 27/5/2009.
27. Rwanda Ministry of Gender and Family Promotion: **Gender Promotion Reports.** *ToR on GBV policy and its strategic plan* [http://www.migeprof.gov.rw/index.php?option=com_docman&task=cat_view&gid=60&Itemid=9999999].

28. Standing H: Gender–a Missing Dimension in Human Resource Policy and Planning: Special Article. *Human Resources for Health Development Journal (HRDJ)* 2000, **4(1)**.
29. World Health Organization: **Women and health: Today's evidence, tomorrow's agenda.** Geneva, Switzerland; 2009.
30. International Labour Organization: **ILOLEX: Database of International Labour Standards.**[http://www.ilo.org/ilolex/english/].

Doctors and Corporatist Politics: The Case of the Mexican Medical Profession

Gustavo Nigenda
Instituto Nacional de Salud Pública

Armando Solórzano
University of Utah

Abstract   This study advances our understanding of the relationship between the state and the medical profession in countries where health care services are used as instruments of economic and political control. As a general argument, we maintain that the corporatist nature of the Mexican state impedes the medical profession from achieving autonomy and control over its professional activities. In contraposition to medical professions in developed societies, the nature of the Mexican profession is shaped by state policies and by its reiterated efforts to act independently of the state's tutelage. We analyze this dynamic interaction through three different historical epochs that reflect the complexity and uniqueness of the Mexican medical profession. Whatever attempts the profession has made to control the medical curriculum, the licensing process, the market, or the specific laws that affect its own field, the Mexican state has responded with measures that systematically divide and antagonize the different factions of medical associations. The result is a highly fragmented and disenfranchised medical profession with dissimilar political, professional, personal, and academic aims. In the final analysis, the interests of the corporatist Mexican state prevail over the interests of other groups, including doctors. The evisceration of the medical corps by the Mexican state results in a profession with low salaries, higher rates of unemployment, atomization in terms of political representation, and heavily co-opted medical organizations that seem to neglect the overwhelming health care needs of the Mexican people.

In spite of the differences that exist between the United States and England, their medical professions have achieved a great level of clinical

Crises and Resilience at the Frontline—Public Health Facility Managers under Devolution in a Sub-County on the Kenyan Coast

Mary Nyikuri[1]*, Benjamin Tsofa[1], Edwine Barasa[1,2], Philip Okoth[1], Sassy Molyneux[1,3,4]

1 Department of Health Systems and Research Ethics, KEMRI/Wellcome Trust Research Programme (KWTRP), P.O. Box 230–80108, Kilifi, Kenya, **2** Health Economics Unit, University of Cape Town, Observatory 7975, Cape Town, South Africa, **3** The Ethox Centre, Department of Public Health, University of Oxford, Old Road Campus, Headington, Oxford, OX3 7LF, United Kingdom, **4** The Centre for Clinical Vaccinology and Tropical Medicine, Nuffield Department of Medicine, University of Oxford, Old Road Campus, Headington, Oxford, OX3 7LF, United Kingdom

* mnyikuri@kemri-wellcome.org

Abstract

Background

Public primary health care (PHC) facilities are for many individuals the first point of contact with the formal health care system. These facilities are managed by professional nurses or clinical officers who are recognised to play a key role in implementing health sector reforms and facilitating initiatives aimed at strengthening community involvement. Little in-depth research exists about the dimensions and challenges of these managers' jobs, or on the impact of decentralisation on their roles and responsibilities. In this paper, we describe the roles and responsibilities of PHC managers–or 'in-charges' in Kenya, and their challenges and coping strategies, under accelerated devolution.

Methods

The data presented in this paper is part of a wider set of activities aimed at understanding governance changes under devolution in Kenya, under the umbrella of a 'learning site'. A learning site is a long term process of collaboration between health managers and researchers deciding together on key health system questions and interventions. Data were collected through seven formal in depth interviews and observations at four PHC facilities as well as eight in depth interviews and informal interactions with sub-county managers from June 2013 to July 2014. Drawing on the Aragon framework of organisation capacity we discuss the multiple accountabilities, daily routines, challenges and coping strategies among PHC facility managers.

Results

PHC in-charges perform complex and diverse roles in a difficult environment with relatively little formal preparation. Their key concerns are lack of job clarity and preparedness, the difficulty of balancing multidirectional accountability responsibilities amidst significant

resource shortages, and remuneration anxieties. We show that day-to-day management in an environment of resource constraints and uncertainty requires PHC in-charges who are resilient, reflective, and continuously able to learn and adapt. We highlight the importance of leadership development including the building of critical soft skills such as relationship building.

Background

Public primary health care (PHC) facilities play a potentially valuable role in the implementation of primary health care in developing countries, and for many individuals are the first point of contact with the formal health care system [1–3]. However these facilities face significant challenges in levels of resources, quality of care, and accessibility to potential users [4]. Such challenges have been fuelled by wider problems of insufficient political prioritisation of health, structural adjustment policies, poor governance, and population growth [5]. Given the importance of primary health care for the achievement of Universal Health Coverage, the strengthening of public sector primary public facilities is a priority for many Low and Middle Income Countries. Facility strengthening requires an understanding of the priorities and concerns of those who work at the interface between health systems and communities, including facility staff and managers, through tracking how they are involved with and affected by policies and interventions as they unfold over time[6, 7].

One general approach to strengthening primary health care has been decentralization. Decentralization of the health system involves a variety of mechanisms to transfer fiscal, administrative, ownership and/or political authority for health service delivery from the central Ministry of Health to alternative institutions, or to intermediate or local levels ([8, 9]). Potential benefits of decentralisation include improved efficiency through greater cost consciousness and control at the local level, and better quality, transparency, accountability and legitimacy[8, 10]. Although evidence on the performance of decentralisation is relatively weak, partial and inconsistent, the data that is available suggest that quality improvements have often not materialised[8]. Challenges in practice have included insufficient transfer of decision-making power to local levels, lack of clarity in responsibilities of key players, and broader factors such as the prevailing political context, and inadequate access to financial resources [8, 9, 11].

The impact of decentralisation on PHC facility in-charges has received relatively little in-depth research attention, despite the key role that they play in implementing health sector reforms both as health care providers and as facilitators of change and of initiatives aimed at strengthening community involvement[12]. Health facility staff can be impacted upon by health sector reforms in unintended and sometimes damaging ways. Through research in Zambia, for example, Mogensen and Ngulube observed that frontline health providers were finding themselves in the centre of increasingly strained relations between the government and community members as a result of the introduction of user fees [13]. As they explained:

Health workers experience that they deliver services which are compensated or reciprocated neither by their employers (the government), since salaries are meagre and working conditions bad, nor from below, since patients' contributions are not making a noticeable difference to the health workers' living standards. In addition, users feel that due to the fees they pay (which do make a noticeable economic difference for them) they can make higher demands upon the health workers. The latter, however, only rarely have the resources with which to

make any noticeable difference in quality of service. They therefore lose dignity in the eye of the 'donors' (the patients and the administrators who each pay them') p.24.

The managers of these facilities and health workers that work within them have been a particularly 'neglected group in the system', potentially playing a central role in the inter-connectivity between health administration, health workers and patients [14]. In this paper we describe the roles and responsibilities of PHC facility in-charges in Kenya, where there has been an accelerated process of political decentralisation in recent years.

Devolution of Health Care Services in Kenya

Following the March 2013 election in Kenya, there was a shift from a centrally governed country with more than 80 districts to 47 semi-autonomous county governments [11]. Within the health sector, devolution meant the transfer of specific functions including service provision and ownership of health facilities to the county level, while the national Ministry of Health retained functions such as policy direction, regulations and standards. The transfer of power from central to county government was expected to take place over a three year period, and to be accompanied by other key changes for the health sector such as the merger of what was formerly two Ministries of Health (MoH), and the handing over of district level functions to the larger county government[15]. Another important change introduced at the same time was the official removal of all user fees at public primary level facilities and of maternity fees from all public hospitals.

Each county in Kenya can now organise its own health system governance structure. Many counties have adapted previous structures, introducing within their county department of health, a new County Health Management Team (CHMT) that oversees health issues in all sub-counties. Sub-counties tend to be managed by a sub-county health management team, or SCHMT, typically replacing what used to be a District Health Management Team (DHMT). The SCHMT provides support and management to all public and private health centres and dispensaries in their sub-county. These primary facilities are grouped under level two in the county health system hierarchy (Fig 1). At this level the focus is on health promotion and basic treatment, including simple diagnostic and short term in-patient services such as maternity care and short recuperative observations. Public PHC facilities are managed by either a nurse or a clinical officer commonly referred to as the "in-charge" or facility manager. These terms are used interchangeably in this paper.

In examining the practices and routines of PHC facility in-charges operating in level 2 of the Kenyan system under devolution including their daily routines, the challenges they face, and the coping strategies they adopt, we contribute to a small but growing literature focusing on the micro-processes of governance at sub-national and local levels in LMICs. We also draw on the distinction made by Ortiz Aragon and others (Fig 2) between three interacting dimensions of organisational capacity: the *hardware* of infrastructure, technology and funding levels; the *tangible software* of knowledge, skills and processes of decision making; and the *intangible software* of relationships, communication practices, values and norms. The intangible features have been argued to be particularly important in shaping the behaviours of those working in an organisation and to underpin that organisations' "power to perform" [16, 17].

Methods

Study setting

The data presented in this paper are part of a wider set of activities aimed at understanding governance changes under devolution in Kenya, conducted under the umbrella of a 'learning
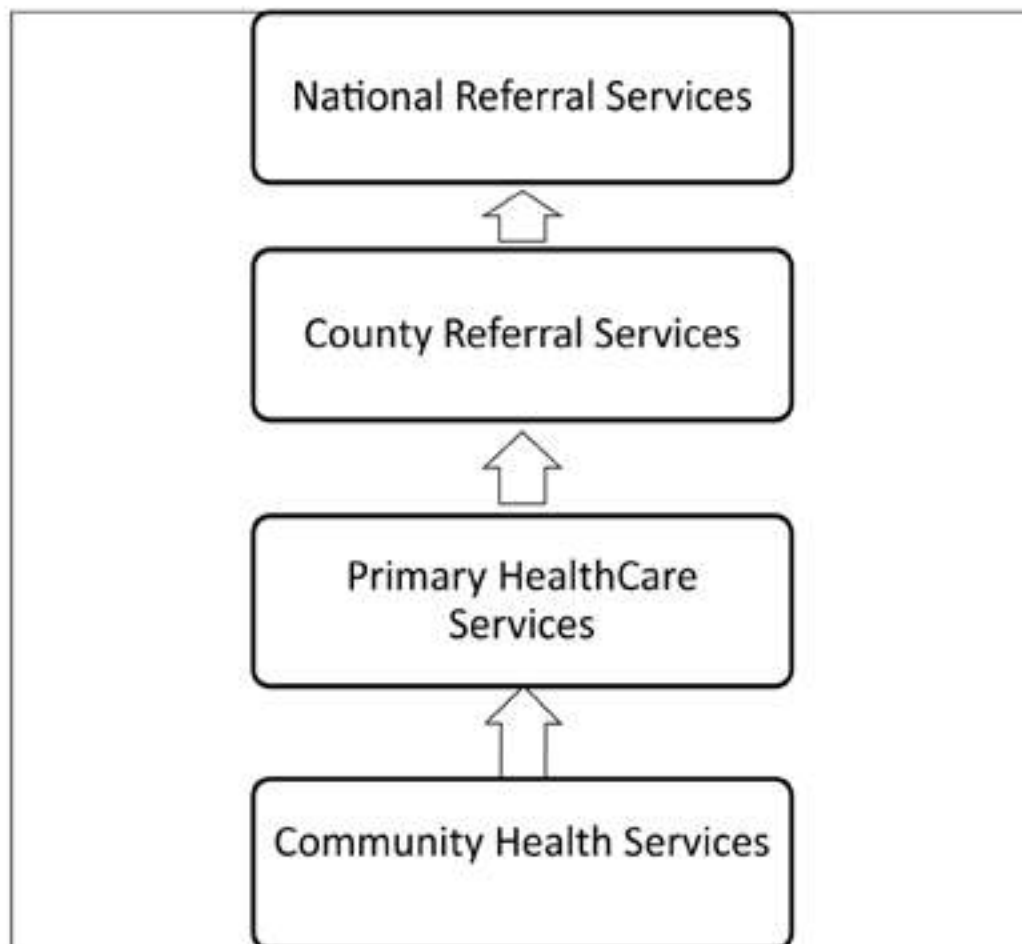
Fig 1. Organization of health services in Kenya under a devolved system.

site'. A learning site is a geographical area in which a long term process of collaborative research is implemented, involving health managers and researchers deciding together what the key health system questions and interventions are. The approach includes repeated interactions over long periods of time that built trust and familiarity, and that enable the invaluable tacit knowledge of health managers to be accessed. The approach was initiated by collaborators in South Africa because of its' potential to overcome many of the challenges common in health systems research, including the difficulty of disentangling the effects of governance changes from those of parallel changes occurring in the health system, and the potential for opposition to the research if it is considered to be irrelevant or undermining by health system managers [6].

The Kenyan learning site is situated in Kilifi County, which in 2013 was estimated to have a population of 1. 2 million, 68% of whom live below the poverty line [18]. The county has 93 public and 110 private facilities with a nursing ratio of 37:100,000, and a doctor ratio of
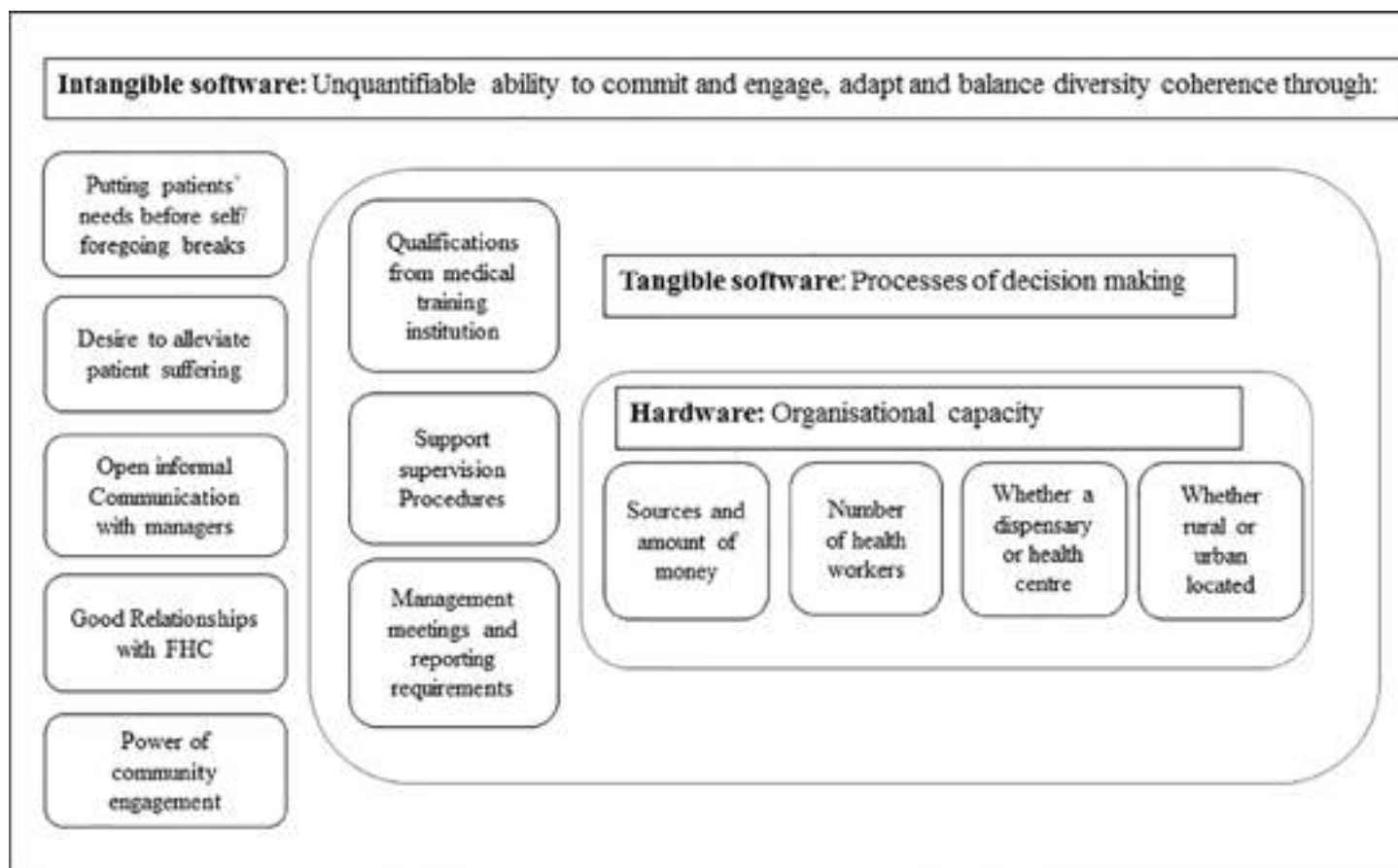
Fig 2. Organisational capacity adopted from Ortiz Aragon, 2010.

doi:10.1371/journal.pone.0144768.g002

1:137,500. Kilifi County covers seven constituencies, now sub-counties, but managed by three District Health Management Teams (now SCHMT). Health facilities are unevenly distributed across the county, with most located along major roads. This has resulted in unequal distribution of basic amenities and services within the county. It has also hampered easy access to these services by more far-flung rural communities [19, 20].

We selected one of the three sub-counties as the focus for the primary public facility work. Of the two sub counties not included in this work, one has other KEMRI research activities being undertaken while the other was inaccessible due to ongoing road construction. It had one health centre (now has two) and 17 dispensaries all of which are now managed by a sub-county management team. On the basis of discussions with sub-county managers, we selected the only health centre and three dispensaries for more in-depth observational and interview work. The three dispensaries were purposively selected to allow for variety in distance from main roads and urban centres, number of staff, and range of services offered.

Observations and interviews at facility and county level

We conducted formal and informal interviews and observations over a one year period (June 2013 to July 2014). MN spent a continuous four week period in each of the four facilities with return visits over the rest of the fieldwork period. During the observation period, she spent all day in the facility, observing daily routines and activities, and having informal conversations

with all staff members and some patients. She also held formal tape-recorded interviews with eight individuals in facilities over that time, usually broken into two different sessions of one to three hours each.

Primary public facility work was complemented by non-participant observation of sub-county level managers in their daily activities over by MN and PO over the same period, including formal interviews with seven managers. MN, SM and BT all live in Kilifi County, and have regular interactions with several of the sub-county and senior county leaders. BT in particular has a key role in our research and understanding: as well as being a governance researcher, he was a previous senior manager in the district himself, is a technical health advisor at county and national levels, and is a prominent member of the local community.

Data management and analysis

Digital recordings of interviews were transcribed, managed and coded in NVIVO 10 using a framework analysis approach [21]. Coded data were organized into charts according to major themes based on the study objectives and issues emerging from interviews and reflective practice sessions. To support our analysis and shared learning, we organised a series of formal 'reflective practice sessions' of between three and five hours among the research team and where possible managers. In these meetings we shared what we learnt in the field and from the wider literature and policy and practice interactions, and the implications for our work and findings.

Ethical consideration

The empirical work was approved by ethics committees of the Kenya Medical Research Institute Ethical Review Committee (SSC 2205). Permission to conduct the research was also obtained from the Kilifi county department of health, and from the three sub-county medical officers of health. As part of the research process, prior to data collection, the research team met with all participants to discuss the nature of the study, the methods that would be used in the study including observations. Before observations, the research team requested for permission to attend and document meeting proceedings. Verbal informed consent was obtained for all observations, and written informed consent for all formal interviews, and these consent processes were approved by the ethics committees of Kenya Medical Research Institute (KEMRI) and the London School of Hygiene and Tropical Medicine. All data were anonymised, with access limited only to researchers. This paper was published with permission from the Director KEMRI.

Results

Following an overview of the basic hardware of the four facilities, we describe the roles and responsibilities of PHC facility in-charges, and some of the key challenges they face. For each of the key challenges, we reflect on the extent to which these appeared to be caused by, or exacerbated by, the devolution process as it unfolded at national and county level.

Describing the four study health facilities

The four health facilities were quite different from each other in terms of size, layout and infrastructure (Table 1). The health centre is relatively large and well-staffed, while the smaller dispensaries vary significantly in size with between six and 15 rooms, and between one and three technical staff members. The health centre has housing for staff, serves a relatively large population of 30 to 40 thousand and offers 24 hour service, while dispensaries only offer services

Table 1. Research Facilities description.

Facility characteristics	HC1	Disp1	Disp2	Disp3
Facility size (number of rooms excluding toilets, verandas and staff housing)	26 (3 wards)	7(6 in use, 1 abandoned)	6 with 3 semi-permanent rooms	15 spacious new rooms (6 old planned for renovation to be a maternity wing
No of technical staff	17 including 2 Medical officers	3 (2 nurses and a chew)	3 (2 nurses and 1 HTC counsellor)	1 (a Nurse)
No. of support staff	6	2	4	2 and a volunteer
Official opening hours	24hrs	08.00–17.00	08.00–17.00	08.00–17.00
Lab available?	Yes	No	Yes	No
Emergency referral system	Reliable Public transport	Reliable Public transport	Unreliable Public transport	Un available
Urban or rural	Urban	Peri-urban	Rural	Rural
Workload	300–350 per day	Data not available	Data not available	60
Functioning electricity supply	Yes	Yes	Yes	Yes
Running piped water	Yes	Yes	Disconnected over unpaid bill	Yes
Staff housing on site?	Yes	No	No	No
Functional telephone for facility use?	No(uses personal mobile)	Yes (though uses personal mobile)	No (uses personal mobile)	No (uses personal mobile)
Fridge and fridge thermometer	Yes	Yes	Yes	Yes
Source of funding	*HSSF, Kenya Government & *OBA	HSSF, Kenya Government & OBA	HSSF, Kenya Government & OBA	HSSF, Kenya Government, donors, user fees

*HSSF—Health Sector Services Fund

*OBA—Output Based Aid

doi:10.1371/journal.pone.0144768.t001

during the day to a population of 10 to 15 thousand. All facilities had running piped water, although at one dispensary water had been disconnected two months prior to the time of MN's visit due to an unpaid bill. Two dispensaries are based in a rural area, and one in a peri-urban area, while the health centre is in an urban setting.

All four facilities were initiated as community projects but have been taken over by the government. In addition to government support, they have received support for infrastructural development from well-wishers, donors and political actors.

What does a PHC in-charge do?

There is no clearly laid out job-description or terms of reference for PHC facility in-charges that we could identify. However in-charges were described by sub-county managers as being the most senior clinical staff member in the facility, performing clinical and managerial duties in both health centres and especially dispensaries. As one Sub-county manager reported, in-charges should be:

> . . .*Responsible for overall leadership, the governance bit, the management bit, all those things; they need to be aware of that. They need to be accountable and own that facility. They need to feel like that facility is their own. So it's like their home in which they need to make sure that everything has been done appropriately*. . . First sub-county manager sub-county two

However, they described their roles in terms of what they did, being responsible for ensuring coverage and delivery of services, including through planning patient flow in a way that all users are served by the available staff. They are responsible for staffing, budgets, drugs,
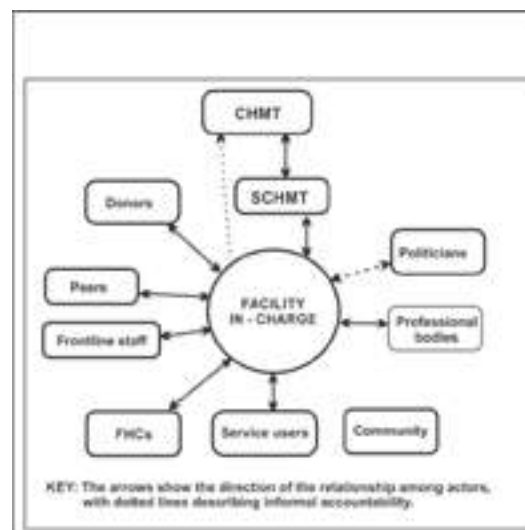
Fig 3. Network of actors that a facility in-charge is accountable to.

doi:10.1371/journal.pone.0144768.g003

equipment, infrastructure, data and records, including as appropriate making orders, monitoring stocks and quality, and reporting on needs to their sub-county line-managers. For casual workers, they are responsible together with facility committee members for hiring, setting salaries, and oversight. For technical staff, they can only make recommendations to the sub-county on the nature and type of staffing they need. In order to plan appropriately, in-charges should develop together with key local stakeholders an annual work plan (AOP) which outlines the activities and resources needed to achieve facility targets. As the accounting officer for the facility and government employees, they are ultimately responsible for spending and accounting for budgets through a quarterly report to the sub-county accountant.

> . . .*So basically they are supposed to plan as a small unit*, *then they incorporate the planning with the facility committee*. . .Female Sub-County Manager Sub-county one

From observations and document review, it emerged that the health facility in-charge has various answerability requirements, upwards to supervisors, donors, politicians, and professional associations, horizontally to colleagues, and downwards to health facility management committees (Fig 3). With some actors there should be regular formal meetings (for example quarterly supervision from managers, and quarterly meetings with HFMCs), while with others meetings are less regular or formal. There are two key changes in these networks since devolution. Firstly, what were the previous district level mangers became sub-county level managers, as noted above and secondly, a new political cadre emerged in elected or nominated Members of the County Assembly (MCAs). Some MCAs have taken an active interest in the functioning of their local health facilities.

PHC facility in-charges also spent significant periods of time away from facilities attending to planned and unplanned meetings and trainings.

> . . .*There are those scheduled meetings and trainings and then there are instances (unscheduled) whereby we tell them to close the facilities if at all this message is very important for them to know and to go and implement*. . .Female Sub-county manager in Sub county one

Interviews revealed that the amount of time spent on different activities varied significantly over time, with reporting requirements being particularly heavy at the end of the month and quarter, as discussed below

In-charges' challenges and coping strategies

Key challenges for in-charges were identified iteratively over the course of the fieldwork, and could variously be related to the three dimensions of capacity noted above—hardware, tangible software and intangible software–as is illustrated in the following sections.

Lack of preparedness for and clarity in role.   A general overall challenge faced by facility in-charges is lack of preparation for their roles. In terms of formal training, they are relatively well prepared to play their professional role of a clinical officer or a nurse through their training at the Kenya Medical Training College or University as described in their current training manual[22]. However they have little preparation for their many leadership and management roles.

> . . .What I have been hearing is that nursing officers, when they finish schooling. . . they are just being informed that 'you are going to be posted as the in charge of this facility', and from school you didn't hear anything about management. . . First female sub county manager in sub-county two

The four in-charges we interviewed had been in service for very different periods of time, ranging from one to seven years. However all remembered how 'unprepared' they were to manage facilities on their first posting, and how 'shocked' or 'overwhelmed' they were by the breadth of their roles.

> . . .a posting letter explains nothing except the facility where you are going. So they just give you drugs and then you go. And in fact me I didn't know what I was expected to do. I thought I was coming here to do nursing but when I came here there were so many things to do. . .A female PHC in-charge at facility two

A particular issue raised across our work was who the in-charge actually is in a facility. Specifically there was a debate about whether this should always be based on length and type of experience, or on the nature and level of formal training. Interviews with sub-county managers indicated that clinical officers were generally preferred over nurses for the position of in charge because of their training. This was fairly straight forward at the health centre we visited: the clinical officer was the overall manager while the nursing officer was in charge of service delivery, and they both agreed with that 'as policy'. However at one of the larger dispensaries, there was tension between the nursing officer and clinical officer over who should be overall 'in charge'. The nursing officer had been in place and functioning as the in-charge since the facility's inception six years earlier, while the clinical officer had only been posted there three months before we visited the facility. The clinical officer described considerable tension resulting from the situation, which he did not know how to handle:

> . . .She is scared of powers being taken away- she is seeing me as a threat instead of as a colleague, yet powers belong to the facility. . . A male deputy PHC in-charge at facility two

Through reflecting on these issues with managers and research colleagues who have worked with facility in-charges for many years, it was clear that problems around role clarity, level of preparedness for in-charges, and tensions between cadres regarding seniority have long been a

Table 2. Amount of reporting–some of forms to be filled.

Clinical forms to show performance	Financial manuals and forms	
MOH711: TB control data	Guidelines and reference documents	Receipt vouchers(F017)
MOH711A: Integrated RH, HIV/AIDS, Malaria, TB &Nutrition	Managing HSSF, an operations manual	Payment vouchers(F021)
MOH113:Nutrition Monthly reporting	Guidelines on financial management for HSSF	Travel Imprest form(F022)
MOH717:Service workload	Chart on accounts	Local Purchase Orders (LPO)
MOH718:Inpatient morbidity and mortality	Registers and books to be completed	Local Service Orders (LSO)
MOH729AF:CDRR for ARV and OI medicine	Memorandum vote book	Request for quotations
MOH730: Facility monthly ARV patient	Receipt book	Stock cards for all items in stores
MOH731: Comprehensive HIV/AIDS facility reporting form	Facility service register	Imprest warrants
MOH733B: Nutrition services summary tool	Cash book	Bank reconciliation forms (F030)
MOH734F:CDRR HIV nutrition commodity	Cheque book	Counter requisition and issue vouchers (S11)
MOH105:service delivery report	Cheque book register	Counter receipt vouchers(S13)
MOH515: Chew summary	Fixed asset register	Handover forms
MOH710: Vaccines and immunization	Imprest register	Monthly financial report forms (MFR)
	Consumables stock register	Monthly expenditure report forms(MER)
	Store register	Quarterly financial report forms (QFR)
	Receipt book register	Other items register
	Forms/vouchers	

doi:10.1371/journal.pone.0144768.t002

feature of primary public facility life and have not been impacted upon in a meaningful way by devolution.

Amount of reporting. Many of the relationships that in-charges have are accountability relationships, in which actors are answerable to one another. These accountability relationships are horizontal to colleagues and peers, upwards to funders and managers, and downwards to communities (Fig 3).

An issue raised in relation to the range of actors that in-charges need to be accountable to was the amount of paper-filling and reporting that they have to do (Table 2), which was variously described as 'overwhelming', 'repetitious', 'confusing' 'tedious' and 'distracting'. Reports to be submitted to government line-managers include monthly service reports such as Malaria, TB and HIV cases (broken down by age category), number of test kits used, bed net distribution, and ANC attendance. In-charges also submit several financial reporting forms, including expenses against budget lines for every purchase and payment made. Beyond being accountable to government line managers, all facilities also had some responsibilities to donors who were supporting with staff or infrastructure. For example three facilities were members of a Reproductive Health Output-Based Aid (OBA) voucher scheme and had to submit delivery reports to the donor every month. To fulfil accountability responsibilities to communities, in-charges not only meet regularly with Facility heath committees (FHCs), but also have to ensure black boards at facilities include monthly outcome indicators and details on collections and expenditures.

All four in-charges described having to work on weekends or past official hours to complete reports, particularly at month and quarter ends when reports are due in. All reports were felt to be important by in-charges and sub-county managers, to indicate workload, facilitate resource allocation, and plan supportive supervision and mentorship and coaching:

. . .reporting is very important. That will make those supervisors know that you are working because you cannot be seen to be working unless you produce that report. You don't say that I saw. . . fifty patients yesterday. . . nobody will believe you that you saw those patients but if the books are there the names are there then somebody can say yes, this is work done. . . A male PHC in charge at facility four

. . .[It]. Can then be seen how heavily you are burdened; so that you can reinforce the place, with maybe more nurses or more drugs, or more facilities that the continuity of services is there. . .. A female PHC in-charge at facility two

However a concern raised particularly by in-charges is that they rarely receive feedback on issues raised through reports. It was also repeatedly mentioned by both in-charges and their managers that it would be useful to simplify reporting requirements and reduce repetition across tools that the in-charges have to submit.

. . .Some are repetitions. . . You report on things like thrice. From the immunization there's a tool for immunization then in the workload it's all there; there's a tool in malaria and then in another tool comes giving a whole report of the same, so it's ambiguous! Why don't we write in one tool. . .? Male PHC in-charge at facility one

Reporting challenges are largely with upward accountability, with financial reports in particular considered difficult and worrying given that in-charges can be held formally responsible for any anomalies. Further challenges are the conflicting requirements of donors and government managers in some cases as illustrated below. Challenges with accountability downwards were less regularly raised. Relationships with HFMCs were mixed across facilities, with some evidence that in-charges worked with facility committees to challenge more senior managers, as discussed in the next section. Relationships between in-charges and MCAs were mixed and evolving; also touched on in the next section.

An illustration of how an in charge dealt with external actors. From interview and document review, dispensary 3 began as a community self-help project to reduce maternal mortality in the area. A donor who was approached to support the facility demanded that the facility be named after him. After the said donor left and returned to his country, the community struggled to keep the clinic running. After approaching the GoK, the MoH took over and sent staff as well as drugs and commodities. Besides, the facility receives HSSF and all MoH support, and thus basically became a public health facility.

On a recent visit, the signage was white washed and promises of the donor name put up, but by use of delaying tactics, the donor left before this was done. The facility remained nameless for a week. When the in charge was asked how he deals with such challenges, he said:

*. . .If the government takes charge of a facility, it should be fully responsible for it, but it seems the government also needs these donors to continue but the donors give their own requirements and the government also has their own requirements so sometimes it differs, but if can you can spend USD0.05 to get USD 0.2, then why no*t. . .? Male PHC in-charge at facility four

The implication is that as a PHC in charge has to continuously reflect on the benefits of various accountability relationships and their cost and be able to learn, adapt to survive.

As with problems around role clarity and preparedness, these accountability burdens and issues were a feature of PHC facility life before recent devolution. However there are several areas in which there appears to be some change. Firstly, there is further demystification about what happens with data and reports, including what is held and acted upon at (sub-county level) and what is forwarded on to national level. Secondly, and relatedly, was a lack of clarity in roles and responsibilities between the county and sub-county level management teams, including in relation to support and oversight of in-charges. Thirdly is the addition of the new political cadre of often quite vocal MCAs into accountability networks.

Resource scarcity. Resource scarcity has long been a challenge for primary public facilities in Kenya, and was regularly noted and observed during our observation period. Significant challenges in hardware were observed in terms of financial resources and drugs more specifically. As will be shown, coping with the challenges required intangible software skills including careful communication and engagement with sub-county managers, facility committees, and patients. Firstly, in Kenya, health centres and dispensaries have always controlled relatively few resources. Until the recent change of government, the central Ministry of Health supplied facility infrastructure, qualified health staff, drugs and equipment, and provided money for operational expenses such as support staff, maintenance, allowances, fuel, and non-medical supplies. However operational expenses were often failing to reach facilities and so user fees were often being charged by facilities to cope with shortfalls.[23, 24] Recognition of these challenges contributed to the introduction in 2010 of an innovative national health financing intervention called the Health Sector Services Fund (HSSF). Through HSSF, a fixed level of funds is sent directly to facility accounts every quarter from central level to assist with facility operations (for dispensaries, approximately USD 340 and USD 1200 for health centres). Although the amount of money is small compared to facility budgets and there have been teething problems, there were impressive achievements across the country with HSSF in terms of ensuring that funds reach facilities, and that funds are being overseen and used in a way that strengthens transparency and community involvement[25]. Quality of care was also generally reported to have improved, particularly in dispensaries, but user fees above national policy levels continued to be charged.

Our observations and discussions revealed significant financial challenges since devolution. One major challenge was a gap in receiving HSSF funds in facilities for six months following the presidential decree. This was related to several key funders of the initiative disagreeing on how HSSF should function under devolution, including on whether funds should now be dispensed through counties. This major set-back for facilities was compounded by the public announcement in June 2013 that all user fees would be removed from facilities. Facility in-charges found themselves losing their funds from national level and from user fees at around the same time. A series of crises resulted at facilities, including accumulation of water and electricity bills (to the point of both being disconnected in one facility), inability to pay casual workers, and community members demanding free services that were not available.

Facility managers developed a range of strategies in an effort to keep facilities open and functioning. Drawing on their prior relationships with sub-county managers they began to re-introduce user fees, in some cases working together to challenge more senior managers as illustrated below. Each in charge developed his or her own approach to doing this, in all cases in discussion with HFMC members who in general were keen to support the continuation of services and could see the predicaments of the in-charges. One facility reintroduced a system loosely based on the previous national policy, another introduced higher fees, arguing that the previous national policy was a registration fee only and that other charges were need to cover for treatments and procedures. A third facility decided that USD 0.3 would be charged for all users regardless of age and in the final one, the donor-funded OBA scheme was made a

requirement for accessing reproductive health services to boost facility resources. Over time, although funder differences continue, the HSSF funds, user fee and maternity fee loss compensation funds were once again channelled into facility bank accounts, and appeared to play a critical role in facility functioning. However, there were new complexities and lack of clarity in terms of allocation criteria as well as reporting requirements at county and national level. Several facilities resolved to retain user fees as a buffer against future delays and given continuous resource constraints anyway. OBA funds also continued to be much appreciated as an added source of funding for the whole facility, rather than as a means specifically to improve Reproductive Health services.

> **Example of innovation on delayed funding.** On 1st June 2013, the President of Kenya announced the removal of user fees and maternity fees from primary health facilities. The Government was going to compensate the facilities through direct funding to their bank accounts. However, four months down the line, no funds had been transferred to facilities, leading to a cash crisis—casual workers and utility bills went unpaid, and outreaches could not be conducted. In the face of water and electricity disconnection, filthy facilities (with casual staff leaving) and imminent closure, one facility in charge turned to her facility committee for a solution. Together with her committee they agreed to re-introduce user fees until the Government released the promised money. Upon learning of this development from Members of the County Assembly, a senior county manager sought to know under whose power the in-charge had acted against a Presidential directive. This incident prompted a visit to the facility by a very high level county team, without informing or inviting sub-county level managers (previously and possibly still the direct supervisors of the facility in-charges). The facility committee stood their ground and supported the in-charge, and managed to convince senior county managers that services could not stall because of central government delays in funding. This innovation by one facility in charge with her committee became an official temporary solution for the whole county. **Source: Researchers reflective meeting 25_10_2013**

Secondly, drugs were noted to be scarce and although drug shortages are not new to facilities, devolution apparently exacerbated the situation for 5 months by creating a change in the drug procurement system in the county from a prepaid system to a post-paid system.

In the old system each gazetted facility had an account with the Kenya Medical Supply Agency (KEMSA) where they were allocated a certain amount of money for drug purchase. The facility in charge ordered according to facility consumption and supplies were deducted from the overall balance. KEMSA used to supply directly to facilities according to their orders.

In the new system, funds allocated for drugs and pharmaceuticals are channelled through the county and the county pharmacist has to do quantification for the whole county, and then place an order to KEMSA. KEMSA makes the deliveries to the county and the county pharmacist has to ensure the supplies get to individual facilities as per their order. In the new system, supply depends on payments and late payments by the county results in delayed delivery causing regular stock outs. We also observed that when stocks did arrive, the deliveries began to be politicised, with politicians wanting to publicise that they have secured the goods.

In-charges coped with stock-outs in varying ways. One facility simply gave patients a prescription and asked them to purchase drugs from private chemists, which is a common practice in many facilities across the country when drugs are not available in the facility. In a more rural facility which is further from an urban centre, the in-charge used his/her own money to buy drugs and then sold them to patients at the market price in order to save patients the transport costs, while in another the in charge borrowed drugs from another facility to be returned upon

receipt of supplies from county. In the final facility the in-charge–who was on leave–reported that other facility staff were procuring drugs and selling them to patients 'at exorbitant prices' to make a profit. Being on leave, (s) he was unable to take any action and upon completion of leave, she was moved to another facility in a promotional capacity.

Thirdly, although not specific to Public Primary Health Facility in-charges, salary delays for health workers across the county resulted in relationship tensions and staffing shortages at facilities. As part of devolution, human resource management for health was moved to county level, including payment of salaries. As a result of political pressure to devolve fast, this move took place suddenly in 2013 and long before structures, systems and key senior positions were in place at county level. This led to salary delays in July 2013, and significant anxiety and fear among staff at all levels, including facility in-charges. In Kilifi County, further delays and non-payment of allowances were experienced in January 2014, culminating in a circular from the Director of Health to all medical officers to require all staff to appear for a head count on 20th and 21st February. Staff took a day away from the facility to participate in the exercise, which included questions about counties of birth and ethnicity. These questions, in a context of wider political contestation and uncertainty, fuelled tensions and concerns among staff that 'outsiders' may lose their position. At all levels, managers and staff were trying to cope with a confused and shifting situation, and concerns about political motives and job insecurity. This anxiety continues to linger almost two years post devolution with occasional health worker strikes in several counties with kilifi nurses holding frequent dialogue meetings with county health managers to air their grievances. While salary debates and delays are not uncommon in Kenya, there was a heightened level of uncertainty and anxiety over this period of change.

The key role of sub-county managers in supporting front-line workers

Over the entire observation period, facilities remained open and functioning despite repeated strains and shocks, only some of which were caused or exacerbated by devolution as it unfolded. A key support system for in-charges over this period was the sub-county managers who have played the role of line managers to in-charges in Kilifi for decades in some cases.

A sub-county manager mentioned that they encourage in-charges from the outset to turn to them if they have problems. S/he mentioned explaining to in-charges being posted to new facilities:

> . . .We are not posting you there to go and die suffering alone, so all of you I beg you, take my number if you have problems let me know, but don't stay with your problems, or run away from your facility going to your home telling them that "Ah the place is so hostile". Don't do that, tell me and me I'll share with the entire DHMT we will see how best to help you out of the problem, but don't run away from workstations. . . Male sub-county manager in Sub County two

According to MOH standards the SCHMT should conduct monthly supervision visits to all health facilities, to offer support, mentor, coach and conduct on job training (OJT) to the staff working there. This routine activity is seen by managers as an opportunity for important relationship-building with the facility staff, to encourage and identify with them to avoid isolation and demotivation. As a manager explained:

> . . .It is to interact with the facility staff, so that you can identify with them, any problems and possibly support them to see that they don't continue suffering. Otherwise, others may be very discouraged; others may be very demoralised to remain in the facilities if nobody ever goes to

say hi to them. But if you go there, you chat with them. If possible you take a drink with them. They feel I'm not wasted; I'm not alone. . . Male sub- county manager in Sub-County two

These visits, when they happen, are appreciated by in-charges:

. . .when we have challenges they can assist us with counselling, if we have shortages they can help us with getting some drugs here and there, sometimes they are also overwhelmed by events and maybe miss one quarter and come the other quarter, but support supervision it is well done here and we appreciate a lot. . . Male PHC in-charge in facility four

Given the challenges of funding to cover all facility based supportive supervision visits, the monthly facility in-charge meetings that take place in the county headquarters are also highly appreciated. These meetings allow information to be shared, progress to be tracked, and problems and solutions to be aired and shared with peers.

Sub-county managers have sometimes worked with or had to challenge MCAs, who have both supported and challenged the in-charges in their initiatives. There were regular reports of MCAs being vocal about health workers failing to heed to free service policy for example, and some have argued that health workers are selling government drugs to patients. These complaints have sometimes been raised to the most senior county health managers who have then acted on them by bypassing the in charge's immediate line managers.

Discussion

PHC in-charges remain an important source of leadership and coordination of care for the majority of poor populations despite the challenges highlighted in many studies [25–29]. In this paper we contribute to a small but growing body of literature focusing on the micro-processes of governance in low income countries, and specifically some of the day-to-day roles and challenges faced by facility in-charges over a period of accelerated decentralisation in Kenya.

Overall, we show that in-charges have complex and diverse roles, which they have to perform in a difficult environment with relatively little formal leadership preparation and training. In addition to their clinical care roles, in-charges also manage clinical services, and take on more strategic tasks such as leading the development and implementation of facility Annual Operation Plans (AOPs). These roles require engagement with, and management of, a complex web of people within facilities, communities and upwards in health system hierarchies. Thus as Daire and Gilson[29] have argued, '*PHC facility management is not primarily a mechanistic or administrative function, entailing efficient implementation of predesigned roles, tasks and instructions, but is instead a dynamic and strategic process occurring in conditions of uncertainty*' (p 96).

The four health facility in-charges we worked closely with draw on different aspects of their facilities' basic hardware to cope with crises (the everyday challenges and systems shocks),with the smaller dispensaries least able to draw on other staff members and resources and apparently having more often to resort to foregoing breaks and working beyond official working hours. Other strategies observed to cope with crises included borrowing from other facilities, purchasing drugs on behalf of patients, and increasing user fees, with such strategies sometimes developed and supported through formal decision-making structures such as FHCs and sub-county managers. These strategies illustrate the importance of tangible software such as knowledge, skills and processes of decision making in coping with system challenges; but also and perhaps even more importantly, the centrality of intangible software such as relationships,

communication practices, values and norms, and intrinsic motivation in ensuring that services keep running in the face of challenges (Fig 2).

Although such strategies suggest that PHC facility in-charges at this level of health system are able to use their available resources and capacities to cope with daily challenges, there is also a potential fatigue and burn out. To sustain such strategies there is need for adequate support and maintenance over a long period. The latter has been observed by Topp et al [28] in Zambia, where the cumbersome nature of hard-copy data-collection tools and the high burden of work and the pressure to complete tasks quickly were contributing to the slow grinding down of facilities. In our observations, most facilities remained open and reasonably busy over our observation period, with staff attending to a constant stream of patients, and particularly busy periods in the mornings and on Mondays. However we were not able to measure and track utilisation rates over the time before and after removal of user fees.

In coping with daily and unusual and specific crises, our study suggests the critical importance of the sub-county managers in mediating between, translating and integrating county changes with in-charge roles and responsibilities. Although devolution has created uncertainty and confusion at the (sub) county level, mid-level managers continued to perform their roles as best as they could over the period, including through drawing on donor resources and support wherever possible to hold facility in-charge meetings and–less successfully–to continue with supervision activities. The importance of this support was regularly expressed by in-charges for enhancing motivation and providing greater job satisfaction. This reflects the findings by Elloker et al in South Africa, who in focusing on the sub district, observed the critical role of sub-district managers and their teams in galvanising front line actors to improve routines and relationships [6, 16]. Other studies in South Africa and in Ghana have illustrated the importance of a team based organisational culture and trust in management as beneficial for motivation; something that has the potential to be built upon and strengthened at a time of on-going change in Kenya. The Ghanaian study also supports the importance of good informal working relationships, a shared understanding and commitment to a mission, and a hands on and supportive management styles as protective against frustration and system level barriers [30].

Given the inter-connectedness of relationships at different levels of the health system [31], in-charges and sub-county managers are inevitably impacted upon by the broader 'environments' or contexts in which they are embedded. Work in South Africa [17] suggests that although conflict is a common outcome in such situations, with negative implications for health managers, providers and patients, there is also the opportunity to bring key actors together to discuss the organisational structures and processes, and identify misalignments and associated constraints. In addition, developing positive individual and organisation capabilities in an environment of stress, constraints and uncertainty requires that managers be resilient, reflective, and continuously able to learn, analyse and adapt [16]. Strategies to build and strengthen system hardware and tangible and intangible software are essential, including building managers who are able to "deal with the calculated chaos of managing–its art and craft. . ." by developing the managerial mind-sets–or competencies–of reflection, analysis, worldliness, collaboration and action. As Gilson and Daire [32] argue, this requires leadership development programmes that focus on generating values-based leaders that are able to manage complexity, and a continued working towards changing the system within which people work, even as they develop people as leaders.

Conclusion

The PHC in-charges and the facilities they manage remain important to the realisation of the health of the majority population in resource poor settings. They have to contend with lack as

well as multiple accountability demands. Drawing on the Ortiz Aragon framework of hardware, tangible and intangible software helped us understand how the in charge copes with scarcity as well as change. Front line health workers need to be resilient, reflective, and continuously be able to learn and adapt in such an environment. Interventions to develop and strengthen capacity at the primary public health facility level and perhaps improve performance, calls for focus not only on system hardware but also on the tangible and–possibility particularly importantly—intangible software.

Acknowledgments

Author Contributions

Conceived and designed the experiments: SM BT. Performed the experiments: MN BT EB PO SM. Analyzed the data: MN SM. Contributed reagents/materials/analysis tools: MN BT EB PO SM. Wrote the paper: MN SM.

References

1. Gormley W, McCaffery J, Quain EE. Moving forward on human resources for health: next steps for scaling up toward universal access to HIV/AIDS prevention, treatment, and care. JAIDS Journal of Acquired Immune Deficiency Syndromes. 2011; 57:S113–S5. doi: 10.1097/QAI.0b013e31821e9320 PMID: 21857293

2. Schneider H, Blaauw D, Gilson L, Chabikuli N, Goudge J. Health systems and access to antiretroviral drugs for HIV in Southern Africa: service delivery and human resources challenges. Reproductive health matters. 2006; 14(27):12–23. PMID: 16713875

3. Rene Loewenson T, Rusike I. Assessing the impact of Health Centre Committees on health system performance and health resource allocation. 2004.

4. Ranson. M, Hanson. K, Oliveira-Cruz. V, Mills. A. Constraints to expanding access to health interventions: an empirical analysis and country typology. Journal of International Development. 2003; 15 (1):15–39. doi: 10.1002/jid.964

5. Rowe AK, de Savigny D, Lanata CF, Victora CG. How can we achieve and maintain high-quality performance of health workers in low-resource settings? The Lancet. 2005; 366(9490):1026–35.

6. Gilson L, Elloker S, Olckers P, Lehmann U. Advancing the application of systems thinking in health: South African examples of a leadership of sensemaking for primary health care. Health Res Policy Syst. 2014; 12(30): doi: 10.1186/1478-4505-12-30

7. Aberese-Ako M, van Dijk H, Gerrits T, Arhinful DK, Agyepong IA. 'Your health our concern, our health whose concern?': perceptions of injustice in organizational relationships and processes and frontline health worker motivation in Ghana. Health policy and planning. 2014; 29(suppl 2):ii15–ii28. doi: 10. 1093/heapol/czu068 PMID: 25274637

8. Mills A, Vaughan JP, Smith DL, Tabibzadeh I. Health system decentralization: concepts, issues and country experience. 1990.

9. Bossert TJ, Beauvais JC. Decentralization of health systems in Ghana, Zambia, Uganda and the Philippines: a comparative analysis of decision space. Health policy and planning. 2002; 17(1):14–31. PMID: 11861583

10. Bardhan P. Decentralization of governance and development. Journal of Economic perspectives. 2002:185–205.

11. Conyers D. Decentralisation and Service Delivery: Lessons from Sub-Saharan Africa. IDS Bulletin. 2007; 38(1):18–32.

12. Walker L, Gilson L. 'We are bitter but we are satisfied': nurses as street-level bureaucrats in South Africa. Social science & medicine. 2004; 59(6):1251–61.

13. Mogensen HO, Ngulube TJ. Whose ownership? Which stakes? Communities and health workers participating in the Zambian health reform. Urban Anthropology and Studies of Cultural Systems and World Economic Development. 2001:71–104.

14. Sheikh K, George A, Gilson L. People-centred science: strengthening the practice of health policy and systems research. Health Research Policy and Systems. 2014; 12(1):19.

15. KENYA LO. The Constitution of Kenya, 2010. Attorney General Nairobi; 2010.

16. Elloker S, Olckers P, Gilson L, Lehmann U. Crises, routines and innovations: the complexities and possibilities of sub-district management: leadership and governance. South African Health Review. 2012:161–73.

17. Scott V, Schaay N, Olckers P, Nqana N, Lehmann U, Gilson L. Exploring the nature of governance at the level of implementation for health system strengthening: the DIALHS experience. Health policy and planning. 2014; 29(suppl 2):ii59–ii70. doi: 10.1093/heapol/czu073 PMID: 25274641

18. Scott JAG, Bauni E, Moisi JC, Ojal J, Gatakaa H, Nyundo C, et al. Profile: the Kilifi health and demographic surveillance system (KHDSS). International journal of epidemiology. 2012; 41(3):650–7. doi: 10.1093/ije/dys062 PMID: 22544844

19. Tsofa B, Molyneux S, Goodman C. Health sector operational planning and budgeting processes in Kenya—"never the twain shall meet". The International journal of health planning and management. 2015.

20. KNBoS. Kenya Demographic and Health Survey 2008–09: Kenya National Bureau of Statistics; 2010.

21. Ritchie. J, Spencer. L, William. O. Carrying out qualitative analysis. Qualitative Research Practice. London: SAGE; 2013.

22. Health Mo. Guidelines on community nursing services (CNS) provision in Kenya. In: Health Mo, editor. Nairobi2013.

23. Waweru E, Goodman C, Kedenge S, Tsofa B, and Molyneux S. Review of Health Sector Services Fund:Implementation and Experience: interim tracking report (submitted). 2013.

24. Kenya Go. Ministry of Health, Public Expenditure Tracking Survey Nairobi.: 2007.

25. Waweru E, Goodman C, Kedenge S, Tsofa B, Molyneux S. Tracking implementation and (un)intended consequences: a process evaluation of an innovative peripheral health facility financing mechanism in Kenya. Health policy and planning. 2015. doi: 10.1093/heapol/czv030

26. Phillips-Howard PA, Wannemuehler KA, Ter Kuile FO, Hawley WA, Kolczak MS, Odhacha A, et al. Diagnostic and prescribing practices in peripheral health facilities in rural western Kenya. The American journal of tropical medicine and hygiene. 2003; 68(4 suppl):44–9. PMID: 12749485

27. Opwora A, Kabare M, Molyneux S, Goodman C. Direct facility funding as a response to user fee reduction: implementation and perceived impact among Kenyan health centres and dispensaries. Health policy and planning. 2010:czq009.

28. Topp SM, Chipukuma JM, Hanefeld J. Understanding the dynamic interactions driving Zambian health centre performance: a case-based health systems analysis. Health policy and planning. 2014. Epub 2014/05/16. doi: 10.1093/heapol/czu029 PMID: 24829316.

29. Daire J, Gilson L, Cleary S. Developing leadership and management competencies in low and middle-income country health systems: a review of the literature. 2014.

30. Cleary SM, Molyneux S, Gilson L. Resources, attitudes and culture: an understanding of the factors that influence the functioning of accountability mechanisms in primary health care settings. BMC health services research. 2013; 13(1):1–11.

31. Sheikh K, Ranson MK, Gilson L. Explorations on people centredness in health systems. Health policy and planning. 2014; 29(suppl 2):ii1–ii5. doi: 10.1093/heapol/czu082 PMID: 25274634

32. Daire J, Gilson L. Does identity shape leadership and management practice? Experiences of PHC facility managers in Cape Town, South Africa. Health policy and planning. 2014; 29(suppl 2):ii82–ii97. doi: 10.1093/heapol/czu075 PMID: 25274644

An evaluation of *Health Workers for Change* in seven settings: a useful management and health system development tool

WASHINGTON ONYANGO-OUMA,[1] ROSE LAISSER,[2] MUSIBA MBILIMA,[3] MARGARET ARAOYE,[4] PATRICIA PITTMAN,[5] IRENE AGYEPONG,[6] MAIRO ZAKARI,[7] SHARON FONN,[8] MARCEL TANNER[9] AND CAROL VLASSOFF[10]

[1]KEDAHR Project, Division of Vector-Borne Diseases, Ministry of Health, Kisumu, Kenya, [2]Institute of Allied Health Sciences, School of Nursing, Dar es Salaam, Tanzania, [3]University Health Centre, Dar es Salaam, Tanzania, [4]Department of Epidemiology and Community Health, University of Ilorin, Nigeria, [5]Women, Health and Development Program, Division of Health and Human Development, Pan American Health Organization, Washington, DC, [6]Ministry of Health, Dangme West Health Research Centre, Dodowa, Ghana, [7]Entomology and Parasitology Division, National Institute for Trypanosomiasis Research, Kadua, Nigeria, [8]Women's Health Project, Department of Community Health. University of the Witwatersrand, Johannesburg, South Africa, [9]Swiss Tropical Institute, Basel, Switzerland and [10]Canadian International Development Agency, Hull, Quebec, Canada

This paper presents the findings of a multi-centre study assessing the impact of *Health Workers for Change* (HWFC) workshops in seven different primary care sites, based on the common core protocol described in this paper. The paper discusses a common methodology used by the studies, consisting of a triangulation of qualitative and quantitative methods. Such methodologies are inherently complex as they require comparisons across systems, sites and procedures. The studies were conducted in six sites in Africa and one site in Argentina. Generally, the intervention resulted either in positive change or in no change, except in the area of staff relationships where conflicts were more frequent after the intervention than before. This may reflect a willingness to confront problems or contentious issues. Implementing the HWFC workshops improved provider–client relations, facility level functioning and aspects of staff interrelationships, and had some impact at the system level. All studies indicated that overall health system development is essential for improved service provision including quality of care. The findings also indicated that this intervention complemented and could assist health sector reform efforts and can play a role in sensitizing health workers to gender issues. The paper concludes with a discussion of the robustness of the methodology used in the studies.
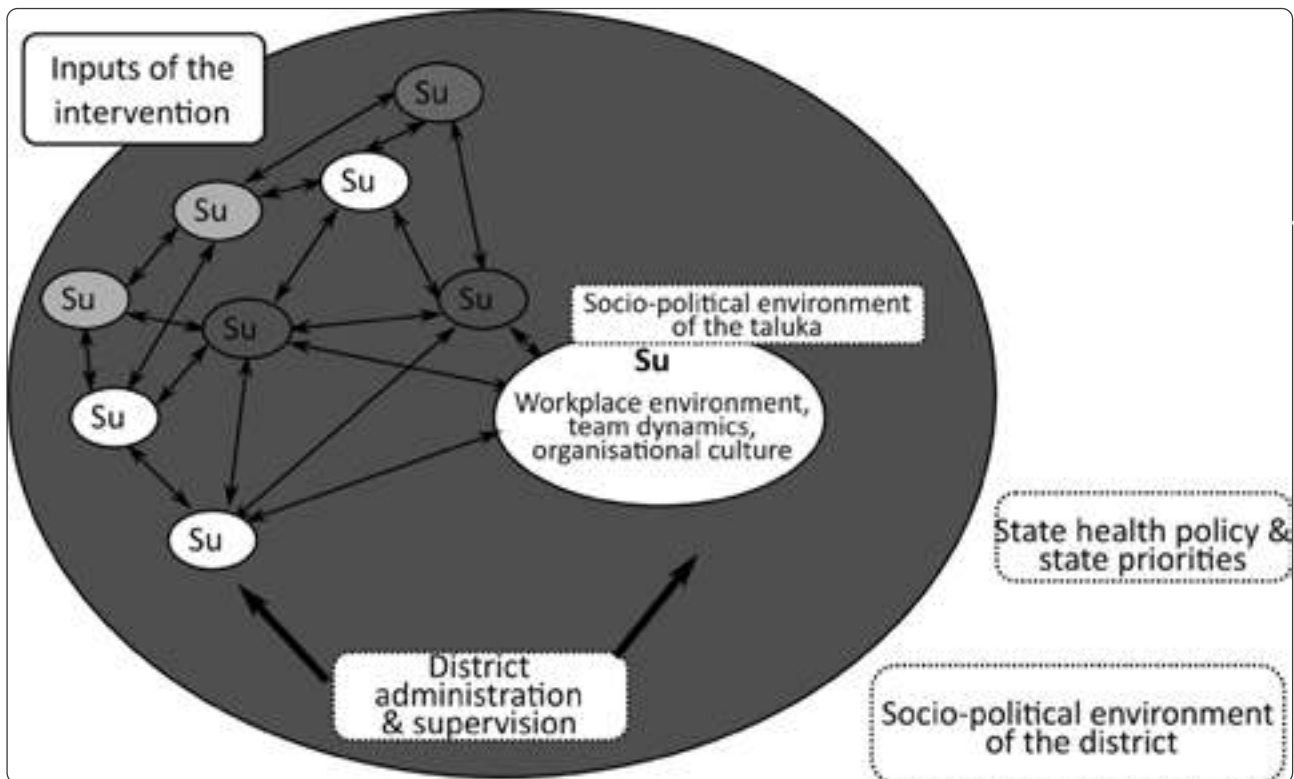
Advancing the application of systems thinking in health: a realist evaluation of a capacity building programme for district managers in Tumkur, India

Prashanth *et al.*

HEALTH RESEARCH POLICY
AND SYSTEMS

RESEARCH　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　**Open Access**

Advancing the application of systems thinking in health: a realist evaluation of a capacity building programme for district managers in Tumkur, India

Nuggehalli Srinivas Prashanth[1,2*], Bruno Marchal[2], Narayanan Devadasan[1], Guy Kegels[2] and Bart Criel[2]

Abstract

Background: Health systems interventions, such as capacity-building of health workers, are implemented across districts in order to improve performance of healthcare organisations. However, such interventions often work in some settings and not in others. Local health systems could be visualised as complex adaptive systems that respond variously to inputs of capacity building interventions, depending on their local conditions and several individual, institutional, and environmental factors. We aim at demonstrating how the realist evaluation approach advances complex systems thinking in healthcare evaluation by applying the approach to understand organisational change within local health systems in the Tumkur district of southern India.

Methods: We collected data on several input, process, and outcome measures of performance of the *talukas* (administrative sub-units of the district) and explore the interplay between the individual, institutional, and contextual factors in contributing to the outcomes using qualitative data (interview transcripts and observation notes) and quantitative measures of commitment, self-efficacy, and supervision style.

Results: The *talukas* of Tumkur district responded differently to the intervention. Their responses can be explained by the interactions between several individual, institutional, and environmental factors. In a *taluka* with committed staff and a positive intention to make changes, the intervention worked through aligning with existing opportunities from the decentralisation process to improve performance. However, commitment towards the organisation was neither crucial nor sufficient. Committed staff in two other *talukas* were unable to actualise their intentions to improve organisational performance. In yet another *taluka*, the leadership was able to compensate for the lack of commitment.

Conclusions: Capacity building of local health systems could work through aligning or countering existing relationships between internal (individual and organisational) and external (policy and socio-political environment) attributes of the organisation. At the design and implementation stage, intervention planners need to identify opportunities for such triggering alignments. Local health systems may differ in their internal configuration and hence capacity building programmes need to accommodate possibilities for change through different pathways. By a process of formulating and testing hypotheses, making critical comparisons, discovering empirical patterns, and monitoring their scope and extent, a realist evaluation enables a comprehensive assessment of system-wide change in health systems.

Keywords: Capacity building, District health system, Organisational commitment, Realist evaluation, Self-efficacy, Systems thinking, Programme theory

* Correspondence: prashanthns@iphindia.org
[1]Institute of Public Health, #250, 2 C Main, 2 C Cross, Girinagar I Phase, Bangalore 560 085, Karnataka, India
[2]Institute of Tropical Medicine, Nationalestraat 155, 2000 Antwerp, Belgium

Multilingual abstract

Please see Additional files 1 and 2 for translations of the abstract into Kannada and Hindi languages.

Introduction

A capacity-building intervention that targets district health management teams is complex given that its implementation involves various actors with different objectives, roles, and power. Further, the setting in which it intervenes is complex since district health systems are constantly evolving in response to national policies, the local socio-political environment, and internal dynamics within the healthcare institutions [1-3]. Realist evaluation can help to make sense of the complex nature of change that is expected in a scenario such as a district level capacity-building intervention. In this paper, we aim to demonstrate how the realist evaluation approach helps in advancing complex systems thinking in healthcare evaluation. We do this by comparing the outcomes of cases which received a capacity-building intervention for health managers and explore how individual, institutional, and contextual factors interact and contribute to the observed outcomes.

People at the core of health systems

People are at the core of health systems capacity [4]. One of the characteristics of a well-performing health system is a robust human resources management system that ensures the right conditions to achieve and maintain performance of the health workforce, which includes health managers. Health worker performance is closely related to their management capacity, but not limited to capacity alone; performance of health staff is determined by a variety of factors related to motivation, organisational dynamics and culture, and environmental factors including socio-economic and political factors [5-7]. These determinants of performance are constantly changing. From a complex adaptive systems perspective, capacity and performance could be viewed as emergent characteristics of a district health system that has many constantly self-adjusting and inter-dependent components [8].

From a realist perspective, it is not merely the implementation of programmes, but people, who change things. A programme is expected to work through providing new resources to one or more actors (agents) within this system. In response to the new resources introduced into the system by the programme, a change in the actors' behaviour or their interactions with systemic elements could create a new way of doing things and thus result in the programme outcome. This "new way of doing things" is expected to result in better performance and hence better health services. While programmes could be designed to change behaviour of people through introducing new knowledge, skills, or ideas, we see that in complex adaptive systems, the response of the people and the systems is neither straightforward nor easily predictable.

Building capacity and improving performance

Capacity building programmes are one of the most commonly used strategies to improve performance of health workers, especially in low- and middle-income countries [1]. However, the connection between capacity building and performance is not straightforward; capacity building is described as being multi-dimensional, spanning individual, teams, institutional, and health system dimensions. Experience from action research in several Indian settings has shown that the more we seek strengthening of systemic capacity, the more complex it seems to be and the harder it is to achieve, being rooted in organisational and the prevailing socio-cultural factors, while implementation of new skills and introduction of tools seem to be relatively less time-consuming and rooted in more technical domains [9]. In view of this multi-dimensional nature of health worker capacity (and performance), the implementation of capacity building interventions in district health systems is complex; improved performance may occur in some settings and not in others. Further, the transition from individual capacity to organisational capacity is not straightforward; several organisational factors play a role in realising the individual capacity of health managers. The disparity in results can be due to a variety of factors, including (but not limited to) the context and the actors' perceptions of the intervention and their responses to it, their interactions with each other, their organisation, and their environment.

Complex adaptive systems: implications for programme evaluation

The conceptualisation of district health systems as a complex adaptive system has implications for evaluating healthcare interventions. In this view, districts are sensitive to (dynamic) contextual factors as well as their initial conditions, which accounts for the often differing outcomes of the same policy or programme. On the other hand, policies or programmes may produce similar outcomes through different organisational configurations within the same district [10]. The literature on programme evaluation as well as on complex adaptive systems urges evaluation researchers and practitioners to adopt research designs that allow the consideration of unanticipated effects, adopting more flexible designs, capitalising on patterns and regularities emerging in the observations, and adopting an iterative manner of inquiry [2,11]. Studies that embrace complex adaptive systems thinking and theory-driven methods inherently allow for these aspects as they invariably involve several cycles of

observations and analysis, especially in the complex healthcare settings. In public health, programme evaluation has embraced complexity. The recently revised Medical Research Council guidance for the assessment of complex interventions, for instance, calls for a closer examination of the causal mechanisms and theory-building to contribute to developing more effective interventions, and provide insight into how findings might be transferred across settings and populations [12,13]. However, flexible research designs for understanding change in response to interventions in a complex adaptive system may have trade-offs in terms of generating knowledge that has external validity beyond the intervention being studied. In this paper, we present a case for using realist evaluation (explained below) to explain change within complex adaptive systems such as a district health system, while broadening the transferability of results [14].

Realist evaluation and complexity

The realist evaluation approach engages with complexity by taking an open systems approach to social systems [15]. The number of interacting agents, components, and forces that influence people and organisations in a given system is high, outcomes are sensitive to initial conditions, and thus outcomes are likely to show high variability. The realist approach to this complexity is to view reality as being stratified, with several layers of explanations to be found for the empirical observations. This provides a possibility to hypothesise and refine our explanations of why some phenomena occur [15,16]. In the realist view, there are many possible behavioural choices that people manifest (or not) in specific conditions, which results in the outcome. An evaluation using the realist approach thus begins by seeking an explanation for why the outcome of interest occurs in some places and not in others, keeping in mind that programmes work through people and their choices. Programmes facilitate agents to make choices and interact in new ways by providing physical or symbolic resources [17].

In order to understand the relationship between intervention, context, and outcome, realists use the concept of mechanisms, which are the "... *underlying entities, processes, or* [social] *structures which operate in particular contexts to generate outcomes of interest*" [16]. In the case of complex adaptive systems, several latent mechanisms could be present within the system, which can be triggered by the intervention in the presence of specific contextual elements and result in the observed outcomes [18]. In practice, realists use the context-mechanism-outcome (CMO) relationship as a tool for empirical investigation and analysis. It allows for developing an explanatory theory of why the intervention worked for

some and did not for others (Figure 1). Theoretical explanations of this kind are referred to as middle-range theories, explanations which "...*involve abstraction... but* [are] *close enough to observed data to be incorporated in propositions that permit empirical testing*" [16,19]. It should be noted that in the literature, middle range theory and programme theory are increasingly used interchangeably. In this paper, for reasons of clarity, we will use the term programme theory.

In a realist approach, the evaluation begins with formulating a programme theory (integrating the assumptions of the programme designers and implementers with the existing wider knowledge or evidence on the topic and insight regarding the contextual factors that could affect the outcome). The programme theory is tested through empirical studies and a refined theory that explains why the intervention worked for some and not for others is the end point of the evaluation. This could be the starting point for a next study. Such cycles allow for fine-tuning of the programme theory and ultimately to accumulation of insight.

The seeking of an explanation for the patterns (or demi-regularities, which are somewhat predictable patterns or pathways of programme functioning) seen in some cases (and not in others) is the hallmark of a realist evaluation [14,21,22]. This addresses one of the features of complexity in social systems, wherein orderly patterns could be seen at the systems level, but often not at the individual level, due to reiterative positive and negative feedback loops among some components (and not in others) [23]. The foundations of realist evaluation within critical realism[a], and its evolution as a scientific evaluation method are described by Pawson [14]. Its potential as an evaluation approach for complex health systems problems has gained interest over the last decade [24-28].

In this paper, we use a case study approach to explore how a capacity building intervention implemented in two different places in a district (both nested systems within the larger complex system of the district) evolved over time, using a realist evaluation, in order to understand how and why observed outcomes occurred. In line with the realist evaluation approach, cases were purposively selected to allow testing of the programme theory propositions and to improve our understanding of why programmes work for some and not for others [15]. We then use the multipolar framework to summarise how the capacity-building intervention could have led to organisational change in a district health system. The multipolar framework, inspired by Champ et al. [29], is a heuristic tool that has been used to explain organisational change in healthcare organisations in high-income settings with recent application in low- and middle-income country settings [22,30].

Figure 1 The realist evaluation cycle showing the steps in a realist evaluation study. Figure based on steps described by Pawson and Tilley [20].
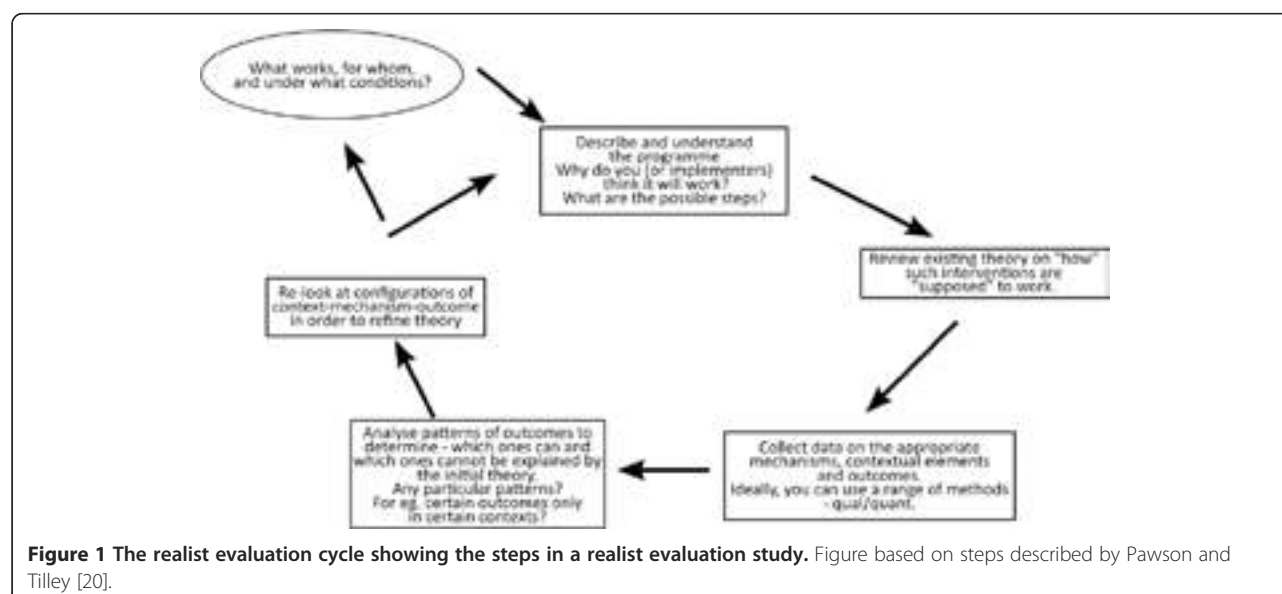
Study setting

This study is based on a capacity building intervention in Tumkur district, which is one of the 30 districts in Karnataka state in southern India; Tumkur had a population of 2.67 million in 2011 [31]. It is an average district with respect to health and development indicators; it ranked 15th in the human development index ranking of the (then) 27 districts of Karnataka in 2005 [32]. In Karnataka, poor health outcomes in maternal health have been attributed to systemic failures in managing health services and responding to critical problems service delivery [33]. Karnataka, like many other Indian states, lacks a management cadre within the health services. In Tumkur, as in all the other districts of the state, doctors with specialisation in one of the clinical specialities and several decades of experience in hospital settings are appointed as health managers of districts and sub-districts without formal or in-service management training [34-37].

The district health system in Karnataka is composed of several sub-systems called *talukas.* They are the political and administrative sub-units of the districts. In 2011, the *taluka* population in Tumkur district ranged from 168,039 in Koratagere to 598,577 in the Tumkur *taluka. Taluka* health management teams are under the charge of a *Taluka* health officer (THO). An administrative medical officer (AMO) is in charge of the hospital, while the THO has the operational responsibility for the Primary Health Centres (PHC). The THO, AMO, and other members of the *taluka* health management team hold monthly review meetings of the *taluka* in which the block programme managers[b] and senior nursing staff participate.

A consortium of five non-governmental organisations partnered with the state government to organise a capacity building programme for health managers of Tumkur district. The programme consisted of periodic contact classes spread over 18 months (August 2009 to January 2011), periodic mentoring visits to participants' workplace (till December 2011), and assignments to help participants apply the knowledge and skills discussed in the classroom teaching. The aim was to bring about organisational change at the district level through improving the performance of health managers with respect to planning and supervision of health services. The intervention identified capacitated health managers as the agency through which organisational improvement could be achieved. People were seen as being at the centre of organisational change. A much shorter intervention, consisting of a one-time five-day of contact classes for all the 162 medical officers of the primary health centres of Tumkur district (all supervised by the health managers trained under the main intervention) and a facilitated discussion with *Panchayati Raj Institution* representatives (PRI), was also conducted. PRI representatives are members of the elected bodies of the local governments at village and sub-district levels. The components of the intervention and the various actors involved are shown in Figure 2. A detailed description of the intervention and its implementation has been presented elsewhere [38,39].

In this paper, our purpose is to describe the complexity of a capacity-building intervention at the district level and illustrate the utility of the realist approach in advancing the practice of systems thinking in complex settings.

Figure 2 Tumkur capacity building intervention: structure of the intervention, actors, and their roles. Government actors are shown in blue and non-governmental actors are shown in green. M stands for financial support, *T* for technical support and *O* for oversight.
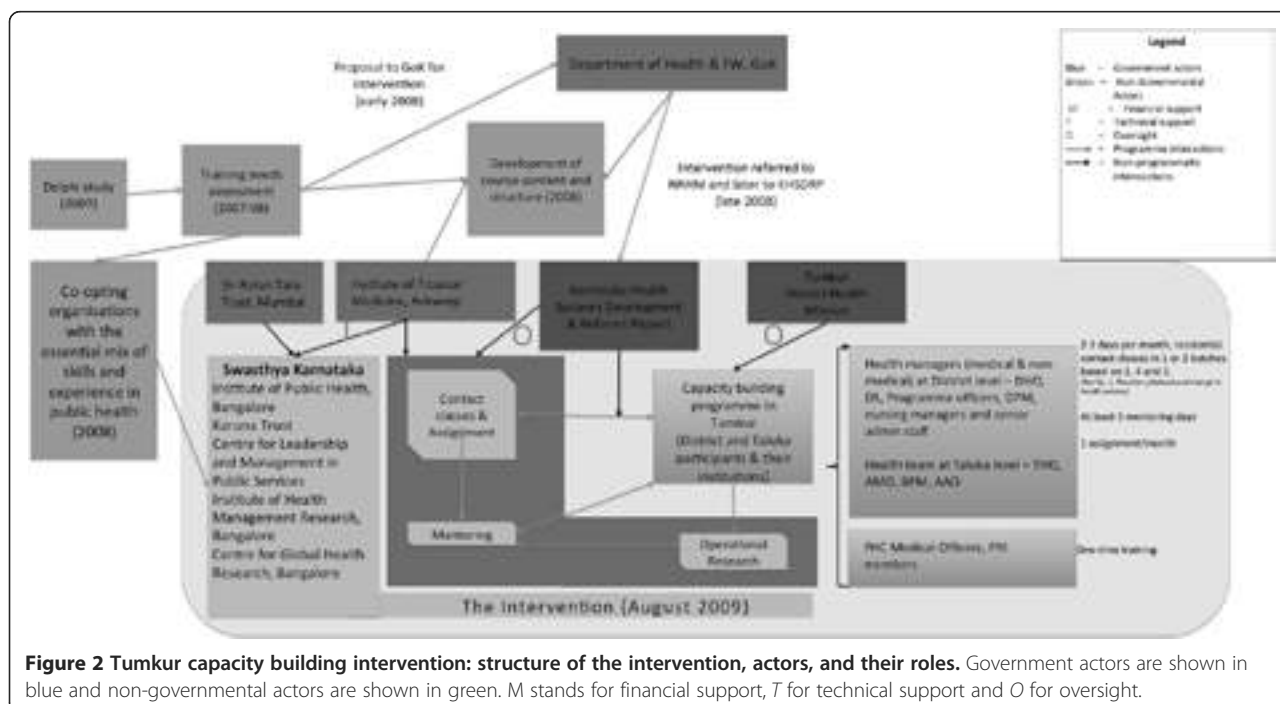
Methods

The realist cycle

A realist evaluation begins with developing the initial theory. A programme theory is best considered as an explanatory pathway, connecting the inputs of the intervention to the expected outcomes, taking into account possible contextual factors and mechanisms [40]. The refining of the programme theory, starting from the initial programme logic of the designers, to a refined programme theory incorporating insight from literature, design of the programme, and its implementation context, is explained elsewhere [41]. Our refined programme theory was aimed at explaining the differences in *taluka* outputs following the intervention, accounting for differences in the individual characteristics of the health managers, institutional factors within the two *taluka* health services and the differing environmental factors. The refined programme theory of the intervention that guided the choice of data and the analysis is shown in Figure 3.

Case selection

In the second step, cases were selected purposively. We assessed the performance of the 10 *talukas* of Tumkur district from 2009 to 2012, focusing on performance aspects that could be logically connected to the capacity building intervention (using the programme theory of the intervention as a guide). We scanned *taluka* performance with a focus on those showing least and most improvement; we chose one positive and one negative outlier (contrasting case selection) for the analysis presented in

this paper. Figure 4 shows the *talukas* of Tumkur, including the *taluka* hospital and the PHCs.

Data collection

In realist evaluation, the choice of data to be collected is guided by the programme theory. First, we collected data on the intensity of the programme implementation: participation in classroom activities, frequency of mentoring visits, and retention of mentoring interest. The mentors seem to have preferred *talukas* based on their own assessment of interest shown for mentoring by the *taluka* team. Hence, retention of mentor interest has been chosen as a proxy for the *taluka*'s commitment towards the vision for change as articulated by the intervention. It was assessed on the basis of frequency of mentoring visits and observation notes of the mentors, and scored into high, moderate, and low. Second, we assessed intermediate outputs (self-efficacy, organisational commitment, style of supervision, and expression of intention of *taluka* managers to make changes) using data from a survey of health managers in Tumkur.

Organisational commitment along with self-efficacy has been described as being crucial to performance and is considered as a key mechanism explaining human agency in various settings [42,43]. The three-component construct of organisational commitment by Meyer and Allen describes the nature of commitment of people to their organisations along three dimensions: affective commitment (emotional attachment to the organisation; a feeling of belongingness), normative commitment (a feeling of

Figure 3 The refined programme theory of the intervention showing possible intermediate steps between intervention inputs and expected outcomes. Data collected for the intermediate steps are shown. Grey boxes with stippled border show contextual elements identified as having an influence on the intervention outcomes during the refining of the programme theory. Unshaded boxes indicate the source of data. Boxes shaded black indicate outcomes. Intermediate steps are shown in boxes shaded grey with no border.

being obliged to the organisation), and continuance commitment (a feeling of being in the organisation because of a lack of alternatives) [44]; the three different dimensions of commitment co-occur. Self-efficacy was measured using a 10-item scale based on the Bandura scale [45] and degree of supportive nature of supervision was measured using a Likert scale questionnaire adapted from a tool by Oldham and Cummings and the Michigan Organizational Assessment Package [46,47]. The tools used have been described earlier and published elsewhere [39].

To assess the distal outputs of the intervention, we collected annualised data on budget utilisation, provision of 24/7 PHC services, coverage rates of institutional delivery, delivery by caesarean section (CS), completion of three antenatal care visits, and immunisation. We also assessed changes in infant mortality rate and stillbirth rate from 2008 to 2012. Stillbirths and infant mortality reported in all the facilities of the *taluka* were used to calculate the rates. These quantitative data were supplemented with qualitative data collected through interviews with health managers and observations. In-depth interviews were conducted with 21 health managers of Tumkur who participated in the intervention, their superiors at state level (n = 2), and their subordinates (PHC health staff and co-workers; n = 4). Participant observation of monthly and annual review meetings at the *taluka* and district level was carried out to understand the organisational dynamics and the differences in interpretation and implementation of state policy.

Analysis
All interviews were transcribed and entered into NVivo 10 (QSR International Ltd., Australia), together with the

observation notes. During the analysis, we used the CMO as a heuristic tool (Table 1). These hypothetical CMO frames were based on the refined programme theory of the intervention, as described elsewhere [41]. Initial codes reflected the programme theory elements of intervention, actors, context, mechanism, and outcomes, and new codes emerged. The quantitative data, including measurements of organisational commitment, self-efficacy, and style of supervision provided were integrated into the analysis and this helped in triangulating emerging findings. In this way, each case was analysed.

We then compared the two *talukas* to further test whether the refined programme theory explained the differences in the outcomes. We supplemented these two contrasting case studies with demi-regularities from comparable settings in the other *talukas*. We focused on the internal dynamics within the *taluka* teams (micro-context) and the interaction of these teams with the immediate *taluka* environment (meso-context) and the larger policy environment at the district, state, and above (macro-context). We also described the organisational configurations of the two cases using the multipolar framework.

Results
Outcomes
The responses of the *talukas* to the intervention varied, as shown in Table 2. The aggregated budget utilisation rate for Tumkur district[c] increased marginally, from 83% in 2009 to 85% in 2012. However, this conceals a variety of responses at *taluka* level. In Figure 5, the net annual change in utilisation (the net change in the proportion of available funds timely spent between two years)

Figure 4 Government health facility map of Tumkur showing the 10 *talukas*, the hospitals (secondary care) and PHCs. Green ovals show PHCs; Red polygons show secondary care facilities.

Table 1 Identifying context-mechanism-outcome frames based on the programme theory of the intervention

Programme inputs (IPT) and how they were supposed to work	Key assumptions identified during the refining of IPT	Supporting theory	Key contextual factor (C)	Outcome of interest (O)	Plausible mechanism (M)
Contact classes work through improving knowledge and/or skills, resulting in improved performance	An attitudinal change among the participants is needed to achieve the desired results	Outcomes of training programmes accrue through four hierarchical levels: reaction (to training programme), learning, behaviour, and impact [48]	Team dynamics affect the individual's intention for positive change; Socio-political environment in the *taluka*/district	Intention to make positive changes	Motivation of the participant towards positive organisational change – a "can-do" attitude
Mentoring participants at workplace facilitates application of knowledge and skills	Targeting individuals will produce impact through teams	Workplace environment in healthcare organisations has been identified as an important element explaining application of learning from training programmes [49]	Nature of supervision and district's openness to "allow" change	Identify/seek opportunities to make positive change in the organisation's performance	Nature of commitment to organisation
			Decentralised action plans and decision-making at district and lower levels. State and higher levels' openness to change proposals	Improved annual action plans – better situation analysis, problem identification, allocation and utilisation of resources	Self-efficacy
A capacitated health manager can become an agent of positive organisational change	Capacity leads to performance; The programme could benefit from alignment with existing policy initiatives	High commitment management literature shows the potential for change by committed staff in settings where resources could be mobilised [50]	Change proposals by districts are in line with state (or central) vision and address local needs (allocation and strategic alignment with external environment per Champ et al.'s conceptual framework) [29]	*Taluka* and district plans improve. They identify more needs, mobilise more resources from state, and utilise them better	Claiming and utilising decision spaces; organisational commitment and self-efficacy in negotiating with superiors and community leaders

Table 2 Assessment of exposure to intervention, key intermediate mechanisms (commitment and efficacy), and outcomes of the 10 *talukas* of Tumkur

	Classroom participation[1]	Mentoring[2]	Retention of mentoring[3]	Organizational commitment[4]	Self-efficacy[5]	Supportive supervision[6]	Intention to change[7]	Stability of team[8]	Net change in budget utilisation[9]	Net change in CS rate[10]	Net change in stillbirth rate[11]	Development index[12]
Gubbi	0.7	0.7	High	AC 2.66 NC 2.47 CC 2.42	68	2.5	50	Moderate	2	1	−16	0.95
Tumkur	0.7	0.7	Moderate	AC 2.85 NC 2.46 CC 2.69	68	2.6	75	Low	6	1.5	−8	1.21
CN Halli	0.6	0.5	Moderate	AC 2.75 NC 2.29 CC 2.71	70	2.2	100	High	4	0.1	0	1.02
Turuvekere	0.6	0.4	Low	AC 2.81 NC 2.80 CC 2.47	68	2.4	83	High	5	5.8	−4	1.06
Tiptur	0.5	0.5	Moderate	AC 2.25 NC 2.33 CC 3.17	86	2.5	75	Low	−4	12.6	−1	1.25
Koratagere	0.4	0.5	Low	AC 2.87 NC 2.73 CC 3.07	71	2.3	20	Moderate	3	1.8	−3	0.89
Madhugiri	0.5	0.5	Low	AC 2.50 NC 2.03 CC 2.50	83	2.4	40	High	4	1.3	−1	0.82
Pavagada	0.6	0.5	Moderate	AC 2.50 NC 2.05 CC 2.28	79	2.3	0	High	6	0	1	0.78
Kunigal	0.6	0.5	High	AC 2.12 NC 2.59 CC 2.83	83	2.2	75	Moderate	2	4.9	−4	0.96

Table 2 Assessment of exposure to intervention, key intermediate mechanisms (commitment and efficacy), and outcomes of the 10 *talukas* of Tumkur *(Continued)*

Sira	0.7	0.9	High	AC 1.80	68	2.2	100	Moderate	6	8.3	2	0.81
				NC 2.00								
				CC 2.67								

[1]Average of degree of classroom participation of all participants from a *taluka*, based on assessment of attendance and classroom activity (assessed by observation notes) expressed on a scale of 0 to 1.
[2]Average of degree of mentoring received based on attendance of participants at mentoring sessions (0 to 1.0).
[3]Qualitative assessment of the *taluka's* ability to retain interest of the mentor expressed as high, moderate, and low.
[4]Three dimensions of organisational commitment: Affective commitment (AC), normative commitment (NC), and continuance commitment (CC). Individual commitment measures for each of these three dimensions were computed and the averages of these were calculated by *taluka*. Commitment scores are on a scale of 0 to 5.
[5]Self-efficacy scores expressed on a scale of 0 to 100.
[6]Style of supervision largely assessing supportive nature of supervision (1 to 5; 1 being most supportive and 5 being most authoritative).
[7]Percentage of ever-trained members in the *taluka*, who expressed intention to make changes based on the capacity building programme.
[8]Stability of team assessed based on turnover of health managers in the *taluka* team from 2009 to 2013 expressed as high, moderate, and low. High indicates stable teams (low turnover).
[9]The net change in percentage budget utilization from 2009 to 2012. Budget utilisation for each of the PHCs in the *taluka* was obtained.
[10]The net change in proportion of caesarean sections (CS) among total deliveries from 2009 to 2012. CS at *taluka* hospitals is at present very low and efforts are on to improve emergency obstetric care at *taluka* hospitals through ensuring facilities to perform CS.
[11]The net change in stillbirth rate (of the total live births in the *taluka*) from 2009 to 2012. Negative change indicates a fall in stillbirth rate.
[12]The socio-economic development index for the *taluka*. Scores less than 1 are considered very poor and such *talukas* have been designated "backward" [51].
The tools for measuring organizational commitment, self-efficacy, and supportive supervision notes on their validity in Indian settings are discussed elsewhere [39].

Figure 5 Annual change in utilization rate of selected *talukas* **of Tumkur district from 2010 to 2012.** The net change (from the previous year) in the aggregate budget utilization rates of all facilities in the *talukas* are shown for CN Halli, Tumkur, Sira, Gubbi, and Madhugiri *talukas*. The District figures are for utilization rates of budget allocated for disease control programmes and other functions managed at the district level.

from 2010 to 2012, is shown. While some *talukas*, like Pavagada, improved their utilisation rate, others, like Madhugiri, reduced their spending rates. Yet others, like Turuvekere, showed wide changes from one year to another, while net change from 2012 to 2009 was only marginal.

In Figure 6, the stillbirth rate in 2012 is plotted by *taluka*, against net change in stillbirth rate from 2009 to 2012. We use the net change in stillbirth rates as a proxy indicator of performance. Stillbirth was chosen because of the emphasis in the intervention on using planning (through good annual situation analyses and problem

Figure 6 Stillbirth rates in 2012 by *taluka* **shown against net change in this indicator from 2009 to 2012.** Gubbi, Sira, Pavagada, and CN Halli stillbirth rates are labelled.

A HEALTH POLICY AND SYSTEMS RESEARCH READER ON HUMAN RESOURCES FOR HEALTH
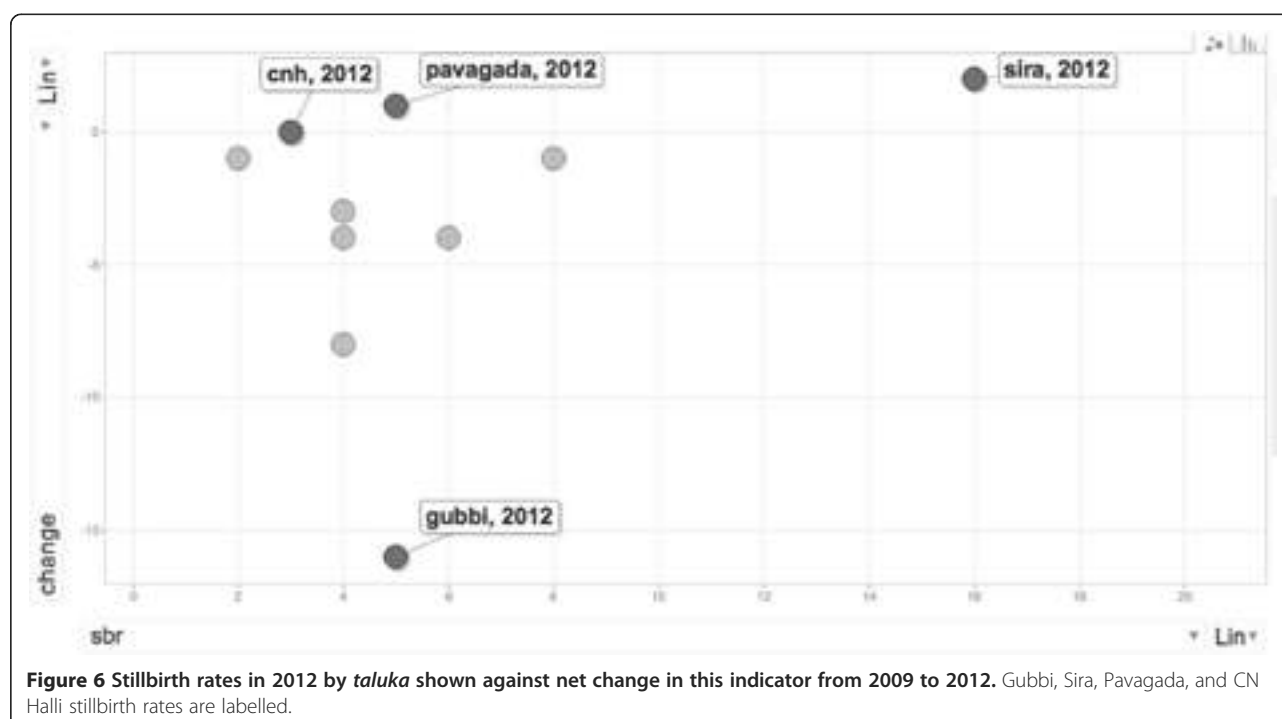
identification) and supportive supervision in improving maternal and child health outcomes. Such variability could result from several factors, including existing re-form processes that promote institutional deliveries, and improvements in the functioning of the health services (including the capacity building intervention). Besides such interventions, which influence all *talukas* to the same degree, context-specific socio-political factors and organisational factors, which are of interest in our evaluation lie, within the *taluka* health services and could influence performance. We shall use the variability in the *taluka* level outcomes to purposively choose *talukas* and examine if the hypothesised explanations from the refined programme theory could explain these differences.

In Table 2, the various individual, team, and institutional factors that we assessed based on the programme theory are shown. The factors chosen are a mix of individual and organisational contextual factors (intervention exposure, socio-economic development index of *taluka*, mentoring interest and supervision received, and team stability), mechanisms of human agency at the individual level (intention to change, organisational commitment, and self-efficacy), and proxy measures of outcomes logically related to improvements in the *talukas* expected from the intervention as well as more distant *taluka* outcomes determined by several other factors. The *talukas* varied in their participation in classroom and mentoring activities, in view of transfer in and out of health managers in the *taluka* or absenteeism (either by choice or due to priority work at the *taluka*). Higher participation in the intervention did not always result in an intention to make changes at the workplace (e.g., Gubbi and Tumkur with highest participation and only moderate expressions of intention for positive change); nor did expressions of such intentions always result in improved outcomes (e.g., CN Halli with a 100% of the team expressing intent but showing negligible change over the three years in the outcomes).

We purposively present the summary of the analysis of two contrasting cases – Gubbi and CN Halli – among the 10 *talukas* to illustrate how the CMO lens derived from our refined programme theory can be used to understand and explain how the outcomes in these cases could have come about and what could be the possible contribution of the intervention in these outcomes. We present the summary of the analysis of the empirical data in the form of observed outcome (O) in relation to mechanisms (M) and contextual conditions (C).

Gubbi

Gubbi's stillbirth rate decreased the most among all the *talukas* in Tumkur; the improvements in proportion of CS performed and budget utilisation were modest (Table 2). Health managers from Gubbi participated actively in the intervention and retained the mentors' interest. They showed relatively higher affective commitment than many other *talukas* (Figure 7). Only half of the health managers expressed an intention to make changes.

From the interviews and observations at Gubbi, the main theme emerging was commitment. The interest shown by the THO and the AMO towards improving services is evident from the interviews. The THO was given temporary charge of heading the team while simultaneously being the medical officer of a nearby PHC. Yet, he felt that he could mobilise greater support to improve services in the *taluka* by motivating like-minded people. He felt that being a health manager is an opportunity to bring about changes.

"In my taluka for example, I think we can make big change. It is not that everybody in my taluka wants to make changes. Only one-third of them are motivated to make changes. And that is enough. I think I can make a lot of improvement by motivating these people."

– *Taluka* health manager from Gubbi (g1)

Such positive assessment of motivation of PHC staff as a strategy towards improving services was not shared widely in the other *talukas*.

Both the AMO and the THO saw the intervention as an opportunity to benefit from the recent efforts to decentralise the preparation of action plans to *taluka* and PHC level. They felt that the decentralisation of planning under the National Rural Health Mission (NRHM)[d] was an opportunity to address specific problems at the PHCs.

"More resources mean more opportunities to make change. If they slowly give more and more power to us at taluka level, we can make many more improvements. Right now, very little is possible at taluka level."

– *Taluka* health manager from Gubbi (g2)

"NRHM has given block programme managers. This will improve plan preparation and monitoring. They are young and enthusiastic, but they need to some guidance and I think I can provide that."

– *Taluka* health manager from Gubbi (g1)

This general pattern of commitment at Gubbi is also seen in the Tumkur *taluka*, with a relatively high affective commitment, albeit with a higher turnover of staff.

Figure 7 Boxplots of three dimensions of organisational commitment in the 10 *talukas* of Tumkur district. The three dimensions of commitment are based on Meyer and Allen [44]. AC is affective commitment, NC is normative commitment, and CC is continuance commitment. Individual commitment measures for health managers were computed separately for AC, NC, and CC. For each *taluka*, box plots of the scores for each of these were plotted.

The Gubbi pattern could be summarised as follows: in a decentralised taluka health system, committed health managers can make use of their increased management capacity to identify opportunities for improving their health services performance.

Chikkanayakanahalli (CN Halli)

While Gubbi is situated close to the district headquarter town of Tumkur, CN Halli is further away, but with a similar level of socio-economic development (Table 2). CN Halli showed hardly any change in most outcomes, in spite of a high intention among the health managers to make improvements in the *taluka*. CN Halli also had lower turnover rates of *taluka* level health managers. The level of affective commitment was comparable to that at Gubbi, but continuance commitment was relatively higher.

CN Halli is amongst the most remote *talukas*. With a limited private sector, it is not a favoured choice of posting for doctors. For several months, the function of THO and AMO was taken up by the same person. The *taluka* level staff showed commitment towards the services and took

pride in working in a remote *taluka* with very limited human resources. However, during discussions about decentralised planning expressed by this *taluka*'s health managers, the dominant theme was frustration.

> "What PIP[e]? What decentralisation? I sent so many requirements for staff and proposals for improvement. Only thing I got is more work, less staff and zero solutions. On one hand, I have to answer the local ZP[f] members' complaints and on the other hand, I have to just keep implementing plans and schemes coming from above. Nothing can be done without more staff."

– Health manager from CN Halli (cnh1)

While the decentralised planning brought about by NRHM was perceived as an opportunity in Gubbi, in CN Halli the respondents expressed frustration. This was also evident in several meetings at the *taluka* level, where a lack of power to make changes at the *taluka* and district level, for instance in recruitment of human resources and purchase of critical equipment, was often raised.

"NRHM has just brought more and more responsibilities, but no powers. For everything, we have to wait for a visit from the secretary or commissioner. More money means more work and more statements of expenditure and paperwork."

– PHC health worker from CN Halli *taluka* at a review meeting (cnh2)

Similar frustrations about increased paperwork and responsibilities were found in the thematic analysis of interviews and observation notes from Pavagada, another poorly staffed, and the most remote *taluka* in Tumkur.

"The increased money with NRHM is good. But it's not merely money. We need committed people who can stay in such a remote area. I am from this area and I live and work here. People who come here hardly stay beyond a few months. They either get frustrated or seek transfers."

–Health manager from Pavagada (P1)

The recent reforms towards giving greater powers to the elected representatives were seen as a threat to their functioning. The *taluka* health staff felt that channelling the frustrations of the PHC staff upwards was their role much more than managing conflicts and frustrations or building amicable relationships with the elected representatives.

"Nothing much can be done without giving powers at taluka level and PHCs. I cannot even appoint a Group D staff. Where is decentralisation in this?"

– a PHC staff from CN Halli *taluka*

"What more can I do? I communicate promptly to my superior all the problems and I am still waiting for the solutions. In the [capacity building] *programme they are saying, find local solutions. With so little staff, how much local solutions can I find? People just don't want to work here. I handle two responsibilities at the same time..."*

– Health manager from CN Halli (cnh1)

The pattern of CN Halli is also seen at the Pavagada *taluka*, which is also severely under-staffed, with a small group of health managers with comparatively lower levels of affective commitment. The improvements of the Pavagada *taluka* were poor, in contrast to the Sira *taluka*, which is also geographically remote and socio-economically poor, yet showing a remarkable vision in

the *taluka* team to operationalize emergency obstetric facilities in the hospital, a dire need in this remote region. The Sira *taluka*, unlike Pavagada and CN Halli, was much more dominated by a continuance commitment rather than affective commitment.

"We felt that we have to do it. So many mothers were just being referred to Tumkur. The delivery load is high and for several months, we had only one obstetrician, but somehow we managed. I know how the pressure is at the district hospital, so having LSCS facility at Sira decreases the burden at the district hospital. It's not easy, but somehow it is happening."

– Sira health manager (s1)

The pattern of CN Halli could be summarised as follows: Health managers working in poorly resourced *talukas*, in spite of their improved management capacities and intentions to make change, get frustrated by the lack of facilitating action from above.

Discussion

Health system interventions need to take into account the subunits of the local health system in which they intervene. In this case, each *taluka* can be conceived as a sub-system with a particular organisational context but a similar macro-context, exposed to the same intervention. In such cases, the realist evaluation approach helps to formulate specific CMO-based propositions that can be tested through comparing contrasting cases. This allows for building explanations on how organisational change occurred in some settings and not in others. The process of testing and refining the CMOs allows for an understanding of the conditions through which such interventions could work in a complex local health system.

Explaining change: contribution of the intervention

While the training programme (the intervention) included all health managers in the district, their actual participation was variable. This depended on several factors at the level of the participant (their interest and motivation), distance between the *taluka* and the district headquarters, the staff turnover rate, and the responsiveness of the implementers to the *taluka* teams. Many of these factors are related to each other, sometimes counterintuitively. For example, remote *talukas* like CN Halli and Pavagada had a relatively low turnover, while more sought-after *talukas* like Tiptur and Tumkur *taluka* had a higher turnover. Capacity building interventions that seek to strengthen local health systems ought to take into account such existing variations within the sub-systems at the design stage.

Health system strengthening interventions seek to strengthen core systemic functions of the local health system. The capacity building intervention sought to improve performance through improving planning and supervision. The contribution of such improvement (if any) ought to be framed against several other activities at the PHC, *taluka*, and district levels. For example, the provision of secondary level obstetric care at the *taluka* hospital includes developing the capacity of the facility to conduct CSs; this has been the policy focus in Karnataka for several years. In addition to the state government's pressure to implement this, health managers also face the pressure of the community and local elected representatives to operationalize CS facilities at *taluka* hospitals. However, in spite of favourable environmental conditions at the *taluka* level, effectively ensuring this requires a strong managerial vision and leadership; this was observed only in some *talukas*. This illustrates that, in a district health system influenced by several policies and environmental factors, it may be difficult to disentangle the contribution of the intervention to the observed outcomes. However, by choosing intermediate and distal outcomes at various levels (individual and institutional) that are most sensitive to the intervention inputs, it is possible to identify *talukas* where the intervention could have contributed to the outcome by seeking alignments with existing conditions and the characteristics of the people and teams in these *talukas*.

Capacity-building interventions could work through identifying such existing alignments between local actors' needs, policy, and practice, and by strengthening conditions for the same. As the CN Halli case shows, in spite of favourable policy, community pressure, and a committed team at CN Halli, the frustrations of health managers resulting from previous negative experience with decentralised planning altered their choices and collective agenda-setting against actualising CSs in their hospital. In contrast, health managers of Sira *taluka* showed relatively low levels of affective commitment and self-efficacy, but frustration was low. With the participation of elected representatives and through effective leadership by the AMO, the CS facility was organised. Thus, in a *taluka* considered to be poorer than CN Halli in terms of socio-economic development indicators, the proportion of deliveries conducted by CS increased by 8.3% between 2009 and 2012. Further thematic analysis of *talukas* that resemble some of the characteristics of our cases (such as the case of Pavagada discussed under the CN Halli case summary above) or are contrasting with our cases in some respects, could strengthen our findings and allow validation of these findings in future studies in similar settings.

From individual change to systemic change

Although the capacity building intervention was implemented at the district level across all *talukas*, the exposure to the programme, the response to the intervention (attitudes towards change and intentions), the internal individual and organisational dynamics, and the outcomes, varied. These factors determine why programmes implemented at the district level may or may not achieve their expected outcomes, especially in those healthcare institutions where the conditions necessary for such a change do not exist. However, despite this potential for variation, formulating hypotheses in the form of CMO propositions and testing these empirically can help identify patterns of response to intervention. The resulting CMO configurations can then be refined further by testing them in other cases of the district to arrive at an explanatory theory that elucidates what worked, for whom, and under what conditions.

Capacity building interventions work through people and the choices they make. Many individual attributes, such as organisational commitment and self-efficacy, have been reported as mechanisms that explain human agency [42,44,52]. However, the *taluka* health system is more than a group of individuals with varying commitment or efficacy measures. The change in the organisation comes about through the interaction among these participants, governed by rules and norms within their organisation (the organisational culture and their activities that result in the organisational outputs), and the interaction between the organisation as a whole with the external environment. These relationships between the internal and external components of the organisation have been brought together in the multipolar framework for assessing performance of healthcare organisations, shown in Figure 8. The multipolar framework is based on Parsons' theory of social action and inspired by the work of Champ et al. [29,30,53].

The observed changes in the *talukas* could be seen as having occurred through shifting or triggering of any of the six alignments in the multipolar framework. The *taluka* management team is responsible for managing not only the four core functions (the boxes in Figure 8), but also the alignments (the arrows in Figure 9) between the functions. The local configuration of these functions, and the management team's response to tensions between these functions explains the variation in the outcomes of the capacity building programme.

The capacity building intervention sought to alter the outputs (service production) through increasing knowledge and skills to develop annual action plans and supervision functions. An analysis of the programme theory of the intervention indicates that the designers of the intervention sought to bring about these changes through instilling a *can-do* attitude among the health

Figure 8 The multipolar performance assessment framework based on Sicotte et al. [29]. The framework consists four poles and six alignments.

managers. This could be seen as trying to strengthen the *allocation* and *operational* alignments in the multipolar framework (Figure 8 and Figure 9). However, in the context of a health system that is undergoing decentralisation to the district levels, and where participation of elected representatives within formal structures of the health service is being increasingly pushed for by the national and state policy, the contextual alignment could dominate in some *talukas*, as was the case in CN Halli. However, a committed leadership at the *taluka* level could counter the negative perceptions of participation of elected representatives prevailing within the health service. In such cases (as in Gubbi; see Figure 9), the

legitimisation and strategic alignments could be triggered where the capacity building programme was seen as an opportunity to translate existing commitment towards the organisation into an improvement in its performance. The overall performance of the *taluka* is the result of how the alignments between the four poles are perceived locally and managed. The capacity building programme thus acts upon the *taluka* performance through imparting skills and vision to managers, who then balance or counter the emerging alignments. However, it must be emphasised that in our study, the insights from the evaluation were not periodically fed back into the system to enable the local actors (implementers

Figure 9 The alignments that the intervention sought to influence to improve performance are shown in green. The alignments that explain the responses of the cases are shown in red.

of the intervention and the recipient health managers) to benefit from or reflect on these. Realist evaluation could also be used as an entry-point for action research on local change, wherein the CMO frames being considered or the refined programme theory could be shared periodically with local actors. Furthermore, such discussions and sharing with local actors could be further used to refine or validate the middle-range theory emerging from the evaluation.

Realist evaluation and systems thinking

Realist evaluation adopts a generative perspective on causality, according to which change occurs as a result of the interaction between actors within a specific context [54-56]. A programme theory that is constructed along these lines can be tested in a reiterative manner and allows for comparison across cases. The resulting insight, in the form of a refined programme theory, informs policymakers, managers, and funders on what works, for whom, in which conditions, and how. A realist evaluation of an intervention provides an explanatory theory on why the intervention worked for some and not for others through a process of adjudication between rival explanations. By employing the classical apparatus of the scientific method – "*formulating hypotheses, making critical comparisons, discovering empirical patterns, and monitoring their scope and extent*" – realist evaluation enables a comprehensive assessment of system-wide change [15].

Limitations

The output of a realist evaluation is a programme theory or a middle-range theory (not a universal overarching theory), which provides a plausible explanation for the outcomes of the intervention; it cannot make predictive statements about the intervention. However, such middle-range theories form the basis for improving our understanding of complex interventions and help in improving design and implementation of such programmes in future.

In this paper, outliers have been purposively selected based on outcomes that are logically connected to the intervention inputs. The explanation that we provide suffers from a possible confirmation bias. Ideally, a full realist evaluation needs to refine the middle-range theory through several iterations of cases selected based on diversity of outcomes. This will strengthen the explanatory power of the middle-range theory.

In an open systems world, there is no end to the explanatory possibilities and role of other mechanisms that can be put forth and tested. Hence, a major limitation of our evaluation is the number of such rival explanatory theories that can be practically put to test. While acknowledging this practical limitation, it may be said that a critical mass of realist evaluations will strengthen the explanatory power of the middle-range theories tested by these evaluations [15].

Endnotes

[a]Critical realism is a philosophical position in social sciences that approaches causation within the social realm as being possible through rationally choosing from rival theories, thus advancing the 'explanatory power' of theories. According to Pratschke (2003), in critical realism, "*the 'black-box' of causation could be approached by understanding the gaps in the 'generative mechanisms' which may subsequently be explained by positing the existence of additional mechanisms at a deeper or more fundamental level*" [57].

[b]Block programme managers (BPM) are a new cadre of health managers created under the National Rural Health Mission (NRHM). These are young and typically recent graduates from management courses. BPMs operate at the *taluka* level. Similar cadres of non-medical health managers were created at the district and state levels as well.

[c]This was calculated by computing an average of percentage utilization rates of budgets of all facilities in the *taluka*/district.

[d]The National Rural Health Mission (NRHM) is a flagship programme of the Indian government to strengthen government health services through greater financial allocation and human resources. Under the NRHM, there was an induction of new cadres of health workers and health managers from village level upwards to PHC, *taluka*, district, and state levels. Decentralised planning and increased participation of elected representatives in formal structures within health services were key features of NRHM.

[e]PIP stands for programme implementation plan. The PIP is the annual action plan instituted by the NRHM. As per the NRHM, the PIP is an instrument for decentralised planning.

[f]ZP stands for *Zilla Panchayat*, the local governments at the district level.

Additional files

> **Additional file 1: Abstract in Kannada.**
>
> **Additional file 2: Abstract in Hindi.**

Abbreviations

AMO: Administrative medical officer; CMO: Context mechanism outcome; CS: Caesarean section; NRHM: National rural health mission; PHC: Primary health centre; PRI: Panchayati Raj Institutions; THO: *Taluka* health officer.

Competing interests

NSP (first author) was a member of the implementation team of the capacity building intervention during the first year of its implementation (2009–2010). ND (third author) led the implementation of all throughout the intervention.

Authors' contributions

Acknowledgements

Funding

References

1. LaFond AK, Brown L, Macintyre K: **Mapping capacity in the health sector: a conceptual framework.** *Int J Health Plann Manage* 2002, **17**:3–22.
2. McDaniel RR, Lanham HJ, Anderson RA: **Implications of complex adaptive systems theory for the design of research on health care organizations.** *Health Care Manage Rev* 2009, **34**:191–199.
3. Adam T, de Savigny D: **Systems thinking for strengthening health systems in LMICs: need for a paradigm shift.** *Health Policy Plan* 2012, **27**(Suppl 4):iv1–iv3.
4. WHO: *Working Together for Health: The World Health Report 2006.* Geneva: World Health Organization; 2006:237.
5. Dieleman M, Gerretsen B, van der Wilt GJ: **Human resource management interventions to improve health workers' performance in low and middle income countries: a realist review.** *Heal Res policy Syst* 2009, **7**:7.
6. Mbindyo P, Gilson L, Blaauw D, English M: **Contextual influences on health worker motivation in district hospitals in Kenya.** *Implement Sci* 2009, **4**:43.
7. Rowe A, Desavigny D, Lanata C, Victora C: **How can we achieve and maintain high-quality performance of health workers in low-resource settings?** *Lancet* 2005, **366**:1026–1035.
8. Plsek PE, Greenhalgh T: **Complexity science: the challenge of complexity in health care.** *Br Med J* 2001, **323**:625–628.
9. Potter C, Brough R: **Systemic capacity building: a hierarchy of needs.** *Health Policy Plan* 2004, **19**:336–345.
10. Sturmberg JP, O'Halloran DM: **Understanding health system reform – a complex adaptive systems perspective.** *J Eval Clin Pract* 2012, **18**:202–208.
11. Patton MQ: *Developmental Evaluation: Applying Complexity Concepts to Enhance Innovation and Use.* New York: Guilford Press; 2010.

12. Moore G, Audrey S, Barker M, Bond L, Bonell C, Cooper C, Hardeman W, Moore L, O'Cathain A, Tinati T, Wight D, Baird J: **Process evaluation in complex public health intervention studies: the need for guidance.** *J Epidemiol Community Health* 2014, **68**(2):101–102.
13. Craig P, Dieppe P, Macintyre S, Michie S, Nazareth I, Petticrew M: **Developing and evaluating complex interventions: the new Medical Research Council guidance.** *Br Med J* 2008, **337**:a1655–a1655.
14. Pawson R: *The Science of Evaluation: A Realist Manifesto.* 1st edition. London: Sage Publications; 2013:216.
15. Pawson R: **Evidence-based policy: the promise of realist synthesis.** *Evaluation* 2002, **8**:340.
16. Wong G, Greenhalgh T, Westhorp G, Buckingham J, Pawson R: **RAMESES publication standards: realist syntheses.** *BMC Med* 2013, **11**:21.
17. Pawson R, Tilley NN, Clarke A: *Realistic Evaluation.* 1st edition. London: Sage Publications Ltd.; 1997:256.
18. Bunge M: **How does it work? The search for explanatory mechanisms.** *Philos Soc Sci* 2004, **34**:182–210.
19. Astbury B, Leeuw FL: **Unpacking black boxes: mechanisms and theory building in evaluation.** *Am J Eval* 2010, **31**:363–381.
20. Pawson R, Tilley N: **Realist evaluation.** In *DPRN Thematic Meeting 2006 Report on Evaluation.* Utrecht, The Netherlands: Development policy review Network; 2008:35.
21. Jagosh J, Pluye P, Wong G, Cargo M, Salsberg J, Bush PL, Herbert CP, Green LW, Greenhalgh T, Macaulay AC: **Critical reflections on realist review: insights from customizing the methodology to the needs of participatory research assessment.** *Res Synth Methods* 2013, **5**(2):131–141.
22. Marchal B: *Why do Some Hospitals Perform Better than Others? A Realist Evaluation of the Role of Health Workforce Management in Well-Performing Health Care Organisations.* Antwerp: Faculty of Medicine and Pharmacy, Vrije Universiteit Brussel & Institute of Tropical Medicine; 2011:227.
23. Kernick D: *Complexity and Healthcare Organization: A View from the Street.* 1st edition. London: Radcliffe Publishing Ltd.; 2004:400.
24. Prashanth NS, Marchal B, Criel B: **Evaluating healthcare interventions: answering the "How" question.** *Indian Anthropol* 2013, **43**:35–50.
25. Marchal B, Van Belle S, De Brouwere V, Witter S: **Studying complex interventions: reflections from the FEMHealth project on evaluating fee exemption policies in West Africa and Morocco.** *BMC Health Serv Res* 2013, **13**:469.
26. Marchal B, van Belle S, van Olmen J, Hoeree T, Kegels G: **Is realist evaluation keeping its promise? A review of published empirical studies in the field of health systems research.** *Evaluation* 2012, **18**:192–212.
27. Sheikh K: **Unlocking the potential of qualitative enquiry into health policy and systems.** In *Second Global Symposium Health Systems Research.* Beijing: World Health Organization; 2012:23. Available at http://hsr2012.healthsystemsresearch.org/images/stories/media/1102/3%20Kabir%20Sheikh.pdf (Accessed June 17, 2014).
28. Westhorp G: **Using complexity-consistent theory for evaluating complex systems.** *Evaluation* 2012, **18**:405–420.
29. Sicotte C, Champagne F, Contandriopoulos AP, Barnsley J, Béland F, Leggat SG, Denis JL, Bilodeau H, Langley A, Brémond M, Baker GR: **A conceptual framework for the analysis of health care organization's performance.** *Health Services Management Research* 1998, **11**(1):24–48. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10178368.
30. Marchal B, Hoerée T, da Silveira VC, Van Belle S, Prashanth NS, Kegels G: **Building on the EGIPPS performance assessment: the multipolar framework as a heuristic to tackle the complexity of performance of public service oriented health care organisations.** *BMC Public Health* 2014, **14**:378.
31. Anil Kumar TK: *Census of India 2011: provisional population totals paper 1 of 2011 India Series 1.* New Delhi, India: Office of the Registrar General & Census Commissioner; 2011. Available at: http://censuskarnataka.gov.in/Provisional%20Population%20Totals,%20Paper%201%20of%202011,%20Karnataka.pdf (Accessed 17 June 2014).
32. Government of Karnataka: *Investing in Human Development: Karnataka Human Development Report 2005.* Bangalore: Department of Planning and Statistics, GoK; 2005.
33. George A: **Persistence of high maternal mortality in Koppal district, Karnataka, India: observed service delivery constraints.** *Reprod Health Matters* 2007, **15**:91–102.
34. Devadasan N, Elias MA: *Training Needs Assessment for District Health Managers. Bangalore.* Bangalore: Institute of Public Health; 2008:78.

Available at https://docs.google.com/file/d/0Bxp4UKSObSs9ODlhNjQwNjct MGNlNC00MjhlLWJmY2QtMGVmN2I3YmY2YWE2.

35. Sathyanarayan TN, Babu GR: **Creating a public health cadre in India: the development of a framework for interprofessional and inter-sector collaboration.** *J Interprof Care* 2011, **25**:308–310.

36. Balabanova D, Mckee M, Mills A: *Good Health at Low Cost 25 Years On. What Makes a Successful Health System.* London: London School of Hygiene & Tropical Medicine; 2011:369.

37. Das GM, Desikachari BR, Shukla R, Somanathan TV, Padmanaban P, Datta KK: **How might India's public health systems be strengthened? Lessons from Tamil Nadu.** *Econ Polit Wkly* 2010, **xlv**:46–60.

38. Hoeree T, Prasad V, Jiang L, Pongsupap Y: *External Evaluation of the Tumkur Training Course.* Bangalore: Institute of Public Health; 2012:50.

39. Prashanth NS, Marchal B, Hoeree T, Devadasan N, Macq J, Kegels G, Criel B: **How does capacity building of health managers work? A realist evaluation study protocol.** *BMJ Open* 2012, **2**:e000882.

40. Lipsey MW, Pollard JA: **Driving toward theory in program evaluation: more models to choose from.** *Eval Program Plann* 1989, **12**:317–328.

41. Prashanth NS, Marchal B, Kegels G, Criel B: **Evaluation of a capacity-building programme of district health managers in india: a contextualised theoretical framework.** *Front. Public Health* 2014, 2:89 doi: 10.3389/fpubh.2014.00089.

42. Bandura A: **Self-efficacy mechanism in human agency.** *Am Psychol* 1982, **37**:122–147.

43. Meyer JP, Paunonen SV, Gellatly IR, Goffin RD, Jackson DN: **Organizational commitment and job performance: it's the nature of the commitment that counts.** *J Appl Psychol* 1989, **74**:152–156.

44. Meyer JP, Allen NJ: **A three-component conceptualization of organizational commitment.** *Hum Resour Manag Rev* 1991, **1**:61–89.

45. Bandura A: **Guide for constructing self-efficacy scales.** In *Self-Efficacy Beliefs Adolesc.* Edited by Pajares F, Urdan TC. Charlotte, NC: Information Age Publishing; 2006:307–337.

46. Oldham GR, Cummings A: **Employee creativity: personal and contextual factors at work.** *Acad Manag J* 1996, **39**:607–634.

47. Cammann C, Fichman M, Jenkins G, Klesh J: *The Michigan Organizational Assessment Package.* Ann Arbor, MI: University of Michigan Survey Research Center; 1978.

48. Kirkpatrick DL, Kirkpatrick JD: *Evaluating Training Programmes: The Four Levels.* 2nd edition. San Francisco, CA: Berrett-Koehler Publishers, Inc.; 1998:289.

49. Clarke N: **Workplace learning environment and its relationship with learning outcomes in healthcare organizations.** *Hum Resour Dev Int* 2005, **8**:185–205.

50. Marchal B, Dedzo M, Kegels G: **A realist evaluation of the management of a well-performing regional hospital in Ghana.** *BMC Health Serv Res* 2010, **10**:24.

51. Government of Karnataka: *Report of the High Power Committee for Redressal of Regional Imbalances.* Bangalore: Government of Karnataka; 2004.

52. Marchal B, Dedzo M, Kegels G: **Turning around an ailing district hospital: a realist evaluation of strategic changes at Ho Municipal Hospital (Ghana).** *BMC Public Health* 2010, **10**:787.

53. Parsons T: *Social Systems and the Evolution of Action Theory.* New York, NY: The Free Press; 1977.

54. Stame N: **Theory-based evaluation and types of complexity.** *Evaluation* 2004, **10**:58.

55. De Souza DE: **Elaborating the Context-Mechanism-Outcome configuration (CMOc) in realist evaluation: a critical realist perspective.** *Evaluation* 2013, **19**:141–154.

56. Greenhalgh T, Humphrey C, Hughes J, Macfarlane F, Butler C, Pawson R: **How do you modernize a health service? A realist evaluation of whole-scale transformation in London.** *Milbank Q* 2009, **87**:391–416.

57. Pratschke J: **Realistic models? Critical realism and statistical models in the social sciences.** *Philosophica* 2003, **71**:13–39.

Submit your next manuscript to BioMed Central and take full advantage of:

- **Convenient online submission**
- **Thorough peer review**
- **No space constraints or color figure charges**
- **Immediate publication on acceptance**
- **Inclusion in PubMed, CAS, Scopus and Google Scholar**
- **Research which is freely available for redistribution**

Submit your manuscript at
www.biomedcentral.com/submit

BioMed Central

BMC Health Services Research

RESEARCH ARTICLE **Open Access**

CrossMark

Opening the black box of transfer systems in public sector health services in a Western state in India

Bhaskar Purohit[1*], Tim Martineau[2] and Kabir Sheikh[3]

Abstract

Background: Limited research on Posting and Transfer (P&T) policies and systems in the public sector health services and the reluctance for an open debate on the issue makes P&T as a black box. Limited research on P&T in India suggests that P&T policies and systems are either non-existent, weak, poorly implemented or characterized by corruption. Hence the current study aimed at opening the "black box" of P&T systems in public sector health services in India by assessing the implementation gaps between P&T policies and their actual implementation.

Methods: This was a qualitative study carried out in Department of Health, in a Western State in India. To understand the extant P&T policies, a systems map was first developed with the help of document review and Key Informant (KI) Interviews. Next systems audit was carried out to assess the actual implementation of transfer policies by interviewing Medical Officers (MOs), the group mainly affected by the P&T policies. Job histories were constructed from the interviews to understand transfer processes like frequencies of transfers and to assess if transfer rules were adhered. The analysis is based on a synthesis of document review, 19 in-depth interviews with MOs working with state health department and five in-depth interviews with Key Informants (KIs). Framework analysis approach was used to analyze data using NVIVO.

Results: The state has a generic transfer guideline applicable to all government officers but there is no specific transfer policy or guideline for government health personnel. The generic transfer guidelines are weakly implemented indicating a significant gap between policy and actual implementation. The formal transfer guidelines are undermined by a parallel system in which desirable posts are attained, retained or sometimes given up by the use of political connections and money. MOs' experiences of transfers were marked by perceptions of unfairness and irregularities reflected through interviews as well as the job histories.

Discussion: The generic transfer rules and ambiguity in how transfers are treated may explain the discrepancy between policy and implementation leading to systems abuse. This discrepancy could have negative influence on MOs' morale which could in turn affect distribution of MOs. Where possible, ambiguity in the rules should be avoided and a greater transparency on implementation of the transfer rules is needed. However, it may not be possible to make any significant improvements to P&T policies and how they are implemented until the external pressure that creates parallel systems is greatly reduced in translating HR policy into HR practice.

Conclusions: Effective P&T policies and implementation may have important implications for organizational performance and may help to improve Human Resource (HR) policy and HR expertise. Also there is a greater need for transparency on implementation of the rules. However, it may not be possible to make any significant improvements to P&T policies and how they are implemented until the external pressure that creates parallel systems is greatly reduced.

(Continued on next page)

* Correspondence: bpurohit@iiphg.org
[1]Indian Institute of Public Health Gandhinagar (IIPHG), Sardar Patel Institute Campus, Drive in Road, Thaltej, Ahmedabad 380054, India
Full list of author information is available at the end of the article

Purohit *et al. BMC Health Services Research* (2016) 16:419

Page 2 of 12

Background

Shortage and inequitable distribution of doctors serving in rural and underserved areas remains a major problem in many countries including India [1] with higher concentration in urban areas [2, 3]. The issue of shortage is linked to poor coverage of basic health services in several countries [1] and poor quality of care being provided to people [4]. Poor health outcomes are often caused by supply side delivery problems such as absenteeism and overall low productivity of Human Resources for Health [1, 5].

Posting and Transfer (P&T) is a mechanism to ensure adequate and equitable staffing across the services and locations. But there is a dearth of literature and reluctance for open debate on P&T in public sector health services in India and elsewhere. Hence the issue of P&T is such where although parallel systems emerge openly within the systems yet there is not enough empirical evidence on the issue [6]. Poor P&T practices have been documented as a cause of low morale, geographical misdistribution and migration of health workers [7]. Further, poor P&T policies directly or indirectly prevent or discourage healthcare providers from either joining Public Health Sector or such policies contribute to provider's dissatisfaction with the existing system and may lead to low morale, poor performance, high absenteeism and attrition [8, 9]. Similarly, lack of adherence to the policies or bypassing them and creating non-transparent and alternative systems of Human Resource Management (HRM) systems can lead to corruption and reduce worker morale thereby affecting the overall effectiveness of the system [10]. However, the effect of the P&T policies on workforce availability is not only dependent on existence of policies but also dependent on the way in which P&T policies are implemented. Hence effectiveness of such policies depends on the degree of "implementation fidelity" of the relevant HR systems [11].

Boxall and Macky [12] refer to the importance of not only having the Human Resource Management (HRM) policies in place but also the way HRM policies are implemented. The Boxall and Macky [12] framework suggests a causal link of between intended Human Resource (HR) practices and the way they are implemented by managers; the perceptions and behaviour of employees; and organisational performance.

Literature on P&T suggests that systems with weak 'implementation fidelity' or non-compliance with P&T rules may lead to systems abuse and corruption [8, 13, 14]. La Forgia el al [15] suggest that the mis-use of formal systems come from the use of parallel systems driven externally e,g through political interference, and internally by health worker preferences. The lack of organizational governance means that the implementation of policies can be influenced by externally and internally driven pressures [16]. The current study focuses on de facto institutional and governance arrangements relating to P&T.

Based on the work of Boxall and Macky [12] and La Forgia et al. [15] we developed a framework that draws a link between intended HR practices, actual HR practices, HR practices as perceived by Medical Officers (MOs), MOs reactions and its potential link to staff turnover (behavior) and organisational performance. The conceptual framework, shown in Fig. 1, also draws from Forgia et al. to explain how external pressures and worker preferences lead to systems abuse.

Anecdotal evidence and limited literature suggest that HRM policies on P&T in the government health sector in India are non-existent, lack transparency or are poorly implemented. The poor implementation of transfer policies results in lack of staff at health facilities, staff not living at posted centres, high absenteeism and political interference [17]. The evidence from other countries indicates that HRM systems in public sector can be inefficient and slow [16, 18]. India also experiences a big variation in the way in which HRM systems are governed and policies are implemented across the country. Hence to address the issue of rational distribution of health personnel, there is a greater need to examine HR policies and practices relating to transfer of Medical Officers (MOs) or doctors in the state.

The P&T system in the government health sector in Pakistan has also been described as arbitrary and while such systems may offer security and stability in the job, the frequent and often inconsistent transfers make such jobs unstable at the same time [8]. Schaaf et al. [6] describe transfers in the health sector as being 'Mission Inconsistent', as they neither maximize health outcomes nor respect the norms of health care worker professionalism [6]. Several studies have found that corruption in the process of transfers is a pervasive problem affecting not only the health sector but it also affects individuals [19–22].

With this backdrop the main objectives of the study were to document extant transfer policies and assess how transfer policies are implemented in practice to understand discrepancies between policies and their actual implementation. The main aim of the paper is to shine a light into the black box of P&T systems in public sector health services in a

Purohit *et al. BMC Health Services Research* (2016) 16:419

Page 3 of 12

Fig. 1 Conceptual framework for the study. Source: Based on Boxall and Macky [12] and La Forgia et al. [15]
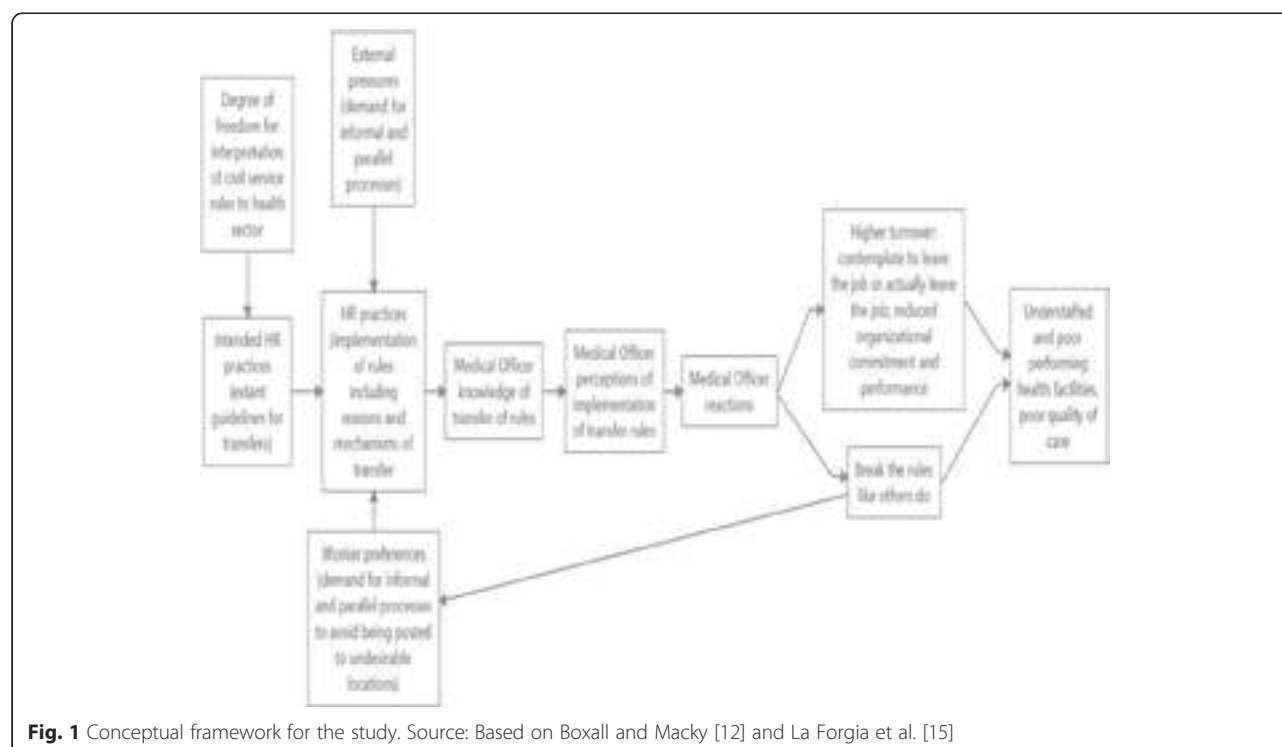
Western state in India. Although there have been a few studies conducted in other countries that aimed at understanding the issue of P&T from the view point of corruption, to our knowledge this is one of the first few studies in India aimed at identifying the implementation gaps in the P&T policies and systems for MOs from government health department. The paper builds on empirical evidence available on transfer policies and practices in the public health system of India which like other government sectors faces the challenge of corruption [10, 21].

The health system of the study state
The Department of Health and Family Welfare or the Department of Health is headed by the Minister of Health and Family Welfare while the Principal Secretary of the Health and Family Welfare is the administrative head of the department and responsible for implementing the policies. There are various directorates under the Principal Secretary which are directly involved in implementation of various programmes and activities. The Department of Health and Family Welfare in the state has three directorates (Health, Medical Services and Medical Education) that are mainly responsible for technical as well as administrative support to the health related activities in the state.

The state is divided into six regions with all the 32 districts in the state falling under the six regions. Six Regional Deputy Directors (RDDs), one for each region is incharge for the health related activities for the districts that fall under their region.

At the district level, Chief District Health Officer (CDHO) is the overall incharge of the Community Health Centers (CHCs) and the Primary Health Centers (PHCs) within the district. Similarly all the District Hospitals (DHs) within the district are headed by the Chief District Medical Officer (CDMO) of the district hospital.

DH is Public Hospital that caters to the health needs of the entire district providing mainly tertiary care.

CHC is a 30 bedded hospital that constitutes the secondary level of health care and provide referral as well as specialist health care to the rural population at the block level. It caters to 80,000 - 120,000 population. According to health service norms, each CHC needs to be staffed with specialists as well as regular doctors or MO.

PHC covers a population of 20,000 in hilly, tribal, or difficult areas and 30,000 populations in plain areas with 4–6 indoor/observation beds. It acts as a referral unit for 6 sub-centres and refer out cases to CHC (30 bedded hospital) and higher order public hospitals located at sub-district and district level. Each PHC needs to be staffed with at least one MO.

The MOs have been categorized into two classes: I and II. Both Class I and II are gazetted posts and the state's Public Service Commission (PSC) called State's Public Service Commission is responsible for recruitment of all gazetted posts including MOs. All graduate doctors are recruited as Medical Officer (MOs) in Class II to work in Primary Health Centres (PHCs) and/or Community Health Centres (CHCs)) whereas those holding Post Graduate

Purohit *et al. BMC Health Services Research* (2016) 16:419

Page 4 of 12

degree in clinical areas are recruited as Specialist as Class I. In addition to specialists, senior level positions at district such as CDHO and CDMO and state level are Class I positions while the MOs working with PHCs and CHCs without Post Graduate specialization are Class II positions.

At the district level, Chief District Health Officer (CDHO) who is a Class I officer is overall in charge of the CHCs and PHCs within the district. Several blocks or the administrative units constitute a district. Blocks are administered by the Block Health Officers (BHOs) who are also usually Class I officers.

Under the compulsory rural service in the state, all the medical graduates from the Government colleges enter the government service under the 'Bonded' category and are required to sign a bond at the time of admission to medical college that requires them to compulsorily serve in rural areas for two years.

To address the shortage of MOs in the state, the Dept of Health and Family Welfare in past recruited MOs from such as candidates from private medical colleges or outside the state. Recruitment of such MOs is called Ad hoc appointment. MOs under ad hoc appointment were appointed on a temporary basis and are required to pass the states' Public Service Commission Exam (PSC) in order to be appointed as permanent employees which would give them regular service.

Methods
Study design
The study used qualitative methods first to develop a 'systems map' for P&T to identify the extant transfer policies with the help of document review and Key Informant (KI) interviews; then to conduct a systems audit through in-depth interviews with MOs and KIs and construction of job histories to understand how policies are implemented and to identify discrepancies, if any between policies and their actual implementation and the explanations for the discrepancies.

Study setting
This study was conducted in a Western state in India in 2013. This state was selected for this study as it represents the economically progressive states of India with health indicators much better than the national average, yet the state suffers from shortage of MOs and specialists, especially in rural areas. The vacancy and shortfall in the state is 24 % for MOs at Primary Health Centres (PHCs) while the vacancy and shortfall is particularly high (77 and 93 % respectively) for all specialists working with Community Health Centres (CHCs).

MOs were included as the main respondents of the study working for the government health department placed at rural health centres from three different districts from the state. The study wished to compare transfers to

the least and the most desirable posts and therefore selected districts which were categorised, with the help of several MOs and officers working at senior level as "desirable", "not so desirable" and "not at all desirable". As several districts were identified in each of the above category, three districts meeting the above criteria were selected from there different regions from the state (out of total six regions) for larger geographical representation.

Data collection methods and sampling
Document review
The current study was part of a larger study that aimed at analysing several other HRM policies other than transfer such as such as recruitment, placement and appraisal. Hence a range of policy documents such as government orders, recruitment rules, appraisal formats etc. were included in the document review. However for the purpose of the current study that focused on transfers, document review of the main policy relating to transfer was done. The transfer policy which is called 'transfer guideline' was made available from the government. Content analysis of the same was carried out to understand the extant transfer related rules and policies.

Interviews with KI
This group comprised of Informants who occupied key state and district level positions purposively selected for their knowledge of the study topic and to gauge their opinions on the existing policies and how policies are implemented. The study purposively included five KIs to ensure that the views and perspectives of range of stakeholders such as representatives from Health department, administrative department and Medical Association could be represented. Three out of five interviews with KIs were conducted in Hindi (the main language spoken in India) and two interviews in English as two KIs preferred to be interviewed in English) using topic guides. The average time of interviews with KIs was 29 minutes.

Interview with MOs
This group consisted of Class I and II MOs who were the main subjects of the study. MOs working mainly with the Primary Health Centres (PHCs) and Community Health Centres (CHCs) were included in the study as these MOs are mainly affected by the policies. During the interviews with MOs, brief job histories were constructed to get deeper insights into transfer processes. The study used purposive sampling at various stages while selecting the study respondents. This purposive selection approach focused on ensuring representation of both male and female doctors; those with Medical graduate degree and/or post-graduate medical degree, both adhoc and bonded doctors, doctors from Block level; as well as regular MOs that were State Public Service Commission (SPSC) confirmed from three different districts

Purohit *et al. BMC Health Services Research* (2016) 16:419

Page 5 of 12

representing three different geographical regions from the state were included which would not have been possible through random selection. The total number of interviews with MOs were conducted till the time saturation in information was experienced. Each MO was interviewed only once, making the total number of interviews 19 and all the interviews were conducted with the MOs in Hindi. The average time of interview with MOs was 32.3 minutes.

Data analysis

Document review analysis: Simple content analysis of the documents was done to understand the existing transfer policies and operational instructions. This included the main policy document called "Revised Guideline for Appointment and transfer of Government employees/officers" [23] or the term 'transfer guidelines' used in the paper to refer to the document. The guideline was available in local language of the state) but translated in English for the purpose of analysis.

In-depth interviews

All interview recordings were transcribed verbatim and then translated into English. Written consent was sought from study participants and the interviews were audio recorded. Important notes relating to Job histories were also taken during the interviews. Interviews were analyzed using thematic framework approach which is a matrix-based method to arrange and synthesize data [24]. The framework analysis approach was best suited to the scope of current research as the aim of the research was to present themes identified in the data. To analyze the data, study objectives, interview guide and methodology adopted were regularly revisited. The framework approach was used to identify key words, themes and sub-themes and the transcripts of the 24 participants (KIs and MOs) were coded and grouped according to the themes and sub-themes identified. A detailed analysis was performed using NVIVO on the transcribed texts.

Job histories

Job histories were constructed from the information available through in-depth interviews with an objective to get deeper insights into the frequencies of transfer and whether transfers complied with the guidelines. Simple descriptive statistics were used to calculate average time for posting (including the first posting) and to compare if such averages complied with transfer rules. The analysis of Job histories also includes the time spent by study respondents during their first posting. This analysis is based for only first posting because the job histories are quite varied where a few respondents had not experienced any transfer or only one transfer while there were other who experienced many transfers. With so much variation in the job histories, it made sense to

look at first posting as all the study respondents held at least one posting (the first posting) during their work.

Research ethics

Due to the sensitive nature of the study topic that involved interviews with MOs and KIs, the study took great care in maintaining confidentiality of the respondents. The participation in the study was completely voluntary. The ethical approval for the study was sought from institutional ethical review committee at Indian Institute of Public Health Gandhinagar (IIPHG). Relevant permission for the study was also obtained from the Department of Health, from the study state. Further, written consent was obtained from all the MOs and KIs.

Results

The result section includes the demographic profile of the study respondents. Next, the systems map (extant P&T policies and rules) is explained. Systems audit (to identify practices and implementation of P&T rules and possible discrepancies) is explained next in the section. Several themes were identified based on conceptual framework of the study. Study results have been structured according to the conceptual framework themes: (a) intended HR practices/extant guidelines for transfers; (b) HR practices and implementation of rules. This sub section also contains perceptions of MOs about the implementation of transfers of rules and their reactions or behaviours driven by their perceptions; and (c) knowledge of the MOs about transfer rules which emerged as an important study theme, hence it is another sub head in the results section.

Demographic details

Of the 19 study respondents, 3 were females while 16 were males. Three respondents were class I officers while 16 were Class II officers. There was almost an equal representation of bonded and adhoc respondents (11 and 8 respectively). As far as place of work is concerned, 7 were from PHCs, 4 each from CHC, DH and BHO (Table 1).

Intended HR practices/extant guidelines for transfers

The transfer guidelines contain several rules, but the present study only focused on two transfer rules as the study respondents were able to share their personal as well as general experiences mainly relating to these two rules, mainly because these two rules were most commonly experienced across all the respondents. The first rule included in the study states that a gazetted officer of Class I and II should not be transferred within 3 years of service and must be compulsorily transferred after 5 years of service at one place. The second rule included in the study suggests that gazetted officers should not use influence of any parliament or legislative assembly

Purohit *et al. BMC Health Services Research* (2016) 16:419

Page 6 of 12

Table 1 Distribution of MOs based on demographic and work profile

Class	District 1	District 2	District 3	Total
Class I	1	1	1	3
Class II	4	5	7	16
Gender				
Male	5	5	6	16
Female	0	1	2	3
Place of Work				
PHC	1	3	3	7
CHC	0	2	2	4
DH	3	1	0	4
BHO	1	0	3	4

member for getting transfer at particular post [25]. More details of these two rules are given in Table 2.

The content analysis of the 'transfer guideline' carried out under the study suggested that several transfer related rules have broad conditions under which such rules may not be completely implemented.

One of the KIs suggested that the Health Department has some degree of flexibility to implement the transfer guidelines. However, to what degree such flexibility exists is not clearly stated anywhere in the documents.

"As far as transfer is concerned, there is no separate transfer guideline [for the health sector]. The guidelines issued by Administrative Department is the same for all other officers [from different departments] like accounts, treasury, engineering and for doctors and sometimes these guidelines are not adhered" (KI 1)

Table 2 Various rules under the transfer guidelines

Policy/rule[a]	Explanation of Rule
Rule 1: The 3 and 5 year rule	A gazetted officer of Class I and II should not be transferred within 3 years of service and must be compulsorily transferred after 5 years of service at one place (Government of …….[b], 2005 Section 1, Page 3)
Rule 2: No use of political influence	If any gazetted officer brings pressure or uses influence of any parliament or legislative assembly member or uses political influence for getting transfer at particular post instead of following proper procedure of getting transfer then the concerned authority should immediately ask explanation from related gazetted officer/employee. (Government of ……,[b]2005 Section 14, Page 13)

[a]The rules presented in the table above have been shortened to authors' numbering and descriptions
[b]State name has been anonimised

"There are transfer rules for all employees- Class I, Class II, Class III as well as Class IV. The government has made policies but as there is shortage of doctors so health department is given some relaxation but such relaxation is not official. Since a doctor works for public so 'Public interest' is taken into consideration when such guidelines are applied to health department" (KI 5)

"Health department or any other department can make minor changes in the transfer guideline as per their need……. But if a major change needs to be made in any department then prior approval of administrative department is needed" (KI 5)

HR practices and implementation of rules

In this section, we present the job history of the MOs as well as the responses of the KIs and MOs against each of the rule discussed in Table 2 to assess the actual implementation of transfer rules. This section also reflects the perceptions of MOs about the transfer rules and the actual transfer systems and MOs' reactions driven by perceptions.

Rule 1: The 3 and 5 year rule The job histories of the MOs reveal a total of 73 transfers were experienced by the 19 MOs during their careers with the government. Of these, only 15 (20 %) complied with the Rule 1 (36 months to 60 months rule) while 58 (80 %) of the transfers did not comply with the rule. Of the 58 transfers that did not comply with Rule 1, 44 (76 %) that did not comply with the rule 1 and happened within 3 years (36 months) of posting while the rest 14 happened after 5 years (60 months) of posting at a particular place. The Table 3 gives the details and shows the percentage of respondents who held first posting according to Transfer Rule 1. The job histories indicate that only one fourth of the MOs held their first posting for time period between 3–5 years (as indicated in the 3–5 years rule) while in 75 % of the cases the rule was not followed. Non-adherence of the 3–5 year rule is reflected both for minimum and maximum periods: 42 % of the respondents were transferred within 3 years and 32 % of the respondents experienced transfer after 5 years of service.

Figure 2 illustrates the frequency of transfers with the posting history of sample of the MOs interviewed. It suggests that most of the tenure for postings for MOs does not comply with the 3–5 year (36–60 months) rule. The numeric data presented in Table 3 and Fig. 2 demonstrate that Rule 1 is barely being adhered to.

The responses of KIs and MOs also suggest poor compliance with Rule 1 both in relation to minimum and maximum periods of posting.

Purohit *et al. BMC Health Services Research* (2016) 16:419

Page 7 of 12

Table 3 % of Respondents who held first posting for various time periods (*n* = 19)

Post held for Less than 3 years			Post held for 3–5 year	Post held for More than 5 years	
Less than 6 months	6 months to 1 year	1–3 years	3- 5 years	5–7 Years	More than 7 years
2 (11 %)	1 (5 %)	5 (26 %)	5 (26 %)	3 (16 %)	3 (16 %)

"We do have administrative rules that no Class II officer can serve in the same place for more than 3 years and in no event can any officer serve the same place for more than 5 years. Unfortunately that is not implemented. We are having rule that is only on paper and is utilized only when some disciplinary or punitive action needs to be taken against some officers" (KI 4)

"The three year rule it is not strictly implemented" (MO 16)

"MOs can only be transferred after 3 years. However there is no such guarantee. Transfers do happen within 6 months, 9 months and in some cases after 10 years of service" ….There are problems in deployment. It's not rational and is done haphazardly" (MO 1)

Rule 2: No use of political influence KIs and MOs confirmed the existence of the rule about not using political influence.

"One of the rules is that there should be no political interference and if an MO approaches Political person for his transfer, it is considered as bad behavior and punishable action" (KI 1)

However, from the interviews it appeared that this rule was not normally being followed.

"After health department transfers a MO, he/she has to serve there for 3 years and only then can be transferred again. This is a rule but it doesn't happen. If you have the right 'Jugaad' [Political connection] then you can be transferred within 5 days also. Leave 5 days, your transfer order is renewed the same day" (MO 3)

Most of the KIs and well as the MOs stated that use of political connections is a common way to get favorable transfers. Therefore Rule 2 is some cases in not implemented.

Reasons and mechanisms for Transfer: From the interviews with KIs and MOs, the main reasons and mechanisms found under which transfers happened were following:

(1) Based on Request of the MO
(2) Administrative Reasons or Public Interest
(3) Punishment or Complaints against the MO

Request Based Transfer: According to transfer guidelines, transfers may be requested by the officials. While such transfers were found to be common, several MOs reported that their requests for such transfers were frequently refused. The study also found that request for transfers sometimes need to be supported with the help of political contact otherwise transfers based on 'Request' are not possible.

"I was transferred in March 2008 to Place X as a PHC MO and this transfer was based on request. The transfer happened smoothly on request. ….My most recent transfer also happened on request". (MO 1)

"There are one or 2 doctors from here who have served for 10–12 years but have not been transferred though they want to be transferred ………..Transfer on request can happen is some cases but in majority cases it doesn't happen." (MO 12)
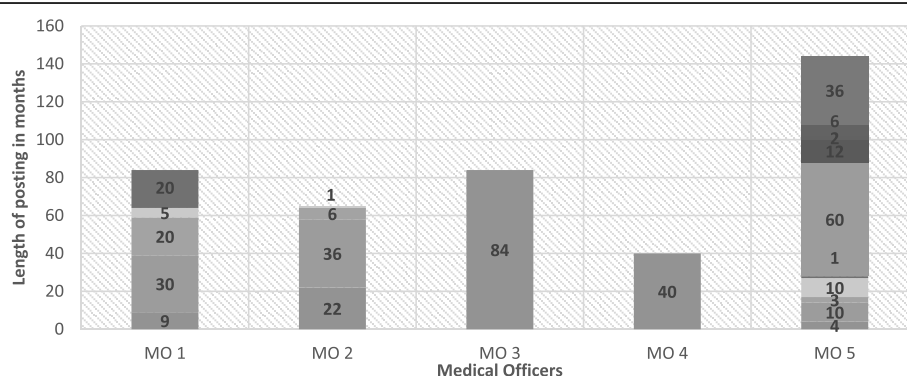

Fig. 2 Postings by length and frequency for as sample of MOs. X Axis showing the length of posting held in months. Y Axis showing various postings held by five MOs

"The most common way of transfer is "approach" [political backing]. At least I do not know any MO who has been transferred on request alone. One has to use some kind of approach else the transfer is not possible" (MO 14)

Administrative Reasons or Public Interest: A common reason for transfers is referred to as 'Admin reasons'. According to one of the KIs, the term 'Public Interest' provided a lot of scope for interpretation including political patronage transfers.

"If some transfer happens due to political connections, Government may give it the name of 'Public Interest'. See the Public Interest term has ambiguity and there are no guidelines that define public interest. For example if a MO is not attending the clinic or not behaving properly then he is transferred in the name of Public interest. But if a politician is requesting for a transfer of MO, this person may be transferred in the name of Public Interest and it cannot be proved. So that's ambiguity" (KI 1)

The study also found that the exact reasons for transfer labelled 'Public Interest' are kept confidential and never disclosed to the concerned MO. The MO would only know that the official reason for the transfer was 'Public Interest'.

"Public interest includes transfers based on complaints but it's a confidential thing. Public Interest is something that is not informed to anyone. It's on file and is not informed to a person. But in transfer order, the government will write transfer based on Public Interest so that MOs can claim dearness and allowance". (KI 1)

Punishment based: A few respondents suggested that MOs may be transferred as a punishment for a variety of reasons. MOs also indicated transfers because of complaints could be reversed if the person had good political connections.

"Yes, transfers happen based on complaints. If there is a complaint against a MO and if the MO does not have any approach [political connection] then such MO could be transferred immediately" (MO 11)

"If there is a complaint against a MO or an enquiry like medical negligence or charging user fee from the patients then such MOs may be transferred" (MO 14)

Mechanisms for Transfer: Mechanisms for transfer include a) through mutual transfers (which are legitimate) and two illegitimate mechanisms b) through political connection, and c) involvement of money.

1) *Mutual Transfers:* The study found transfer by mutual agreement between two parties (in this case – MOs) as another form of transfer, although not very common. However how the mutual transfers are treated officially and under which category of Transfer they are categorized is a matter of further exploration.

"I wanted to go to PHC [x], where a medical officer was working. He did not want to stay there, and was willing to come to my PHC so we went to the Commissioner and it was mutually agreed to interchange our postings" (MO 5)

2) *Political Connections:* Most of the MOs and KIs suggested that use of political connections to get transfers was common. Common synonyms used for 'political connection' included: *Jugaad, Jack, Contacts, Approach, Pehchan, Takat*. MOs said that a very common reason for using political connection – for them and colleagues – was to transfer from an undesirable posting or resist transfer from a desirable posting.

"In my opinion 80 % of the transfers happen due to '*Jugaad*' and 20 due to 'Request'" (MO 11)

"I had to put some political pressure otherwise my transfer was not possible- pressure is needed" (MO 13)
After so much pain, he [another MO the respondent is talking about] used his '*Jack*' [political connection] to get himself transferred to [name of the place]- There are no rules: '*Jiski Jitni takat and haisiyat*' (Translation: 'It is a power game')" (MO 2)
"Due to political backing transfer takes place within 2 days, or may be someone is posted in morning and he gets a transfer in the evening. I know a doctor who was transferred at 3 different places in the same day." (MO 7)

Political influence is sometimes used to actually create vacancies for well-connected MOs. Transfers arranged through political connection are disguised under category of 'administrative reasons' or 'public interest'.

"Transfers are sometimes done in order to create vacancies for MOs having political contacts" (MO 15)
"If one has good contacts then he/she can get a good transfer. Transfers happen due to contacts and it's a common way in our district also. In order to bring someone, others may be removed. And they may be

Purohit *et al. BMC Health Services Research* (2016) 16:419

Page 9 of 12

removed under the name of 'administration need' saying that 3 years have been completed" (MO 6)

"There was lot of pressure on us to get transferred 'on request'. Because if it is not on request then the authorities may require strong reasons to justify the transfer on papers. So we were forced to get transferred 'On Demand' to XYZ PHC [name of the PHC changed]" (MO 7)

3) *Use of Money:* The study found that sometimes MOs paid money to get themselves transferred from an undesirable posting or resist transfer from a desirable posting.

"The main reason for us to be unable to get ourselves transferred is lack of political connections. The only way one can get transferred is either through political connection or through 'Money Policy'. For example, if you want to go to district X [a desirable district for posting] then the rate is 2 lakh rupees [USD3500]" (MO 8)

"Sometimes they take money, but mostly the transfers are based on political connections with influence through political leaders and local leaders. For this reason MOs are continuing in one place for many years. But for MO who does not have political connections, money is the next resort" (MO 1)

"If I wish to be transferred then I can be transferred by tonight. I just need to have 50–60 thousand rupees [USD 1000–1100].....And people bribe to get transferred, almost 60–80 thousand rupees [USD 1200–1400] for transfers". (MO 19)

"Oh yes! Use of Money for transfers is rampant" (MO 16)

Knowledge related to transfer related rules

Most of the MOs interviewed demonstrated limited understanding about the transfer rules which was mainly confined to the '3 and 5 year' rule. Further they stated that no specific briefing or guidelines were provided to MOs at any time during their job. Some MOs were unsure which officers had the powers to transfer them. Only four respondents knew that according to the policy that the powers to transfer Class I and II MOs lie with the Health Minister.

"I just know one rule, that once you are transferred you need to serve in that place for at least 3 years. You can only be transferred after 3 years of service. This is the rule made by the government" (MO 11)

"Barring 1 or 2 small rules no MO knows about the transfer rules. One of the rules is that a MO must serve at a place for at least 3 years before being transferred. I don't know more than this" (MO 17)

Discussion

Although the study aimed at illuminating the "black box" of transfer systems to find ways of improving staffing, the study only throws a partial light on the issue and has several limitations. While there are many transfer-related rules detailed in the government transfer guidelines, the current study looked at selected transfer related rules experienced by the study respondents. Due to sensitive nature of study topic involving sharing of experiences on illegitimate mechanism used in transfer systems, in a few cases the interviews with MOs reflect the P&T experiences of other MOs rather than their own. Also due to the complexities of the mechanisms of transfers, it was difficult to quantify the number of transfers that happened based on legitimate and illegitimate reasons and mechanisms. In addition due to sensitive and complex nature of the topic, the job histories of the respondents were not validated with the actual transfer orders received by the study respondents. Finally as the study was conducted only in one state based on views and experience on 24 respondents, so generalisations about transfer processes in other states in India cannot be made on the basis of this.

Despite responses from a few KIs suggesting that government understands that transfer needs of health department are different than other government departments, the study found that there are no specific rules for transfer for health department. An earlier study done in India found it surprising that no formal rules exist for transfer of Indian Administrative Services (IAS) officers despite the fact that this cadre is frequently transferred [26]. The results also suggest that the health department has some flexibility to implement the transfer guidelines. However, to what extent such flexibility exists is not clearly laid down in transfer guideline or any other document nor was clearly suggested by any KIs.

The study also found that the transfer rules are not strictly implemented, particularly the rule relating to three and five year transfer. The main explanation of the purpose of the 3–5 year rule is to provide insulation to IAS officers/ civil servants against political pressures from being too frequently transferred [25], but in fact some MOs were using political pressure to get around the rule. Non adherence to such rule has been reported by other studies in India [27] and in the health sector in Pakistan [8]. In the latter case the use of political influence was the main reason why the three year rule was not implemented strictly.

Rule 2 in the civil service in is meant to protect against political influence in transfers, but appears not to be adhered to. In fact it was perhaps one of the most common mechanisms used in transfer. So it can be reasoned that MOs who are not in a position to use political influence for their transfers lose out. A study of

Purohit *et al. BMC Health Services Research* (2016) 16:419

Page 10 of 12

doctors in Nepal suggested the use of 'source force' – or the use of power and money - was deeply embedded in the social structure and is the institutional modus operandi for HRM in India public administration [14, 15]. In a study done with bureaucrats in India, use of political influence was found to be common [27]. The authors suggest that despite some kind of constitutional insulation available to MOs (in form of the 3 and 5 year rule) against the political pressures, many MOs in fact suffer due to political influence. Hence the overall benefit from this rule-to the health system and the staff who work in it-should be reappraised in future research.

There is no doubt that the transfer guidelines are not being strictly followed; the question is whether this make good sense in terms of human resource management, given the labour market conditions in which the health department is operating. We suggest several reasons for weak implementation of the transfer rules. The transfer rules include very broad and ambiguous conditions under which such rules may not be strictly followed often under 'Public Interest' or 'Administrative reason'. The study findings suggest that many times MOs may be transferred arbitrarily where they either do not know the reasons for their transfer or the reasons known to MOs remained as broad as 'admin reasons' or 'public interest' as reported by another study done in the same state with IAS officers [28]. When reasons for transfer are used ambiguously, the transparency of the system is lost and then it becomes easier to use political connections in the transfer process. Another possible reason for weak implementation because of the flexibility given to the health sector in the use of generic P&T rules which may sometimes allow certain parallel practices (use of political influence or money) of transfer to take place. While such a flexibility may benefit health systems and certain MOs, it may negatively affect other MOs. Studies elsewhere suggest that in the absence of clear rules and policies, parallel systems emerge [21].

The study results also indicate that the overall transfer system was very unpredictable. Some MOs do not get transferred for fifteen years whereas others are transferred within a few months. For instance we found that 42 % of the MOs were transferred well within 3 years of their first posting and 16 % within the first year of first posting. Similar findings have been reported in India with IAS officers where over half of the IAS officers held their post for less than 1 year with transfers being erratic and frequent movements of officers [29]. Yet another study in India found similar violations in the transfer rules as in the study reported here. The average tenure of IAS officers in a given post is sixteen months and only 56 % of District Officers spend more than one year in their jobs. Such transfers are violation of the recommendations for a three-to five-year tenure in each post put

forward by the Ministry of Personnel and the Fifth Pay Commission [25]. Studies done in India on P&T have found that issues of arbitrary transfers may be harassment for government employees [26]. The authors suggest that the unpredictable or arbitrary nature of transfers can demotivate MOs. This was the single most important reason for demoralization and sense of insecurity in a study of IAS officers [26]. The significant link of HR policies and practices on organizational commitment and performance has been discussed in HR management literature [12].

Our study also found that while several MOs fulfilled the required tenure needed under Rule 1 and requested for transfer as per the rule, but it is inferred that there is no one in the health department bound to comply with such request. Studies done on the transfer of IAS officers in India confirm such findings where no one is bound to comply with the legitimate requests of the IAS officers for transfers [28]. Our study also found that the corruption in the P&T process for MOs is not only limited to use of political connections but also found use of money to get favorable transfers. Often such practices allow illicit use of money to have other sources of income as reported by another study done with irrigation department in India which enable rent-seeking for the provision of posts [30]. Also as discussed earlier that while there is a provision where MOs can request for transfer, such requests may not be often granted and the health department need not necessarily entertain such requests. So for the MOs whose legitimate requests for transfer are not granted and for those who cannot break rule number 2 (use of political influence), informal payments remains the last resort.

In order to address the parallel systems that exist in the P&T, our recommendations are in line with La Forgia el al [15] who suggest that the state authorities can enact new and more precise rules governing HR functions as done in the state of Tamil Nadu in India [15]. In addition we also recommend that it is better not to make exceptions to rules – even in the case of the health sector – as this leads to ambiguities. Further, there must be clear definitions about what 'administrative reasons' or 'public interest' mean to add transparency to the transfer system. However, significant improvements to P&T policies and how they are implemented may not be possible until the external pressure that creates parallel systems is greatly reduced [15].

To address the poor knowledge of MOs about the transfer rules, which is a transparency issue, we recommend improving the information related to transfer rules and their implementation. Similar study in India suggest state-led accountability mechanisms on improving the availability of information on HRM policies and practices that as is underway in some

Purohit *et al. BMC Health Services Research* (2016) 16:419

Page 11 of 12

India states such as Tamil Nadu, Karnataka and Odisha [16].

Information about available vacancies, like the one followed in the state of Tamil Nadu in India called 'Counselling' (http://www.scribd.com/doc/34652363/Tamil-Nadu-Medical-Service-Counselling-for-transfer-and-promotion-Revised-guidelines-issued#scribd), should be provided to MOs. When fresh recruits are posted to undeserved areas, the length of the posting should be made clear to them and they should be assured that once such a tenure is completed they will be transferred to areas of their choice. Although movement from underserved to preferred locations is not a direct promotion for MOs, but it may be a very powerful way to address the morale of MOs. Such a system exists in Nepal health system where health workers who have served in rural areas may get priority for promotion [31]. The movement from most underserved to preferred locations must be based on availability of vacancies that may be made available to MOs through a systems similar to 'counselling' and the requests of the MOs for such transfers. However the health department must ensure that such requests are considered.

Conclusion

Our study aimed at opening the 'black box' of P&T systems in public sector health services in a Western state in India by assessing the implementation gaps between P&T policies and their actual implementation. Results suggest that the transfer guidelines are not implemented robustly, indicating a significant gap between policy and actual implementation. The broad transfer rules and ambiguity in how transfers are treated may explain the discrepancy between policy and implementation leading to systems abuse and corruption.

The study found that overall transfer system for MOs was marked by perceptions of unfairness and irregularities. The P&T system was characterized by de facto institutional mechanisms where the formal transfer rules are undermined by a parallel system in which desirable posts can be attained, retained or sometimes given up (to move to a more desirable place) by use of political connections and in some cases by use of money. Some plausible reasons for poor implementation of P&T policies could be: (1) the flexibility allowed to the health department in implementing transfer rules and absence of any document or common understanding among policy implementers as to what level this flexibility really exists (2) the broad reasons under which transfers are done such as 'Admin reason' and 'Public Interest'.

Effective P&T policies and implementation may have important implications for organizational performance and may help to improve Human Resource (HR) policy and HR expertise. The benefit of the 3–5 year posting rule should be reappraised. Where possible, ambiguity in the

rules should be avoided. Greater transparency on implementation of the rules is needed. However, it may not be possible to make any significant improvements to P&T policies and how they are implemented until the external pressure that creates parallel systems is greatly reduced.

Author details
[1]Indian Institute of Public Health Gandhinagar (IIPHG), Sardar Patel Institute Campus, Drive in Road, Thaltej, Ahmedabad 380054, India. [2]Liverpool School of Tropical Medicine (LSTM), Pembroke Place, Liverpool L3 5QA, UK. [3]Public Health Foundation of India, Plot No. 47, Sector 44, Institutional Area Gurgaon 122002, India.

References
1. WHO. The World Health Report 2006; Working Together for Health. Geneva: World Health Organisation; 2006.
2. Government of India, Ministry of Health & Family Welfare, National Rural Health Mission (NRHM): Rural Health Statistics in India 2010. New Delhi: NHRM; 2010.

3. WHO. Not Enough Here Too Many There: Health Workforce in India. World Health Organization. Country: Office for India; 2007.
4. Gupta N, Zurn P, Diallo K, Poz MR. Uses of population census data for monitoring geographical imbalance in the health workforce: snapshots from three developing countries. Int J Equity Health. 2003;2:11.
5. Chaudhury N, Hammer J, Kremer M, Muralidharan K, Rogers FH. Missing in action: teacher and health worker absence in developing countries. J Econ Perspect. 2005;20(1):91–116.
6. Schaaf M and Freedman P. Unmasking the open secret of posting and transfer practices in the health sector. Health Policy Plan. 2013;1–10 doi:10.1093/heapol/czt091
7. Lehhman U, Dieleman M and Martineau T. Staffing remote rural areas in Middle and Low Income countries: A literature review of attraction and retention. BMC Health Serv Res. 2008;8(19). doi:10.1186/1472-6963-8-19.
8. Collins CD, Omar M, Hurst K. Staff transfer and management in the government health sector in Baluchistan, Pakistan: problems and context. Public Adm Dev. 2000;20:207–20.
9. McPake B, Koblinsky M. Improving maternal survival in South Asia—what can we learn from case studies? J Health Popul Nutr. 2009;27:93–107.
10. Davis J. Corruption in Public service delivery. Experience from South Asia's water and sanitation sector. World Dev. 2003;32(1):53–71.
11. Patterson M, Rick J, Wood S, Carroll C, Balain S, Booth A. Systematic review of the links between human resource management practices and performance. Health Technol Assess. 2010;14(51). doi:10.3310/hta14510.
12. Boxall PF, Macky K. High-performance work systems and organisational performance: Bridging theory and practice. Asia Pacific J Hum Resour. 2007;45:261.
13. Lewis M, Pettersson G. Governance in healthcare delivery. Raising performance. In policy research working paper 5074. Washington, DC: World Bank; 2009.
14. Weiner S. Source force and the Nepal medical profession. Soc Sci Med. 1989;29(5):669–75.
15. La Forgia G, Raha S, Shaikh S, Maheshwari SK, Ali R. Parallel systems and Human Resource Management in India's Public Health Services: A view from front Lines. Public Adm Dev. 2015;35:372–89.
16. Vujicic M, et al. Working in health. Financing and managing the public sector health workforce. Washington, DC: World Bank; 2009.
17. Mavalankar DV. Posting and Transfer Policy for Health Staff in Rural Areas. In: Banerjee M. E Discussion-Solution exchange for maternal and child health community. Indian Institute of Management, Ahmedabad (E-Discussion). 2006.
18. Davidson J. OMB's Zients determined to untangle federal hiring process. In The Washington Post. 2010.
19. Gupta S, Davoodi HR, Tiongson ER. Corruption and the provision of health care and education services. In: Abed GT, Gupta S, editors. Governance, corruption, and economic performance. Washington, DC: International Monetary Fund; 2002. p. 245–72.
20. Azfar O. Corruption and the delivery of health and education services. In: Spector BI, editor. Fighting corruption in developing countries: strategies and analysis. Bloomfield, CT: Kumarian Press; 2005. p. 181–212.
21. Lewis M. Governance and corruption in public health care systems. Working paper number 78. Washington, DC: Center for Global Development; 2006.
22. Rose R. Corruption is bad for your health: findings from Central and Eastern Europe. In: Transparency International. Global Corruption Report 2006: Special focus on corruption and health. London: Pluto Press; 2006. p. 39–43.
23. Government of Gujarat: General Administration Department): Revised guidelines of appointments and transfers of government employees/ officers: Resolution no.: TRF-1098-1432-G.2, Sachivalaya, Gandhinagar, 2005
24. Ritchie J, Spencer L, O'Connor W. Carrying Out Qualitative Analysis. In: Ritchie J, Lewis J, editors. Qualitative Research Practice: A Guide for Social Science Students and Researchers. London: Sage; 2003. p. 220–62.
25. Iyer L, Mani A. Travelling agents: political change and bureaucratic turnover in India: the review of economics and statistics. August. 2012;94(3):723–39.
26. Banik D. The transfer Raj: Indian civil servants on the move. Eur J Dev Res. 2001;13(1):106–34.
27. de Zwart F. Personnel transfer in Indian state bureaucracy: corruption and anti-corruption. In: Bakker H, Nordholt N, editors. Corruption and Legitimacy. Amsterdam: SISWO; 2000. p. 53–65.
28. de Zwart F. The Bureaucratic Merry-Go-Round: Manipulating the Transfer of Indian Civil Servants. Amsterdam: Amsterdam University Press; 1994.
29. Potter DC. Mobility patterns in state government in India. Indian J Public Adm. 1988;34(3):907–32.
30. Wade R. The market for public office: why the Indian State is not better at development. World Dev. 1985;13:467–97.
31. Nepal Law Commission. Nepal Health Service Act, 2053 (1997) - with updates. 2010. Available at: www.lawcommission.gov.np.

HUMAN RESOURCES FOR HEALTH

CH1

RESEARCH

Open Access

So many, yet few: Human resources for health in India

Krishna D Rao[1*], Aarushi Bhatnagar[2] and Peter Berman[3]

Abstract

Background: In many developing countries, such as India, information on human resources in the health sector is incomplete and unreliable. This prevents effective workforce planning and management. This paper aims to address this deficit by producing a more complete picture of India's health workforce.

Methods: Both the Census of India and nationally representative household surveys collect data on self-reported occupations. A representative sample drawn from the 2001 census was used to estimate key workforce indicators. Nationally representative household survey data and official estimates were used to compare and supplement census results.

Results: India faces a substantial overall deficit of health workers; the density of doctors, nurses and midwifes is a quarter of the 2.3/1000 population World Health Organization benchmark. Importantly, a substantial portion of the doctors (37%), particularly in rural areas (63%) appears to be unqualified. The workforce is composed of at least as many doctors as nurses making for an inefficient skill-mix. Women comprise only one-third of the workforce. Most workers are located in urban areas and in the private sector. States with poorer health and service use outcomes have a lower health worker density.

Conclusions: Among the important human resources challenges that India faces is increasing the presence of qualified health workers in underserved areas and a more efficient skill mix. An important first step is to ensure the availability of reliable and comprehensive workforce information through live workforce registers.

Keywords: India, Human resources, Census, Household survey

Background

Greater availability of health workers is associated with better service utilization and health outcomes [1-3]. In addition to overall numerical strength, health workforce effectiveness is also influenced, among other things, by skill mix, type of providers and their geographical distribution. Information on indicators such as these is critical for policy makers to manage and plan better for the health workforce. Yet, in many developing countries, such as India, workforce planning is handicapped by the lack of comprehensive and reliable information on the number of health workers, what types operate, what their qualifications are and where they are located.

Counting health workers in India is a challenging exercise. For one, India's health workforce is characterized by a diversity of health workers offering health services in several systems of medicine. These health workers are present in both the private and public sector. According to the National Occupation Classification (NOC), providers of allopathic health services broadly include doctors (general and specialists), dentists, nurses, midwives, pharmacists, technicians, optometrists, physiotherapists, nutritionists, sanitarians and a range of administrative and support staff [4]. Physicians and surgeons trained in Indian systems of medicine - Ayurveda, Yoga, Unani, Sidha - and Homeopathy, collectively known as AYUSH, also provide health care through public and private sector facilities. Certain states have also introduced state specific cadres; the states of Chhattisgarh and Assam have deployed non-physician clinicians with three and a half years of allopathic training. In addition, a large number of community health workers operate in the health sector.

* Correspondence: kd.rao@phfi.org
[1]Public Health Foundation of India, New Delhi, India
Full list of author information is available at the end of the article

BioMed Central

Adding to this complexity is the large number of informal medical practitioners, commonly called RMPs (Registered Medical Practitioners [a]). RMPs are often the first point of contact for medical care for the rural population and the urban poor. They typically practice allopathic medicine, but have no formal qualification or license to do so. While it is difficult to estimate their numbers, one study estimates that 25% (42% in rural and 15% in urban) of the individuals classified as allopathic doctors, reported no medical training [5]. Another study conducted in the Udaipur district of Rajasthan in 2003 found that 41% of private practitioners who called themselves doctors had no medical degree, 18% had no medical training at all and 17% had not even graduated from high school [6]. In addition, a substantial number of practitioners of traditional medicine and faith healers inhabit the rural workforce space.

Routine sources of information on the health workforce are fragmented and generally unreliable. For certain cadres (allopathic doctors, AYUSH physician, dentists, nurses, pharmacists) of health workers, information on their strength is available from their respective professional councils. However, this information suffers from several limitations. Because professional councils don't maintain live registers, the information they provide is inaccurate due to non-adjustment of health workers leaving the workforce due to death, migration and retirement or double counting of workers due to their registration in more than one state [7]. Further, not all state councils follow the same registering procedure, raising issues of comparability. Importantly, certain categories of health workers, such as physiotherapists, medical technicians, RMPs and faith healers, are not recorded at all. Finally, data on health workers in some states (e.g. India's north-east) are not available because they do not have state specific professional councils.

This paper attempts to present a more complete picture of India's health workforce. It quantifies the size, composition and distribution of India's health workforce by drawing on non-routine sources such as the Census and from nationally representative household surveys. Because these sources collect information directly from individuals, they can potentially overcome many of the deficiencies associated with routine data sources.

Data and methods
This study used data from two sources - the 2001 Census of India and the 61st round (July 2004-June 2005) of the National Sample Survey (NSS) on 'Employment and Unemployment'. The census data were a sample drawn from the population - from each district of the country, 20% of the rural and 50% of the urban enumeration blocks (EB) were selected using systematic sampling. An EB consisted of 600 and 750 individuals in the urban and rural areas, respectively. In the 11 smaller states and union territories (<2 million population) all EBs were selected, making the total sample size roughly 300 million individuals. The sample estimates were then inflated by a factor of five for rural and two for urban districts to get population totals.

The NSS is a multi-stage stratified cluster sample survey covering the entire country. This survey was spread over 7999 villages and 4602 urban blocks covering 124 680 households and 602 833 persons. Both the census and the NSS collected information on the self-reported occupation [8].

The National Occupational Classification (NOC) codes were used to classify occupation self-reports [4]. NOC codes enabled classifying health workers according to their specific occupation such as doctors, nurses, homeopaths, ayurvedic practitioners, medical assistants, traditional and faith healers and the like. These were grouped and the final categories of health workers included allopathic physicians, AYUSH practitioners, nurses and midwives, dentists, pharmacists, others (including the paramedical support staff) and other practitioners of traditional medicine [9]. The category of nurses and midwifes was grouped together as their NOC codes suggested overlapping job functions. Similarly, it is possible that traditional birth attendants are subsumed under midwifes because the NOC codes do not distinguish between the two.

Because workforce information from the Census and the NSS is based on occupation self-reports, it is susceptible to unqualified providers being counted as qualified ones. To adjust for this, data from the NSS, which collected information on both occupation and technical education (degree or diploma/certificate in medicine) and general education, was used to calculate the proportion of qualified health workers and this fraction was then applied to the Census estimates. For instance, a person classified as an allopathic doctor was considered qualified if they either had a technical degree or post-graduate diploma/certificate in medicine. Persons classified as nurses and midwives were considered qualified if they had any technical education in medicine or if they possessed a diploma/certificate.

To make the Census and NSS estimates temporally comparable, the average annual population growth rate between 1991 and 2001 Census was used to upwardly adjust the 2001 Census estimates to 2005.

Results
Size and composition[b]
The Census estimates show that there were approximately 2.17 million health workers in India in 2005, which translates into a density of approximately 20 health workers per 10 000 population (Figure 1). Among the different categories of health workers shown in Figure 1,
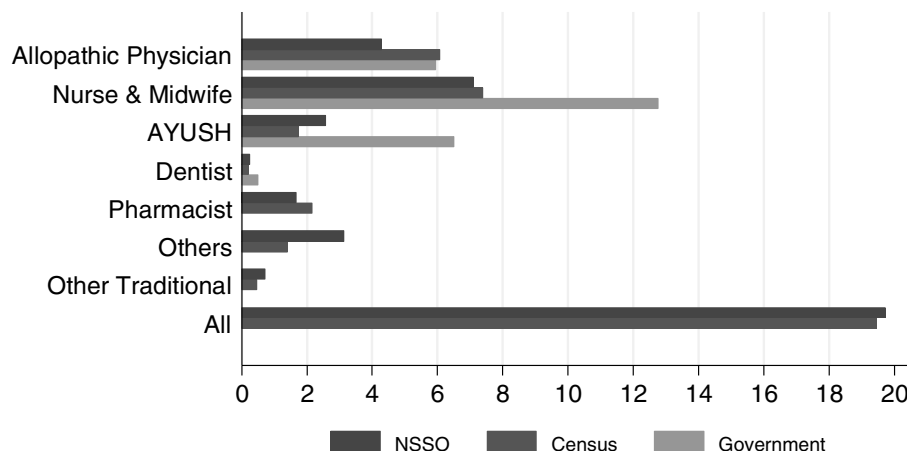
Figure 1 Health worker density - All India (Per 10 000 population).

nurses and midwifes had the largest share in the health workforce, followed by allopathic physicians, AYUSH physicians and pharmacists. The Census and NSS estimates are remarkably close in the estimated total number of health workers although there are differences when the data are broken down by cadres. Government estimates of workers in both the public and private sector are only available for some cadres. In general, across cadres, the Census and NSS estimates tend to be closer to each other than the Government estimates.

When the Census estimates are adjusted for health worker qualification the health worker density reduced from 20 to a little over 8 per 10 000 population (Figure 2). For physicians, estimates from the NSS survey suggest that 37% (63% in rural and 20% in urban areas) had inadequate or no medical training; applying this proportion to the Census estimates, the allopathic physician density in India reduced from 6.1 to 3.8 per 10 000 population. In rural (urban) areas the qualified allopathic physician

density is 1.2 (11.3) per 10 000 population. Put another way, there is one qualified doctor per 8333 (885) people in rural (urban) areas of India.

There are 4.9 nurses and 2.5 midwifes per 10 000 population. This translates to 1.6 nurses and midwifes per allopathic physician. After adjusting for unqualified workers, the nurse density reduces to 1.7 and the midwife to 0.6 per 10 000 population making the nurse-doctor ratio as low as 0.5.

Distribution

There is considerable variation in the density of the health workforce across the states of India. For example, Figure 3 shows that states such as Goa and Kerala have doctor densities up to three times as high as states such as Orissa and Chhattisgarh. Similarly, variation in nurse and midwife density (Figure 4) in states such as Goa and Kerala are up to six times as much as the low density states of Bihar and Uttar Pradesh. In general, the north-
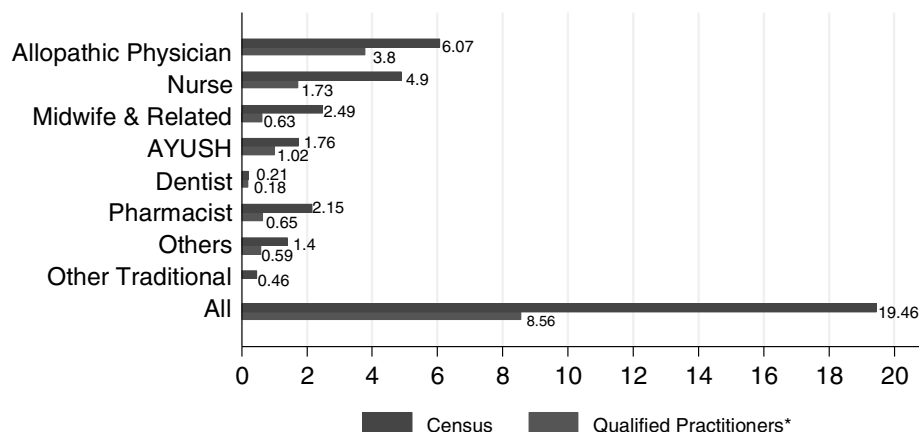
Figure 2 Health worker density - All India, 2005 (Per 10 000 Population).

Figure 3 Doctor density, 2005 (Per 10 000 Population).
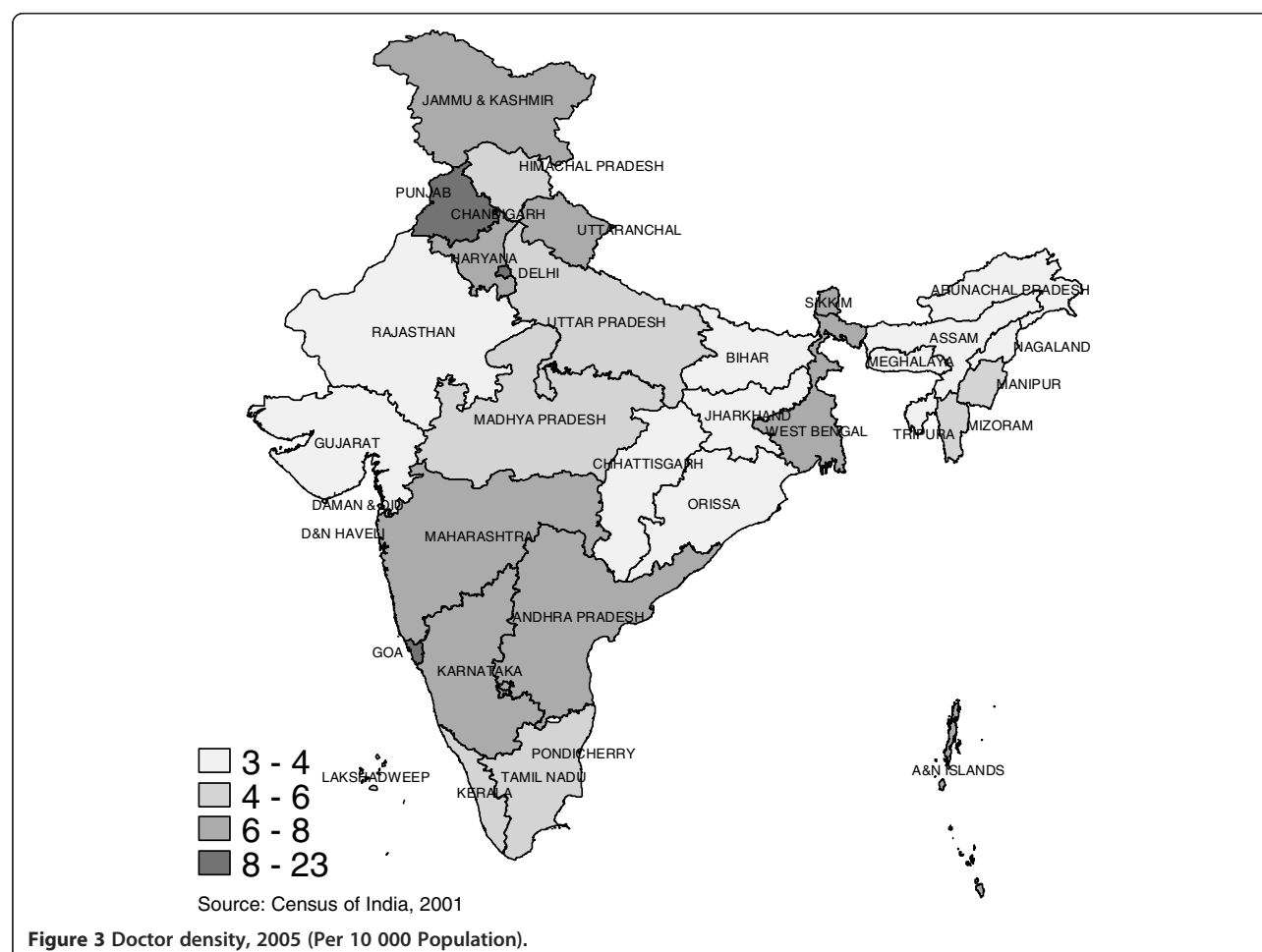
central states have low workforce densities and also have poorer average health.

The majority (60%) of health workers are present in urban areas (Figure 5). Because the majority of India's population is rural, health worker to population ratios are even more skewed. For example, the density of allopathic physicians in urban areas is four times that of rural areas, and for nurses and midwives it is three times as large. If the NSS estimate of the proportion of unqualified allopathic physicians were applied, then the density of allopathic physicians in urban and rural areas would be 11.3 and 1.2, respectively, reflecting the higher proportion of physicians reporting insufficient qualifications in rural areas. Similarly, the density of qualified nurses is higher in urban (4.3) relative to rural (0.7) areas.

The majority (70%) of health workers were employed in the private sector in both urban and rural areas (Figure 6). Significantly, the vast majority of doctors, AYUSH practitioners and dentists were employed by the private sector in both urban and rural areas. In contrast, only about half the nurses were employed by the private

sector. Health workers without qualifications were mainly present in the private sector.

The proportion of women in the health workforce is low. There are approximately 7 female health workers per 10 000 population, indicating that women comprise only about a third of all health workers in the country. There were only about 2 female doctors per 10 000 women in the population. The share of female doctors was particularly low comprising only 17% of all doctors in the country (Figure 7) and only 6% of the rural doctors. In contrast, 70% of nurses and midwives were women.

Health workforce estimates presented here do not include community workers, although these are intended in part to address the low access to more qualified workers. The Census and NSS, which classify health workers based on international occupation codes, do not have separate classification codes for community health workers. At the time of the 2001 Census and the 2004/2005 NSS, Accredited Social Health Activists' (ASHA) were not yet introduced into the workforce. Under the National Rural Health Mission (NRHM) the Government will add

Figure 4 Nurse & Midwife density, 2005 (Per 10 000 Population).
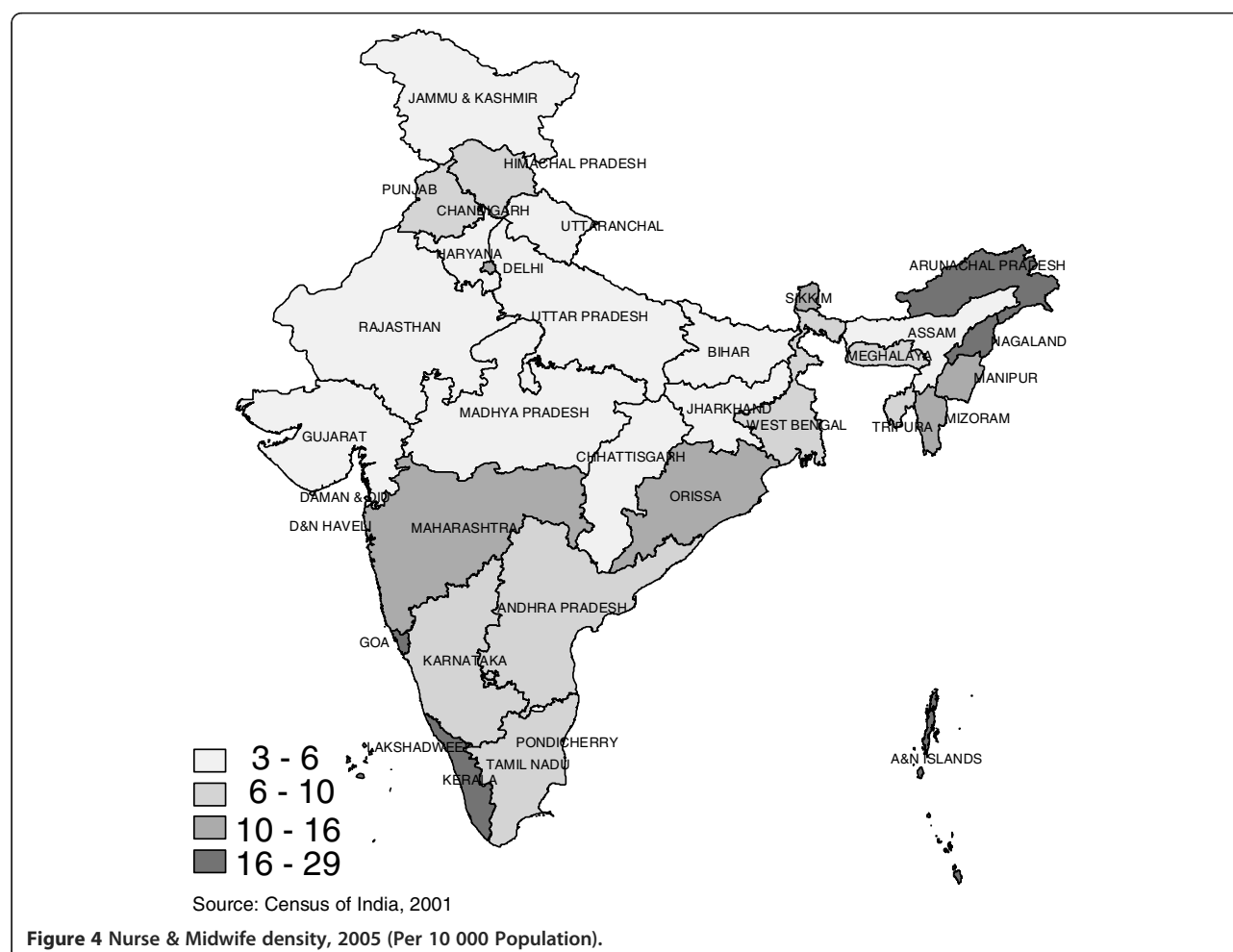
more than five hundred thousand ASHAs to the health workforce [10]. Further, nearly one million community workers for the Integrated Child Development Scheme [11] are also not included in the health workforce estimates. Both these groups of health workers would add a significant number to the health workforce, especially in rural areas. The inclusion of community workers would increase the size of the health workforce in India by nearly 80%.

Workforce density and health
States with higher health worker density tend to have lower infant mortality rates and better health, more generally (Figure 8). Similarly, positive associations are observed for immunizations and attended deliveries (results not shown). Bihar and Uttar Pradesh have low health worker density and poor health, while Goa and Kerala are at the opposite extreme. Interestingly, there is considerable variation in infant mortality for given density levels indicating that there are several factors other than workforce availability which influence health and service utilization. It also suggests that some states have more efficient health workers.

Higher per capita state spending on health, workforce density and health appear to be associated. In general, states with higher per capita health spending have higher workforce density and better health outcomes. Again, Goa with higher government spending on health has a higher health worker density and substantially lower infant mortality compared to states such as Bihar and Uttar Pradesh. This is expected since the majority of state health spending is on workforce salaries.

Discussion and conclusion
In many developing countries such as India, policy makers lack basic information on the health workforce which handicaps effective planning and management. Building a reliable and comprehensive information system will require fundamental changes in the scope and manner in which workforce data are collected. Some of these changes are relatively easy to implement; for example, maintaining live registers for different cadres of health workers. Other measures such as registering unqualified health workers are more challenging but vital to be able to better regulate health providers. The

Note: Numbers on the Bars Indicate Density (Per 10,000 Population)
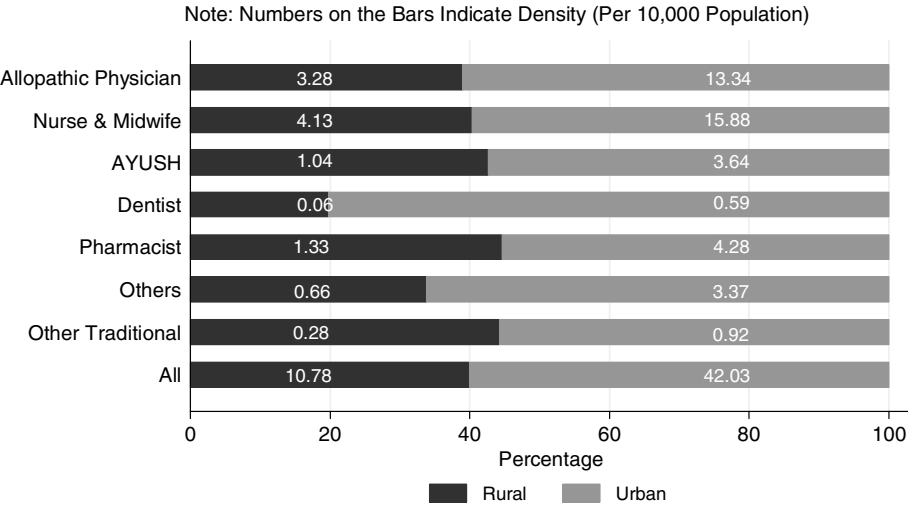
Source: Census of India 2001

AYUSH = Ayurvedic, Yoga, Unani; Others = Dietician & Nutritionist, Opticians, Dental Assistant, Physiotherapist, Medical Assistant & Technician and Other Hospital Staff;
Other Traditional = Traditional Medicine Practitioner, Faith Healer

Figure 5 Rural–urban distribution of health workers in India, 2005.

level at which workforce information is collected is also important. Current routine sources of workforce information are typically available only at the state level. Disaggregating this information to the district level will make it considerably more useful for resource management for several reasons. India has large districts with considerable variation in population and geography between districts within states. Further, health systems planning is now done upwards from the district level which makes it important to have reliable information on health workers in a district.

Information contained in non-routine information sources can provide a rich and comprehensive description of the health workforce. This study illustrates the use of the Census and household surveys for this purpose. Comparisons between the NSS and Census indicate that the latter has good validity. Because of the opaque way in which professional councils in India count health workers it is not possible to say anything about the validity of officially reported health workforce estimates.

The Census results paint a dismal picture of the health workforce landscape. For one, there is an overall deficit
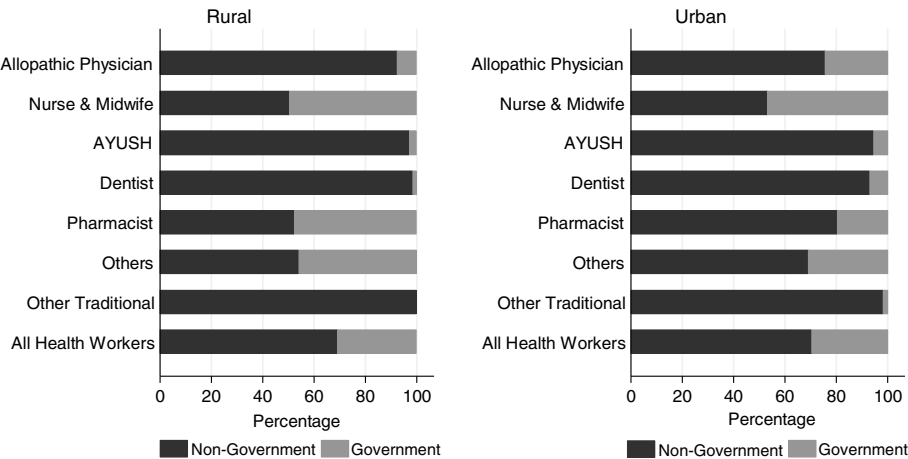
Figure 6 Distribution of health workforce by sector, 2005.

Figure 7 Female doctor density, 2005.
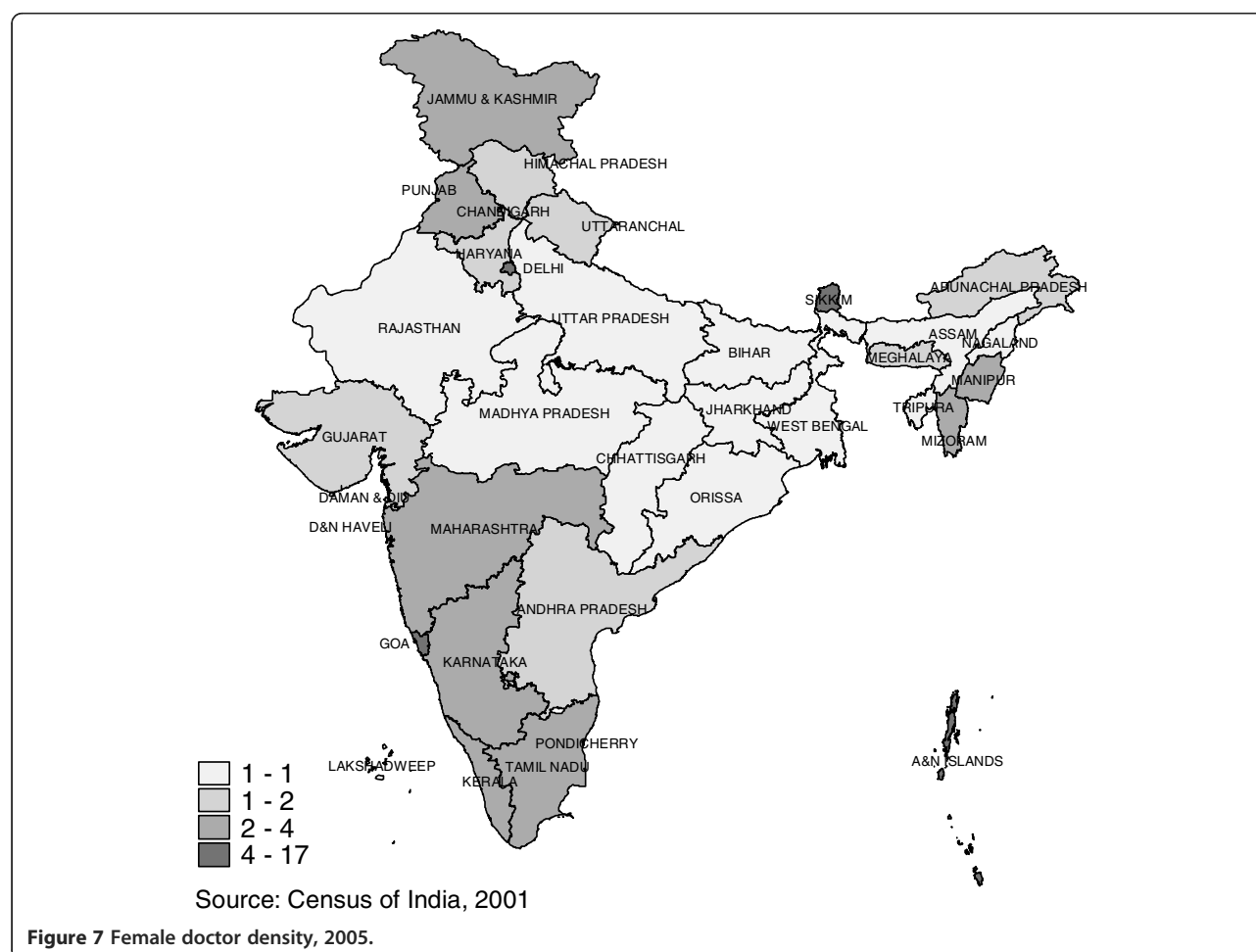
in the number of qualified health workers; the estimated density of allopathic physicians, nurses and midwifes (13.4) in 2005 was about half of the WHO benchmark of 22.8 workers of these categories per 10 000 population associated with achieving 80% deliveries attended by skilled personnel in cross-country comparisons [12]. When adjusted for possible inclusion of unqualified providers, the level may be as low as one fourth of the WHO benchmark. This highlights both the deficit of qualified health workers in India's health sector as well as the large number of unqualified health workers operating in the workforce, particularly in rural and poor urban areas.

The geographic mal-distribution of the health workforce in India is another cause for concern. States with poor health indicators tend to have fewer health workers. While several factors drive health outcomes, having few health workers profoundly influences the ability of the health systems to deliver preventive and curative services. The large disparity in workforce density between urban and rural areas is alarming. This rural shortage is due to a lack of qualified health workers in both the public and private sector. The rural deficit indicates the difficulty

rural Indians face in accessing health care from qualified health workers and their reliance on unqualified providers. Further, efforts to increase the coverage and quality of health services in rural areas are also severely constrained by the lack of qualified health workers thereby providing lucrative opportunities for unqualified providers to fill this need. This is further compounded by a lack of regulation provided by the government and professional bodies which play a poor role in regulating even qualified health workers [13].

The reasons behind the geographic mal-distribution of qualified health workers need to be better understood through focused research on the supply side (e.g., production capacity of health workers) and the demand side (e.g., incentives to recruit and retain, institutional factors and policy environment) factors [14-17]. The large urban bias in the distribution of qualified health workers can be addressed by changing the incentive environment in which health workers operate. For this, a better understanding of the effectiveness of, and experimentation with, different strategies to attract and retain health workers in rural areas is necessary. Several of these experiments are
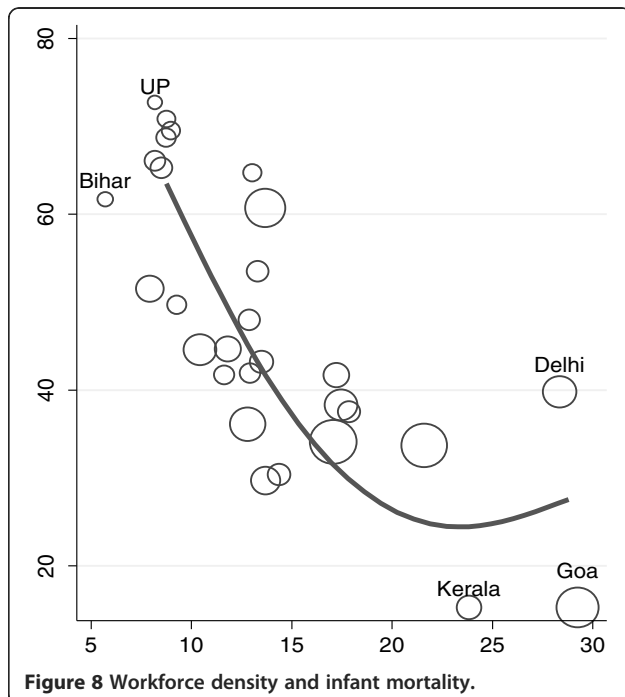
Figure 8 Workforce density and infant mortality.

currently underway in different states in India and these should be closely watched; they represent local solutions to a national problem.

Findings from this study also draw attention to the sub-optimal mix of health workers in the workforce - the nurse-doctor ratio in India is heavily skewed in favour of doctors. Having similar number of nurses and physicians is widely seen internationally as a significant imbalance in the human resource skill mix. In comparison, countries like the United States of America and the United Kingdom have nurse-physician ratios of 3 and 5, respectively [1]. According to the 1993 World Development Report, as a rule of thumb, the ratio of nurses to doctors should exceed 2:1 as a minimum with 4:1 or higher considered more satisfactory for cost-effective and quality care [18]. The limited presence of nurses in India's health workforce is a reflection of the poor representation of female health workers, particularly doctors, in the workforce. This underrepresentation of women indicates forgone opportunities for women to participate in the health workforce and will likely have an effect on the uptake of maternal health services, particularly in rural areas.

Nurses and other mid-level cadres of health workers can deliver many of the basic clinical and public health services, particularly at the community level, at a lower cost than trained physicians. Further, such cadres are likely to be more amenable to join government service, as nurses in India are (see Figure 6), and more easily placed in underserved areas. Already in two states (Chhattisgarh and Assam), non-physician clinicians have

been deployed to address the rural health worker deficit. The use of such cadres to deliver certain basic clinical services offers a way of reducing the substantial doctor deficit in rural India.

The estimates derived from the Census closely match those from the NSS, thereby suggesting that the Census estimates have good validity. However, the accuracy of workforce information from non-routine sources such as the Census and household surveys can be improved in several ways. For one, information on self-reported occupations should be crosschecked with the reported educational qualifications. This helps in separating out qualified and less qualified health workers and produces more reliable estimates for both. Secondly, the current classification codes used in the census are not sensitive enough to detect some health worker cadres such as community health workers, traditional birth attendants and community based nutrition workers. With India investing in these types of health workers in a major way, enumerating them is all the more important.

Endnotes

[a] The term RMP comes from the registration decades ago of non-physician providers with limited or in some cases no qualifications. Despite changes in the regulations, today most RMPs are not "registered" nor recognized, yet the term persists.

[b] Estimates presented in this section do not distinguish between qualified and unqualified health workers, unless specifically stated.

Author details
[1]Public Health Foundation of India, New Delhi, India. [2]Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA. [3]Harvard School of Public Health, Boston, MA, USA.

References
1. World Health Organization: *Working Together for Health – World Health Report 2006, in World Health Report*. Geneva, Switzerland: World Health Organization; 2006.
2. Joint Learning Initiative: *Human Resources for Health – Overcoming the Crisis*. Boston, USA: Joint Learning Initiative, Harvard University and World Health Organization; 2004.
3. Anand S, Barnighausen T: **Human resources and health outcomes: cross-country econometric study.** *Lancet* 2004, **364**:1603–1609.
4. Government of India: *National Occupational Classification*.; . Available from: http://dget.nic.in/nco/jobdescription/welcome.html.
5. Rao KD, Bhatnagar A, Berman P: **India Health Beat, Volume 1**. In *India's health workforce: size, composition and distribution*. Edited by La Forgia J, Rao KD. New Delhi: World Bank, New Delhi and Public Health Foundation of India; 2009:3.

6. Banerjee A, Deaton A, Duflo E: **Wealth, health, and health services in rural Rajasthan.** *Am Econ Rev* 2004, **94:**326–330.
7. World Health Organization: *Not Enough Here. . . Too Many There – Health Workforce in India*. New Delhi, India: World Health Organization, Country Office for India; 2007.
8. 8. Census of India: *Census of India, G.o.I*. New Delhi:; 2001. http://www.censusindia.gov.in.
9. Rao KD, Bhatnagar A, Berman P, Saran I, Raha S: *India's Health Workforce: Size, Composition and Distribution. HRH Technical Report #1*. New Delhi, India: Public Health Foundation of India and the World Bank; 2008. Accessed from http://www.hrhindia.org/assets/images/Paper-I.pdf.
10. Government of India: *Accredited Social Health Activists*. New Delhi: National Rural Health Mission; 2007. Ministry of Health and Family Welfare, Government of India.
11. Government of India: *Integrated Child Development Scheme*. New Delhi: Ministry of Health and Family Welfare, Government of India; 2007.
12. Anand S, Barnighausen T: **Health workers and vaccination coverage in developing countries: an econometric analysis.** *Lancet* 2007, **369:**1277–1285.
13. Rao M, Rao KD, Kumar AK, Chatterjee M, Sundararaman T: **Human resources for health in India.** *Lancet* 2011, **377:**587–598.
14. Berman P, Raha S, Rao KD: *India Health Beat*, Volume 1. In *Tackling health human resource challenges in India: Initial observations for setting priorities for action*. Edited by La Forgia J, Rao KD. New Delhi: World Bank, New Delhi and Public Health Foundation of India; 2009:1.
15. Raha S, Berman P, Bhatnagar A: *India Health Beat*, Volume 1. In *Career preferences of medical and nursing students in Uttar Pradesh*. Edited by La Forgia J, Rao KD. New Delhi: World Bank, New Delhi and Public Health Foundation of India; 2009:6.
16. Rao KD, Ramani S, Murthy S, Hazarika I, Khandpur N, Chokshi M, Khanna S, Vujicic M, Berman P, Ryan M: *Health worker attitudes toward rural service in India: Results from Qualitative Research*. HNP Discussion Paper. Washington DC: The World Bank; 2010.
17. Raha S, Berman P, Bhatnagar A: *India Health Beat*, Volume 1. In *Some priority challenges in the nursing sector in India*. Edited by La Forgia J, Rao KD. New Delhi: World Bank, New Delhi and Public Health Foundation of India; 2009:5.
18. World Bank: *World Development Report*. Washington DC, USA: World Bank; 1993.

Submit your next manuscript to BioMed Central and take full advantage of:

• **Convenient online submission**

• **Thorough peer review**

• **No space constraints or color figure charges**

• **Immediate publication on acceptance**

• **Inclusion in PubMed, CAS, Scopus and Google Scholar**

• **Research which is freely available for redistribution**

Submit your manuscript at
www.biomedcentral.com/submit

BioMed Central

Listening to the rural health workers in Papua New Guinea – The social factors that influence their motivation to work

Husna Razee [a,*], Maxine Whittaker [b], Rohan Jayasuriya [a], Lorraine Yap [a], Lee Brentnall [a]

[a] School of Public Health and Community Medicine, University of New South Wales, Sydney, NSW 2052, Australia
[b] Australian Centre for International and Tropical Health, School of Population Health, The University of Queensland, Herston, Qld 4006, Australia

ARTICLE INFO

ABSTRACT

Despite rural health services being situated and integrated within communities in which people work and live, the complex interaction of the social environment on health worker motivation and performance in Low Middle Income Countries has been neglected in research. In this article we investigate how social factors impact on health worker motivation and performance in rural health services in Papua New Guinea (PNG). Face-to-face in-depth interviews were conducted with 33 health workers from three provinces (Central, Madang, and Milne Bay) in PNG between August and November 2009. They included health extension officers, community health workers and nursing officers, some of whom were in charge of the health centres. The health centres were a selection across church based, government and private enterprise health facilities. Qualitative analysis identified the key social factors impacting on health worker motivation and performance to be the local community context, gender roles and family related issues, safety and security and health beliefs and attitudes of patients and community members. Our study identified the importance of strong supportive communities on health worker motivation. These findings have implications for developing sustainable strategies for motivation and performance enhancement of rural health workers in resource poor settings.

© 2012 Elsevier Ltd. All rights reserved.

The organizational culture of a Brazilian public hospital

A CULTURA ORGANIZACIONAL DE UM HOSPITAL PÚBLICO BRASILEIRO

LA CULTURA ORGANIZACIONAL DE UN HOSPITAL PÚBLICO BRASILEÑO

Fernanda Ludmilla Rossi Rocha[1], Maria Helena Palucci Marziale[2], Michele Cristina de Carvalho[3], Samira de Fátima Cardeal Id[4], Monica Chiodi Toscano de Campos[5]

ABSTRACT

The objective of this research was to analyze the organizational culture of a Brazilian public hospital. It is a descriptive study with quantitative approach of data, developed in a public hospital of São Paulo State, Brazil. The sample was composed by 52 nurses and 146 nursing technicians and auxiliaries. Data were collected from January to June 2011 using the Brazilian Instrument for Assessing Organizational Culture – IBACO. The analysis of the organizational values showed the existence of hierarchical rigidity and centralization of power within the institution, as well as individualism and competition, which hinders teamwork. The values concerning workers' well-being, satisfaction and motivation were not highly valued. In regard to organizational practices, the promotion of interpersonal relationship, continuous education, and rewarding practices were not valued either. It becomes apparent that traditional models of work organization support work practices and determine the organizational culture of the hospital.

DESCRIPTORS

Nursing
Organizational culture
Health administration
Health Services

RESUMO

O objetivo deste estudo foi analisar a cultura organizacional de um hospital público brasileiro. Trata-se de pesquisa descritiva, com abordagem quantitativa dos dados, desenvolvida em um hospital público do Estado de São Paulo. A amostra foi composta por 52 enfermeiros e 146 técnicos e auxiliares de enfermagem. Os dados foram coletados entre janeiro e junho de 2011, sendo utilizado o Instrumento Brasileiro para Avaliação da Cultura Organizacional – IBACO. A análise dos valores organizacionais demonstrou existência de rigidez hierárquica, centralização de poder, individualismo e competição no trabalho, dificultando o desenvolvimento do trabalho em equipe. Valores de bem-estar, satisfação e motivação dos trabalhadores foram pouco considerados. Em relação às práticas organizacionais, a promoção de relações interpessoais, as práticas de educação permanente e a recompensa dos trabalhadores também foram pouco valorizadas. Fica evidenciado que modelos tradicionais de organização do trabalho sustentam as práticas de trabalho do hospital e determinam a cultura organizacional.

DESCRITORES

Enfermagem
Cultura organizacional
Administração em saúde
Serviços de Saúde

RESUMEN

El objetivo de este estudio fue analizar la cultura organizacional de un hospital público brasileño. Corresponde a una investigación descriptiva con enfoque cuantitativo de los datos, desarrollada en un hospital público en el estado de São Paulo. La muestra estuvo conformada por 52 enfermeras y 146 técnicos y auxiliares de enfermería. Los datos fueron recogidos entre enero y junio de 2011, y se utilizó el Instrumento Brasileño para la Evaluación de la Cultura Organizacional - IBACO. El análisis de los valores de la organización demostró la existencia de una jerarquía rígida, la centralización del poder, el individualismo y la competencia en el trabajo, dificultando el desarrollo del trabajo en equipo. Los valores de bienestar, satisfacción y motivación de los trabajadores fueron poco considerados. En relación a las prácticas de la organización, la promoción de las relaciones interpersonales, las prácticas de educación continua y las prácticas de recompensa de los trabajadores también fueron infravaloradas. Se evidencia que los modelos tradicionales de organización del trabajo soportan las prácticas de trabajo del hospital y determinan la cultura organizacional.

DESCRIPTORES

Enfermería
Cultura organizacional
Administración en salud
Servicios de Salud

303

INTRODUCTION

Culture is a historical and social construction that comprises knowledge, morality and standards that guide the behavior of a group; it is characterized by individuals' experiences, beliefs and values, which can be learned and shared and transmitted from generation to generation[1].

Culture can represent more than a set of rules, habits and artifacts. It also means an organism full of meanings where individuals from the same group share them, functioning as a collective pattern of identification of different groups with their specific ways of thinking, feeling and acting[2].

Organizations are seen as micro societies included in a social context with which they interact, influencing it and being influenced by it. They represent cultural, symbolic and imaginary systems, composed of a structure of values and standards that condition the behavior of its members and guide their practices[3].

Organizations are composed of people who constantly interact with each other, and are thereby considered to be dynamic processes in which the cultural formation of individuals and specific groups take place on a continuous basis[4]. Therefore, workers are agents in organizations and their personal values become elements of the organizations' culture[2].

An organizational culture can be seen as a process of construction and sharing of the reality of an institution. It plays an essential role in the lives of organizations and can be seen as a set of meanings shared by their members, which configures a collective identity[5].

In this context, the perceptions of the members of an organization express shared beliefs and represent organizational values, forming the core of organizational culture. Organizational values can be considered formative aspects of the organization's basis, constituting the diverse dimensions of the institution and have the function of guiding life in a company and the daily behavior of workers. Organizational values can therefore influence the workplace and the functioning of organizations, determining common directions for workers[6-7]. Moreover, organizational values have also been shown to impact quality of care and safety culture in different health services worldwide[8-11].

Given our understanding concerning the inter-relationships among individuals, organizational culture and health organizations, we became motivated to conduct this study whose objective was to analyze the organizational culture of a public hospital from the perspective of nursing workers.

METHOD

This descriptive study with quantitative approach was based on the framework of Hofstede[12]. It was developed in a public hospital in the interior of São Paulo State, Brazil, classified as a high-complexity hospital, linked to the Unified Health System (SUS).

The study's population was represented by 213 nurses and 923 nursing technicians and auxiliaries working in different sectors in the institution: hospitalization units in the Surgical Ward, Intensive Therapy units, and Ambulatory units of Medical Specialties.

Stratified random sampling was used to define the sample size. Using a precision level of 5%, N_1 = 213, N_2 = 923 and maximizing equal proportions of workers who have a negative view of the organizational culture, that is, $p_1 = p_2 = 0.50$, we have the total sample sizes for the two categories, totaling a proportion of 10%, were given by: n_1 = 62 (number of nurses) and n_2 = 265 (number of nursing technicians and auxiliaries).

Inclusion criteria: nursing workers who were not on leave during the data collection period and answered at least 50% of the questions of the forms used to collect data.

The data collection instrument was composed of two parts. The first part addressed the categorization of workers (age, gender, marital status, education, workplace) and the second part comprised the Brazilian Instrument for Assessing Organizational Culture – IBACO[13].

IBACO was developed by Brazilian researchers based on the Hofstede's Theory[12]. It objective is to assess values and practices that shape the culture of an organization from the perspective of workers. This instrument presents 55 items distributed into four factors related to organizational values: values concerning cooperative professionalism, rigidity in the hierarchical structure of power, competitive and individualist professionalism, and wellbeing and satisfaction. IBACO also presents 39 items distributed into three factors related to organizational practices: external integration practices, rewarding and training practices, and practices concerning the promotion of interpersonal relationships.

Data were collected from January to June 2011 through the application of the instrument in workplaces during the work shifts of the study's participants, who signed a consent form.

The study's project was submitted to and approved by the institution's Ethics Research Committee (protocol 3117/2010). The study complied with guidelines provided by Resolution 466/2012 concerned ethical standards for research involving human subjects[14].

RESULTS

A total of 52 out of the 62 selected nurses agreed to participate in the study and returned the completed instruments. Two nurses refused to participate in the study; three were no longer working in the facility; one was on health leave, and four nurses had been transferred to other units and were therefore excluded from the sample.

We verified that 16 out of the 52 participants were coordinators (30.77%); women (96.15%), and workers aged from 31 and 50 years old (71.16%); married individuals (59.62%) predominated; ten nurses (19.23%) had master's degrees and only seven nurses (13.46%) reported another job.

Of the total of 265 nursing auxiliaries and technicians selected, 146 participated in the study. Of the 119 participants who did not participate in the study, 42 refused to participate, 28 did not return the questionnaire, 23 were on sick leave, 20 were on vacation, and six no longer worked in the facility.

We verified that 78.1% of these workers were women; 64.5% were 31 to 50 years old; 54.1% were married; 71.3% had completed secondary school; 85.6% were nursing auxiliaries and 82.2% did not report another job.

Values and practices that characterize the organizational culture

IBACO[13] presents 94 statements, 55 of which are related to four types of organizational values: Cooperative Professionalism (CP), Rigidity in the Hierarchical Structure (RH), Competitive and Individualistic Professionalism (CIP), and values associated with the workers' Satisfaction and Well Being (SW). The remaining 39 statements are related to three categories of organizational practices: External Integration (EI) practices, Rewarding and Training (RT) practices, and Interpersonal Relationship Promotion (IRP) practices.

CP concerns values concerning the valorization of workers who perform tasks efficiently and competently, showing a spirit of collaboration, dedication, professionalism, and initiative, therefore, contributing to the achievement of the organization's goals. RH refers to values that define the organization as a system of centralized authority, not acknowledging the human element and hindering professional growth. CIP refers to the acknowledgment of individual competence and performance in result-driven tasks, not acknowledging collective work. SW, in turn, refers to the acknowledgement of workers' wellbeing, satisfaction and motivation.

EI refers to practices related to strategic planning actions, decision-making and serving the organization's external client. RT refers to practices linked to rewarding and training systems for workers and also to meeting the needs of internal clients. IRP refers to practices concerning the promotion of interpersonal relationships and worker satisfaction, favoring internal cohesion.

In order to answer the questionnaire, the participant checks, based on his/her perception, the statement that *somewhat* (one point), *little* (2 points), *reasonably* (3 points), *very much* (4 points) or *totally* (5 points) applies to the organization. The average of scores assigned by the respondents to each factor is computed for data analysis. Scores range from 1 to 5, while the higher the result, the higher the degree to which the organization's value or practice, measured by that specific factor, is present in the organization.

The answers provided by the nurses resulted in an average score of 3.06 for the values concerning cooperative professionalism; 3.22 for values related to hierarchical rigidity and the centralization of power; 2.27 for individualistic professionalism and competition at work; 2.32 for values related to wellbeing and the motivation of workers. In relation to organizational practices, we verified an average of 3.51 for external integration; 2.20 for rewarding and training practices, and 2.94 for practices related to the promotion of interpersonal relationships at the hospital.

The answers provided by the nursing auxiliaries and technicians obtained an average score of 2.64 for cooperative professionalism; 2.81 for hierarchical rigidity and the centralization of power; 2.19 for individualistic professionalism and competition at work; 2.13 for worker well-being and motivation. In relation to organizational practices, we verified an average of 3.44 for external integration practices, 1.87 for rewarding and training practices, and 2.57 for practices related to the promotion of interpersonal relationship within the organization. Data are presented in Table 1.

No discrepancies were found between the answers of the two groups, despite the higher average scores obtained by the answers provided by nurses compared to those provided by nursing auxiliaries and technicians.

Table 1 - Average scores of organizational values and practices from the perspective of nursing workers in a public hospital in the interior of the state of São Paulo, Brazil 2011

Values/ Practices	Nurses (n=52)				Nursing technicians and auxiliaries (n=146)			
	Average	Median	Standard deviation	Minimum-Maximum	Average	Median	Standard deviation	Minimum - maximum
CP	3.06	3.20	0.48	1.9-4.4	2.64	2.60	0.72	1.1-4.3
RH	3.22	3.20	0.39	2.4-4.4	2.81	2.80	0.58	1.2-4.5
CIP	2.27	2.30	0.40	1.5-3.0	2.19	2.05	0.67	1.0-5.0
SW	2.32	2.40	0.51	1.2-3.5	2.13	2.10	0.69	1.0-4.0
EI	3.51	3.50	0.41	2.6-4.4	3.44	3.50	0.59	1.8-4.7
RT	2.20	2.30	0.40	1.2-3.0	1.87	1.85	0.45	1.0-3.2
IRP	2.94	2.90	0.50	1.8-4.0	2.57	2.50	0.64	1.1-4.4

Note: (n=198)

The organizational culture of a Brazilian public hospital
Rocha FLR, Marziale MHP, Carvalho MC, Id SFC, Campos MCT

Rev Esc Enferm USP
2014; 48(2):303-9
www.ee.usp.br/reeusp/
305

DISCUSSION

Based on the study of the psychodynamics of health work, we assert that the organizational structure and management model adopted by an organization determine the work processes and behaviors of workers. Additionally, we understand that there are values, beliefs, habits and practices implicit in work places that are shared among the members of an organization, defining behavioral standards and ways of organizing work.

This set of values and practices, expressed through rituals, myths, habits and beliefs common to workers, represents the organizational culture, which defines the characteristics of each institution and is considered to be the foundation of an organization[4].

The analysis of organizational values of the studied hospital shows that nurses find the existence of hierarchical rigidity and the centralization of power in the institution (average RH=3.22); believed there was cooperation among workers (average CP=3.06), though they perceived individualism and competition (average CIP=2.27), each of which hinders the development of teamwork-based practices. They also believed that values associated with the workers' well-being, satisfaction and motivation were seldom acknowledged by the hospital (average SW=2.32). In relation to organizational practices, the nurses believed in the adoption of strategic planning actions within the institution (average EI=3.51), but considered interpersonal relationship promotion (average IRP=2.94), continuous education and the rewarding of workers (average RT=2.20) to be little valued by the institution.

The answers of nursing technicians and auxiliaries also showed they believed there was cooperation and collaboration (average CP=2.64), despite the existence of competition among workers; there was hierarchical rigidity and the centralization of power in the institution (average RH=2.81), while workers' well-being and motivation were seldom acknowledged by the institution (average SW=2.13). In relation to organizational practices, the promotion of interpersonal relationships (average IRP=2.57) and training interventions and worker rewards (average RT=1.87) were under-valued within the hospital.

Therefore, this study's results reveal that the values and practices that define the culture of the studied hospital are closely related to the organization and management model adopted by the facility. Hence, the institution's culture presents elements related to rigid organizational structure and the centralization of power; existence of competition among workers, individualism and difficulty developing teamwork; lack of interest on the part of the hospital in the workers' well-being and the promotion of interpersonal relationships, disregarding the needs of workers.

Organizational culture is a result of a society's cultural dynamics, in which organizations are included[12]. Seeking to confirm this assumption, the researchers performed a study in 76 countries, including Brazil, initially identifying the cultural elements present in all the nations. After identifying the countries' cultural characteristics, they performed a study of different organizations within these countries and verified that organizational culture is directly influenced by national culture.

These studies enabled the development of theoretical assumptions related to different dimensions of the organizational culture. The dimensions are dynamic and interdependent and represent the practices and values that characterize the culture of organizations. Among these dimensions, we highlight: process-oriented versus result-oriented cultures; work-oriented versus worker-oriented; weak control over work versus strong control over work in organizations[12].

According to these authors, process-oriented and work-oriented organizations present rigid structures, the centralization of power, strong work specialization, formal relationships and difficult communication. Processes are highly controlled, as are workers, who suffer pressure from managers while performing their tasks, are not allowed to participate in decision-making and feel their personal problems do not matter to the organization.

On the contrary, result- and worker-oriented organizational cultures present less hierarchical levels and participatory decision-making, concerning for workers' needs, which is expressed through valuing their well-being and satisfaction.

Brazilian public health services are examples of process- and work-oriented organizations. Their hierarchical structure is predominantly authoritarian with centralized decision-making, excessive control of procedures, rigid administration not focused on local needs, and a context in which change is difficult due to a lack of entrepreneurial behavior[2,15].

These findings corroborate other national studies addressing the influence of the Brazilian culture on organizations, showing that Brazilian history reflects on the history of the Brazilian administration and consequently on the culture of public organizations.

Similarly to the Brazilian cultural history, the history of Brazilian administration is marked by a constant struggle between a formal, centralizing and ritualistic bureaucracy that is averse to change, which is linked to conservative economic interests, and a modernizing tendency that seeks news management models that move toward globalization and neoliberalism[16].

For this reason, Brazilian public organizations present authoritative organizational structures with excessive centralization of decision power and excessive control of procedures, which leads to rigid administration styles and paternalism[15]. There is an attachment to rules, routines and to power and the overvaluation of hierarchy,

306

Rev Esc Enferm USP
2014; 48(2):303-9
www.ee.usp.br/reeusp/

The organizational culture of a Brazilian public hospital
Rocha FLR, Marziale MHP, Carvalho MC, Id SFC, Campos MCT

characteristics that hinder changing processes and that define organizational values and beliefs, as well as the human resources policy adopted by the company[2].

Additionally, these elements are related to traditional management models and work organization, present from the time productive structuring of health services and nursing in Brazil. The traditional models are based on the logic of legal authority inherited from the classical conception of administration and characterized by hierarchical and authoritative structures, in which communication and interpersonal relationships are formalized, tasks are fragmented, with an emphasis on organization and work processes with devaluation of individuals[17].

Authority and the social division of nursing work, often embedded in rigid hierarchies, lead to estrangement and conflicts among workers[18], which may explain a lack of cooperation among workers and the difficulty that exists in developing interdisciplinary work and teamwork in institutions.

Conflictive relationships in the health work result from its complexity, since the health field involves different professions, each with its own specificity and historically constructed culture. In this context, nurses' work is based on the profession's historical and cultural context. Nurses play both managerial and care roles and are the element responsible for the composition of service, interpersonal relationships and the coordination of work. Moreover, the management role of nurses is marked by control mechanisms and power related to military and religious influences inherent to the profession's history[19].

In addition to these characteristics, healthcare delivery follows the principles of the biomedical model, which values medical knowledge, specialization of actions, submission of other professions to physicians, and a fragmented view of the human being, which in turn leads to fragmented care, the lack of humanization and integrality in care, and a lack of teamwork and interdisciplinary work. The main consequence of this process is low quality care delivered to patients.

This work context in the heath field can lead to a lack of motivation and professional dissatisfaction, hindering workers from developing their full potential and skills and, consequently, harming their professional growth, potentially even leading to occupational diseases.

Unfavorable conditions impeding workers from having freedom and control over their work may generate fear, insecurity, despair and psychological suffering, which in turn can trigger anxiety, depression, personality disorders and burnout syndrome. Occupational mental disorders result from the sum of difficulties faced daily in the work context and the interaction of these factors with the workers' individual characteristics[20].

Burnout represents a process that develops in the interaction of workplace characteristics and the workers' personal characteristics, manifesting itself as burnout or emotional exhaustion, reduced personal accomplishment and depersonalization[20]. A study performed with health workers indicates that there is an association between organizational values and the occurrence of burnout syndrome. The results enabled the authors to understand this syndrome as a process with multiple determinants, in which organizational values are important elements. The promotion of human values would represent a strategy to prevent this syndrome[21].

It's been observed, however, a productive and organizational restructuring process in the health work context, as the taylorist-fordist model has been depleted and new productive scenarios emerge due to the need to revise work organization and management. In the nursing field, integral care practices with an interdisciplinary focus stand out, as do those related to the humanization of the workplace, to the participatory management of services, continuous education, as a way to ensure the continuous development of workers, and practices related to motivational actions[22].

Additionally, contemporary health practices have become the focus of attention due to new conceptions of the human being, currently seen as a social being and agent of care[23]. The valorization of the human dimension and feelings present in work relations are highlighted in a process in which interdisciplinary teams are implemented with greater integration and cooperation among the different professionals[24]. Moreover, organizational values related to the valorization of the human dimension have been considered essential to enhance the quality of care in health services worldwide[8-11].

The demands for nursing that emerge have shown that the health work should not be fragmented, impersonal or devoid of affection. On the contrary, the establishment of bonds among the different social actors is needed in order to welcome and empower people, which requires one to understand health as a right, including the health of workers. The routine, mechanical work that is, devoid of pleasure, creativity and subjectivity, should be replaced by pleasant, bold, and creative practices, moving toward the reconstruction of a new way of providing care, based on the satisfaction of individual needs in the workplace, whose solutions are not found in any manual of rules and routines[25].

Similarly, challenges resulting from the implementation of the principles of universality, equity, and integrality in the SUS require a review of the role of each institution in its relationship with users, being essential to decentralizing power and leveling relationships, developing more autonomy and new professional competencies.

CONCLUSION

This study's results provide evidences of the relationship between the organizational culture and the

The organizational culture of a Brazilian public hospital
Rocha FLR, Marziale MHP, Carvalho MC, Id SFC, Campos MCT

Rev Esc Enferm USP
2014; 48(2):303-9
www.ee.usp.br/reeusp/
307

A HEALTH POLICY AND SYSTEMS RESEARCH READER ON HUMAN RESOURCES FOR HEALTH   479

management model and work organization adopted by the health institution. Traditional administration models and principles of scientific organization of work, historically incorporated by managers and workers in the institution, together support work practices and determine organizational values and practices.

Hence, based on the perception of workers, organizational values and practices permeate hierarchy, assert control over work and rigidity, individualism, and competition among individuals and the devaluation of workers. This conception of work leads to a fragmentation of care delivered to patients, and also hinders teamwork, the development of interdisciplinary health care actions and the achievement of quality care delivery.

Moreover, these characteristics of work within the facility lead to dissatisfaction and lack of motivation as the workers' needs and competencies are not taken into account, hindering professional growth and compromising the quality of care even further.

Hence, we deem it necessary to transform heath care practices through the adoption of new forms of management and work organization, which have been studied and implemented in diverse institutions in the attempt to replace traditional models, advocating participatory management, teamwork, acknowledgement of individuals' needs (of both patients and workers), integrality of care, the humanization of interpersonal relationships, and comprehending the human being as agent of health actions.

We believe, however, that this change will be effective only when values shared among individuals, and which form the culture of organizations, also change. Such a process can contribute to the improvement of the quality of health care and should be initiated by managers and work coordinators.

REFERENCES

1. Helman CG. Cultura, saúde e doença. 5ª ed. Porto Alegre: Artes Médicas; 2009.

2. Pires JCS, Macedo KB. Cultura organizacional em organizações públicas no Brasil. Rev Adm Pública. 2006;40(1):81-105.

3. Schein EH. Organizational culture and leadership. 4th ed. San Francisco: Jossey-Bass; 2010.

4. Santos SR. Cultura nas instituições de saúde e suas relações com a identidade individual. Cogitare Enferm. 2007;12(2):229-35.

5. Vaitsman J. Cultura de organizações públicas de saúde – notas sobre a construção de um objeto. Cad Saúde Publica. 2000;16(3):847-50.

6. Tamayo A, organizador. Cultura e saúde nas organizações. Porto Alegre: Artmed; 2004.

7. Azevedo CS, Braga Neto FC, SÁ MC. Indivíduo e a mudança nas organizações de saúde: contribuições da psicossociologia. Cad Saúde Pública 2002;18(1):235-47.

8. Tyagi RK, Cook L, Olson J, Belohlav J. Healthcare technologies, quality improvement programs and hospital organizational culture in Canadian hospitals. BMC Health Serv Res. 2013;13:413.

9. Belohlav JA, Cook LS, Olson JR, Drehmer DE. Core values in hospitals: a comparative study. Qual Manage J. 2010;7(4):36-50.

10. Khatri N, Halbesleben JRB, Petroski GF, Meyer W. Relationship between management philosophy and clinical outcomes. Health Care Manage Rev. 2007; 32(2):128-39.

11. Stock GN, McFadden KL, Gowen CR III. Organizational culture, critical success factors, and the reduction of hospital errors. Int J Prod Econ. 2007;106(2):368-92.

12. Hofstede G, Hofstede GJ, Minkov M. Cultures and organizations: software of the mind. Intercultural cooperation and its importance for survival. 3rd ed. New York: McGraw Hill; 2010.

13. Ferreira MC, Assmar EML. Cultura organizacional. In: Siqueira MMM, organizador. Medidas do comportamento organizacional: ferramentas de diagnóstico e de gestão. Porto Alegre: Artmed; 2008. p.125-38.

14. Conselho Nacional de Saúde. Resolução n. 466, de 12 de dezembro de 2012. Dispõe sobre as diretrizes e normas regulamentadoras de pesquisas envolvendo seres humanos [Internet]. Brasília; 2012 [citado 2013 set. 17]. Disponível em: http://conselho.saude.gov.br/resolucoes/2012/Reso466.pdf

15. Carbone PP. Cultura organizacional no setor público brasileiro: desenvolvendo uma metodologia de gerenciamento da cultura. Rev Adm Pública. 2000;34(2):133-44.

16. Castor BVJ, José HAA. Reforma e contra-reforma: a perversa dinâmica da administração pública brasileira. Rev Adm Pública. 1999;32(6):97-111.

17. Matos E, Pires D. Teorias administrativas e organização do trabalho: de Taylor aos dias atuais, influências no setor saúde e na enfermagem. Texto Contexto Enferm. 2006;15(3):508-14.

18. Vaghetti HH, Padilha MICS, Lunardi Filho WD, Lunardi VL, Costa CFS. Significados das hierarquias no trabalho em hospitais públicos brasileiros a partir de estudos empíricos. Acta Paul Enferm. 2011;24(1):87-93.

308

Rev Esc Enferm USP
2014; 48(2):303-9
www.ee.usp.br/reeusp/

The organizational culture of a Brazilian public hospital
Rocha FLR, Marziale MHP, Carvalho MC, Id SFC, Campos MCT

480   **A HEALTH POLICY AND SYSTEMS RESEARCH READER ON** HUMAN RESOURCES FOR HEALTH

19. Prochnow AG, Leite JL, Erdmann AL, Trevizan MA. O conflito como realidade e desafio cultural no exercício da gerência do enfermeiro. Rev Esc Enferm USP 2007;41(4):542-50.

20. Brasil. Ministério da Saúde; Organização Pan-Americana da Saúde. Doenças relacionadas ao trabalho: manual de procedimentos para os serviços de saúde. Brasília; 2001.

21. Borges LO, Lima MAS, Vilela EC, Morais SSG. A síndrome de Burnout e os valores organizacionais: um estudo comparativo em hospitais universitários. Psicol Reflex Crít. 2002;15(1):189-200.

22. Abrahão JI, Pinho DLM. As transformações do trabalho e desafios teórico-metodológicos da ergonomia. Estudos Psicol (Natal). 2002;7(n.esp):45-52.

23. Erdmann AL, Andrade SR, Mello ALSF, Meirelles BHS. Gestão das práticas de saúde na perspectiva do cuidado complexo. Texto Contexto Enfem. 2006;15(3):483-91.

24. Kurcgant P, Massarollo MCKB. Cultura e poder nas organizações de saúde. In: Kurcgant P, coordenadora. Gerenciamento em enfermagem. 2ªed. São Paulo: Guanabara Koogan; 2010. p. 23-33.

25. Rossi FR, Silva MAD. Fundamentos para processos gerenciais na prática do cuidado. Rev Esc Enferm USP. 2005;39(4):460-8.

Correspondence address to: Fernanda Ludmilla Rossi Rocha
Av. Bandeirantes, 3900
CEP 14040-902 – Ribeirão Preto, SP, Brazil

A HEALTH POLICY AND SYSTEMS RESEARCH READER ON HUMAN RESOURCES FOR HEALTH

A Multifaceted Intervention to Improve Health Worker Adherence to Integrated Management of Childhood Illness Guidelines in Benin

| Alexander K. Rowe, MD, MPH, Faustin Onikpo, MD, MPH, Marcel Lama, MD, MPH, Dawn M. Osterholt, MD, MSPH, Samantha Y. Rowe, PhD, MPH, and Michael S. Deming, MD, MPH

To reduce the enormous burden of child mortality in developing countries, the World Health Organization (WHO) and other partners developed the Integrated Management of Childhood Illness (IMCI) strategy.[1] IMCI has 3 components: improving case management practices of health workers (especially in outpatient health facilities), strengthening health systems, and promoting community and family health practices. To improve case management practices, IMCI encourages the use of evidence-based guidelines for identifying and treating the leading causes of child deaths (e.g., pneumonia, diarrhea, and malaria[2]) in first-level health facilities that lack sophisticated diagnostic equipment and treatments. WHO recommends implementing the guidelines through an 11-day in-service training course, a follow-up visit to health workers' facilities in 4 to 6 weeks to reinforce new practices, and job aids (a flipchart and wall chart of clinical algorithms, a pictorial counseling guide, and a 1-page form for recording a patient's assessments, illness classifications, and treatments). For brevity, we describe this implementation process as IMCI training.

More than 110 countries are implementing IMCI, and studies have demonstrated that the strategy can improve quality of care at health facilities[3–6] and seems to reduce mortality.[7] However, these studies also revealed substantial room for improvement in adherence to IMCI guidelines. For example, IMCI-trained health workers correctly treated only 58% to 73% of children needing an oral antimicrobial.[5,6,8,9] To improve adherence, health workers need support after IMCI training.[9]

In 1999, Benin adopted the IMCI strategy and began planning its introduction. Assistance was provided through a US-funded malaria control project, the Africa Integrated Malaria Initiative. During planning, concerns were raised about WHO's implementation approach:

Objectives. We evaluated an intervention to support health workers after training in Integrated Management of Childhood Illness (IMCI), a strategy that can improve outcomes for children in developing countries by encouraging workers' use of evidence-based guidelines for managing the leading causes of child mortality.

Methods. We conducted a randomized trial in Benin. We administered a survey in 1999 to assess health care quality before IMCI training. Health workers then received training plus either study supports (job aids, nonfinancial incentives, and supervision of workers and supervisors) or usual supports. Follow-up surveys conducted in 2001 to 2004 assessed recommended treatment, recommended or adequate treatment, and an index of overall guideline adherence.

Results. We analyzed 1244 consultations. Performance improved in both intervention and control groups, with no significant differences between groups. However, training proceeded slowly, and low-quality care from health workers without IMCI training diluted intervention effects. Per-protocol analyses revealed that workers with IMCI training plus study supports provided better care than did those with training plus usual supports (27.3 percentage-point difference for recommended treatment; *P*<.05), and both groups outperformed untrained workers.

Conclusions. IMCI training was useful but insufficient. Relatively inexpensive supports can lead to additional improvements. (*Am J Public Health*. 2009;99: 837–846. doi:10.2105/AJPH.2008.134411)

the training might not lead to long-term changes in health worker practices, and printing an IMCI recording form for each patient would be unaffordable. Therefore, we designed a package of supports to follow IMCI training and conducted a trial to evaluate them. We characterized the effectiveness and cost of the posttraining supports (primary objective) and IMCI training (secondary objective) on health care quality for all illnesses combined.

METHODS

The study area, the Ouémé and Plateau departments in southeastern Benin (Figure A, available as a supplement to the online version of this article at http://www.ajph.org), typified West Africa, with widespread poverty, weak infrastructure, endemic malaria, and high child mortality.[10,11] The trial design was a pre–post

study with randomized controls. The Ouémé and Plateau departments were divided into 2 areas (i.e., 2 units of randomization), each comprising 8 communes (small districts). We randomly chose a slip of paper from a bag to assign 1 area to receive IMCI training plus study supports and the other to receive IMCI training plus "usual supports" (Figure 1). WHO has not specified exactly what follow-up supports to IMCI training should be; usual supports were the control-area supports we assumed would have been provided in the absence of our study and generally reflected supports outside our setting. Because supervision was a key intervention and communes were each supervised by 1 person, communes were not divided. The 2 study areas were designed to be similar: each included relatively inaccessible communes, and each included part of the largest city, Porto-Novo. Communes within each study area were geographically
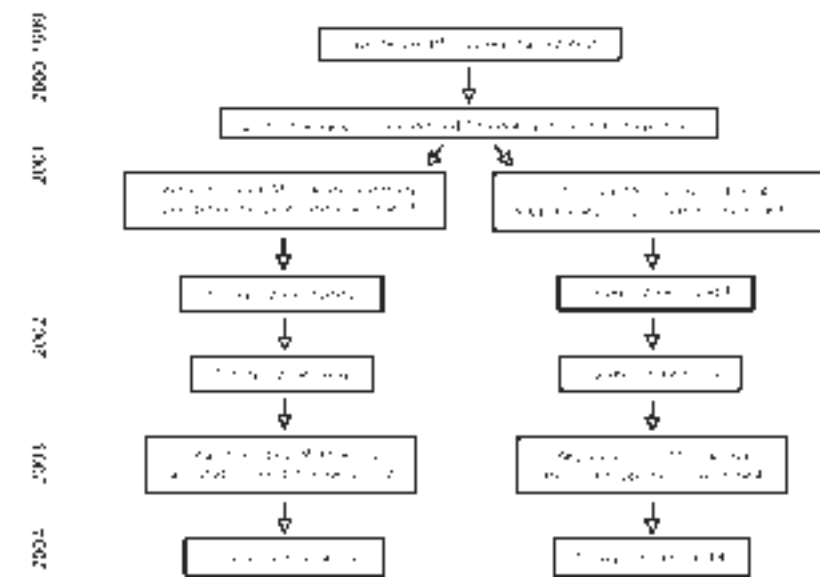
^aZones 1 and 2 were randomized as a group to be the intervention area; zones 3 and 4 were randomized as a group to be the control area. Zone 1 was the trial intervention area in which IMCI was piloted: training began in 2001, and IMCI-trained health workers received study supports. Zone 2 was the trial intervention area in which IMCI began later: training began in 2003, and IMCI-trained health workers received study supports. Zone 3 was the trial control area in which IMCI was piloted: training began in 2001, and IMCI-trained health workers received usual supports. Zone 4 was the trial control area in which IMCI began later: training began in 2003, and IMCI-trained health workers received usual supports.

FIGURE 1—Timeline of Integrated Management of Childhood Illness (IMCI) training and the study to evaluate posttraining supports: Benin, 1999–2004.

grouped to minimize contamination. The study was unblinded because it was impossible to conceal the study supports from health workers and surveyors.

We conducted 4 health facility surveys: a baseline (before IMCI training) survey in 1999 and 3 follow-up surveys after IMCI implementation began (2001, 2002, and 2004). Public and private licensed health facilities were eligible for inclusion if they provided outpatient services to children and their level of care was appropriate for IMCI (1 referral hospital and 1 subspecialty hospital were excluded). Consultations were eligible if they involved children aged 1 week to 59 months being seen for any illness during regular working hours (typically 8 AM–6 PM) on weekdays.

Surveys used cluster sampling, with a cluster defined as all ill-child consultations at a health facility on 1 day. Sampling for each survey was done independently. We used systematic sampling[12] with a computer-generated random starting point to select health facilities and then select 1 cluster (i.e., the survey visit date) for each facility. We did not give advance notice of our visit to health facility staff. The unit of observation was an ill-child consultation. Three surveys (1999, 2001, and 2004) produced equal probability samples of health facilities and ill-child consultations in the entire study area, and 1 survey (2002) covered half the study area (i.e., the 8 nonrandomly selected pilot communes in which the Ministry of Health initially decided to implement IMCI [Figure 1]).

Interventions

IMCI was implemented with WHO's approach. IMCI training courses had 24 to 25 participants and a participant-to-trainer ratio of approximately 4 to 1, were conducted off site, were taught by experienced IMCI-trained clinicians who had received an additional 5-day course on teaching IMCI, and used multiple educational methods (i.e., lectures and reading, interactive discussions, role play, videotaped examples, and clinical practice). Nearly all IMCI-trained health workers received the

recommended follow-up visit 4 to 8 weeks after the IMCI course. In accordance with governmental policy, IMCI training was not offered to nursing aides (i.e., health workers with no formal medical training) because the course was considered too complex. Although we intended implementation to take approximately 1 year (in 2001), because of funding and logistical problems, it took 4 (5 courses in 2001, 2 in 2002, 3 in 2003, and 1 in 2004).

In the intervention area, we implemented a multifaceted strategy to support IMCI-trained health workers (Table A, available as a supplement to the online version of this article at http://www.ajph.org). First, we conducted a 5-day workshop with 3 facilitators (A.K.R, F.O., and M.L.), 8 supervisors (physicians), and 3 other health officials to develop, practice, and encourage use of a protocol for supportive IMCI supervision. Our protocol recommended 2 supervision visits every 3 months, alternating between the health worker's clinic and supervisor's health facility (i.e., a hospital in which clinical supervision could include seeing severely ill patients); a checklist to aid supervisors as they observed consultations, provided constructive feedback, and helped health workers solve problems; and supervision of supervisors, in which a senior pediatrician with extensive IMCI experience observed supervision visits and provided constructive feedback to supervisors on their performance. Second, we printed and distributed 2 job aids to each IMCI-trained health worker: patient registers that replaced the IMCI recording form (Figure B, available as a supplement to the online version of this article at http://www.ajph.org) and a counseling guide. Third, just after the IMCI course, we organized half-day training sessions for groups of 5 to 20 health workers on use of the job aids and on the supervision checklist, so they would know what to expect during supervision. Fourth, we implemented nonfinancial incentives (supplemental Table A).

All components were implemented together. No financial support was provided for supervision, because government and community-based funding was supposed to cover supervision field costs. Notably, almost no supervision occurred in the intervention's first 6 months (July–December 2001), so we added a fifth component: 1- to 3-day workshops every 3 months in which supervisors presented their

supervision results (and if not all visits were completed, supervisors explained why), engaged in problem solving related to IMCI implementation and supervision, and planned the next round of supervision; some of the workshops included clinical practice at a hospital. However, despite this additional support, supervision records and checklists revealed that only 29% (348/1186) of planned supervision visits actually occurred (A. K. Rowe et al., unpublished data, May 2008).

The following influenced the design of our study supports: (1) the opinion that multifaceted interventions targeting multiple determinants of health worker practices were more likely to be effective than single interventions[13–17]; (2) our view that key categories of strategies to improve health worker performance in low-resource settings (aside from training) included supervision (to model ideal practices, motivate health workers, and provide focused training), job aids (as reminders and to make work easier), and incentives (for motivation); (3) our knowledge that supervision was weak in Benin (hence supervision for supervisors); and (4) the price of IMCI patient recording forms, which were considered unaffordable (hence our provision of a job aid that could replace the IMCI form).

IMCI-trained health workers in the control area received usual supports: job aids (i.e., packets of IMCI recording forms) and some IMCI-specific supervision (supplemental Table A). In addition, health workers in all areas potentially benefited from 5 vehicles for supervision donated in 2002, decentralization throughout Benin (commune supervisors were given some control over budgets), and results of our surveys (shared at least annually).

Data Collection

Methods for evaluating health care quality are described elsewhere.[12,18] Briefly, after obtaining consent from health workers and children's caretakers (usually the mother), we collected data with 5 methods: (1) silent observation of consultations, with observations recorded on a checklist; (2) interviews with caretakers as they left the facility to ascertain prescribed medications and caretakers' understanding of treatment instructions; (3) child reexamination by a study clinician, out of the health worker's view, to obtain an expert, independent determination of

the child's IMCI illness classifications; (4) health facility assessments to evaluate supplies and equipment; and (5) health worker interviews to obtain information on demographics, training, supervision, opinions, and knowledge. After reexamination, inadequately treated children were given appropriate medications without charge. Surveyors were trained until the agreement of practice results of surveyors and study investigators was greater than 90%.

Definitions of illness classifications (e.g., malaria, pneumonia) were based on Benin's adaptation[19] of WHO's generic IMCI guidelines.[1] (Potentially life-threatening illnesses, essential treatments, and treatment quality categories are defined in Box A, available as a supplement to the online version of this article at http://www.ajph.org.)

Analysis

Data were double-entered and verified with Epi Info, version 6 (Centers for Disease Control and Prevention, Atlanta, GA). Analyses were restricted to initial consultations. Analyses were performed with SAS version 9.1 (SAS Institute Inc, Cary, NC). For hypothesis testing and confidence interval (CI) estimation, α was set at .05.

We analyzed 3 quality-of-care outcomes. Two were dichotomous treatment outcomes: recommended treatment and recommended or adequate treatment (supplemental Box A). The latter outcome was the complement of inadequate treatment (i.e., the percentage receiving recommended or adequate treatment equaled 100% minus the percentage receiving inadequate treatment). The third outcome was a continuous, child-level IMCI adherence index from 0% to 100%, defined as the percentage of needed IMCI tasks that were performed (see Box B, available as a supplement to the online version of this article at http://www.ajph.org).

We first performed intention-to-treat analyses. For each outcome, a regression model was constructed with dummy variables for time (2001 and 2004, with 1999 as the referent), study area (intervention or control), and 2 study area–time interactions (see Box C, available as a supplement to the online version of this article at http://www.ajph.org). The interactions, which compared intervention-area time trends (1999–2001 and 1999–2004)

with control-area trends, were the main effects. The 2002 survey was omitted because it did not cover the entire study area.

For the dichotomous treatment outcomes, logistic regression modeling was performed with the SAS GENMOD procedure. For the continuous adherence outcome, linear regression modeling was performed with the REGRESS procedure in SUDAAN version 8.0.0 (Research Triangle Institute, Research Triangle Park, NC). Both procedures use generalized estimating equations to account for correlation (i.e., similarity of health care quality for children in the same cluster). We used an exchangeable working correlation structure. For all outcomes, we evaluated 20 factors (e.g., medicine availability, supervision, caseload, demographic factors, and case complexity) as potential confounders of the study area–outcome association by entering factors into models 1 at a time. Factors that changed main effects by more than 20% were considered confounders and retained in the final model.

Effect sizes were defined as absolute percentage point difference of differences (e.g., $[\text{follow-up}-\text{baseline}]_{\text{intervention}}-[\text{follow-up}-\text{baseline}]_{\text{control}}$) derived from adjusted outcome values (Table 1 and supplemental Box C).[14] For dichotomous outcomes, effect sizes were estimated with predicted probabilities (i.e., adjusted outcome values) from the logistic regression models at baseline and follow-up time points for the intervention and control areas, with confounders held constant; 95% CIs were estimated with bootstrapping.[20] For the continuous outcome, effect sizes and 95% CIs were obtained directly from the model.

Unfortunately, because IMCI training proceeded slowly, many consultations in the follow-up surveys were performed by health workers who had not received IMCI training and who provided low-quality care. Thus, in the intention-to-treat analyses, effects of the study supports were diluted because both study areas contained a mix of IMCI-trained (and better performing) health workers and nontrained health workers.

To account for slow IMCI implementation, we also performed per-protocol analyses with a pre–post study design with nonrandomized controls.[21] Three health worker exposure groups

TABLE 1—Per-Protocol Analysis of the Effect of Study Supports and Integrated Management of Childhood Illness (IMCI) Training on Case Management Quality for Ill Children During Initial Consultations at Outpatient Health Facilities in Ouémé and Plateau Departments: Benin, 1999–2004

Outcomes for the 3 Health Worker Exposure Groups	Recommended Treatment	Recommended or Adequate Treatment	Percentage of Needed Tasks Performed per Child
IMCI trained with study supports			
Baseline			
Consultations, no.	102	102	123
Unadjusted outcome value, %[a]	15.7	22.6	21.3
Adjusted outcome value, %[a]	15.8	22.0	21.5
Follow-up			
Consultations, no.	127	127	146
Unadjusted outcome value, %[a]	54.3	55.1	76.6
Adjusted outcome value, %[a]	62.2	62.1	77.4
IMCI trained with usual supports			
Baseline			
Consultations, no.	106	106	119
Unadjusted outcome value, %[a]	21.7	25.5	24.4
Adjusted outcome value, %[a]	21.3	25.5	24.9
Follow-up			
Consultations, no.	238	238	265
Unadjusted outcome value, %[a]	37.4	45.8	64.0
Adjusted outcome value, %[a]	40.4	50.3	65.2
Not IMCI trained			
Baseline			
Consultations, no.	164	164	188
Unadjusted outcome value, %[a]	19.5	27.4	25.6
Adjusted outcome value, %[a]	17.0	24.8	26.2
Follow-up			
Consultations, no.	364	364	403
Unadjusted outcome value, %[a]	17.0	22.0	29.9
Adjusted outcome value, %[a]	17.1	22.8	31.8
Effect sizes[b,c]			
Effect of study supports,[d] percentage-point change (95% CI)	27.3* (10.8, 44.5)	15.3 (−2.3, 33.5)	15.5** (9.0, 22.0)
Effect of IMCI training,[e] percentage-point change (95% CI)	19.1* (4.2, 33.5)	26.8** (12.9, 41.3)	34.7** (28.5, 40.9)
Effect of IMCI training + study supports,[f] percentage-point change (95% CI)	46.4** (35.5, 62.1)	42.1** (27.2, 59.5)	50.2** (45.8, 54.7)

Note. CI = confidence interval. The baseline period was 1999. The follow-up period was 2001–2004.

[a]Columns 2 and 3 show percentages; column 4 shows mean percentages.

[b]Based on quality of care adjusted for case complexity. In the model used to estimate the effect size for recommended treatment, the intraclass correlation coefficient was 0.094; the mean cluster size was 4.00 (1101 consultations/275 clusters); and the design effect was 1.28. In the model for recommended or adequate treatment, the intraclass correlation was 0.071; the mean cluster size was 4.00; and the design effect was 1.21. For percentage of needed tasks performed per child, the intraclass correlation was 0.388; the mean cluster size was 4.44 (1244 consultations/280 clusters); the design effect was 2.33; and the multiple R^2 was 0.731.

[c]For example, the value 27.3 for the effect of study supports equals the improvement in treatment quality provided by health workers in the IMCI-trained group receiving study supports from baseline to follow-up (i.e., 62.2%–15.8%, or 46.4 percentage points) minus the improvement in the IMCI-trained group receiving usual supports from baseline to follow-up (i.e., 40.4%–21.3%, or 19.1 percentage points). The time × study supports interaction term from the multivariate model was statistically significant, and the 95% CI of the 27.3 percentage-point effect size excluded 0 (i.e., was statistically significant).

[d]Study supports versus usual supports for IMCI-trained health workers.

[e]IMCI-trained health workers with usual supports versus health workers with no IMCI training.

[f]IMCI-trained health workers with study supports versus health workers with no IMCI training. This is the sum of effects from the IMCI group receiving study supports versus the IMCI group receiving usual supports and the IMCI group receiving usual supports versus the group receiving no IMCI training.

*P value of the interaction term from the multivariable regression model is between .01 and .049.

**P value of the interaction term from the multivariable regression model is <.01.

were compared: IMCI trained in intervention areas (all received study supports), IMCI trained in control areas (all received usual supports), and non–IMCI trained in any geographic area (per-protocol analysis controls). We used the same methods as in the intention-to-treat analysis (supplemental Box C), except for 3 points. First, we included the 2002 survey. Second, because sample sizes for individual years were sometimes small and effect sizes were generally similar, we combined all follow-up surveys. Third, to estimate baseline (pre-IMCI) outcome values for the 3 health worker exposure groups, we divided the 1999 survey into 3 parts: the 4 IMCI pilot communes in the intervention area (zone 1 [supplemental Figure A], as baseline for the IMCI study supports group), the 4 IMCI pilot communes in the control area (zone 3, as baseline for the IMCI usual-supports group),

and the 8 communes that were not IMCI pilots (zones 2 and 4, as baseline for the non–IMCI group).

In per-protocol analyses of dichotomous treatment outcomes, case complexity (mean-centered number of IMCI tasks needed per child [supplemental Box B], which helped adjust for case mix) was identified as a confounder and retained in all models (supplemental Box C, last term in model). For comparability, case complexity was added to models for the continuous-adherence index.

For the treatment outcomes, incremental cost-effectiveness analyses were conducted for 3 interventions: study supports, IMCI training plus usual supports, and IMCI training plus study supports (Table B, available as a supplement to the online version of this article at http://www.ajph.org). We took the provider

perspective (i.e., the perspective of an organization that funded quality-improvement strategies, such as a governmental or donor organization). The time horizon was the follow-up period (December 2001–October 2004). We did not use discounting because the follow-up period was relatively short. Incremental costs were the variable costs for IMCI training ($850 per health worker) and study and usual supports (supplemental Table A). Incremental effects were estimated by multiplying effect sizes (Table 1) by the estimated number of children with potentially life-threatening illnesses seen at all eligible health facilities over the follow-up period. Because caseloads differed between the group receiving study supports and the one receiving usual supports, incremental costs and effects were scaled to a constant 100 000 consultations. For the

TABLE 2—Survey Sampling, Enrollment of Study Participants, and Scale-Up of Integrated Management of Childhood Illness (IMCI) Guidelines: Benin, 1999–2004

	Baseline Survey (Before IMCI Training)	Follow-Up Survey 1	Follow-Up Survey 2	Follow-Up Survey 3
Data collection	July 28–Oct 29, 1999	Dec 3, 2001–Jan 25, 2002	Sept 16–Oct 30, 2002	July 19–Oct 6, 2004
Zones sampled[a]	1, 2, 3, 4	1, 2, 3, 4	1, 3	1, 2, 3, 4
Surveys in intervention area				
Health facilities sampled/total eligible, no.	48/48	55/60	22/22	54/72
Health facilities open and with ≥1 ill child consultation	41	47	18	40
IMCI-trained health workers/total health workers who performed ≥1 ill child consultation, no. (%)	0/50 (0)	21/69 (30.4)	15/28 (53.6)	34/58 (58.6)
Among IMCI-trained health workers, median time since IMCI training, mo (range)	. . .	2 (1–4)	12 (1–16)	20 (1–37)
Ill children enrolled,[b] no.	288	225	77	156
Initial consultations performed by IMCI-trained health workers/total initial consultations, no. (%)	0/225 (0)	52/186 (30.0)	39/65 (60.0)	63/126 (50.0)
Surveys in control area				
Health facilities sampled/total eligible, no.	39/39	45/51	33/33	46/58
Health facilities open and with ≥1 ill child consultation	38	40	30	40
IMCI-trained health workers/total health workers who performed ≥1 ill child consultation, no. (%)	0/51 (0)	23/47 (48.9)	17/37 (45.9)	31/53 (58.5)
Among IMCI-trained health workers, median time since IMCI training, mo (range)	. . .	4 (1–6)	12 (2–15)	20 (1–37)
Ill children enrolled,[b] no.	295	168	154	214
Initial consultations performed by IMCI-trained health workers/total initial consultations, no. (%)	0/205 (0)	71/127 (55.9)	61/138 (44.2)	125/172 (72.7)

Note. Ellipses indicate that the data are not applicable.
[a]Zone 1 was the trial intervention area in which IMCI was piloted in 2001, zone 2 was the trial intervention area in which IMCI began in 2003, zone 3 was the trial control area in which IMCI was piloted in 2001, and zone 4 was the trial control area in which IMCI began in 2003.
[b]Excluded 1 child in 1999 (consultation accidentally not observed), 4 in 2001 (all withdrew after initially agreeing), 10 in 2002 (6 refused, 4 withdrew), and 10 in 2004 (8 refused, 2 withdrew).

incremental effect, we only considered children seen on weekdays during regular working hours (to match our survey methods), a conservative decision that probably led to an underestimation of the true effects.

RESULTS

We observed 1577 ill-child consultations, including 1244 initial consultations for any illness (Table 2). Caretakers of an additional 25 children either refused to participate or withdrew (participation rate=1577/1602, or 98.4%). Among initial consultations, according to the study's expert reexaminations, the most common IMCI illness classifications were uncomplicated malaria (69.9%), mild anemia (44.0%), uncomplicated pneumonia (24.0%), and diarrhea (15.0%); 1101 (88.5%) children had a potentially life-threatening illness, and 196 (15.8%) had a severe classification. Dysentery, measles, and malnutrition (other than anemia) were uncommon (<3%). Initial consultations were observed during 301 health facility visits to 114 health facilities and performed by 267 health workers. In the follow-up period, even though the plan called for all children to be seen by IMCI-trained health workers, only half were (411 of 814 initial consultations; Table 2).

Analyses

Intention-to-treat analysis. Characteristics of study groups were similar (Table C, available as a supplement to the online version of this article at http://www.ajph.org), except that children in control areas were significantly more often seen by IMCI-trained health workers in the follow-up period (*P*=.003). For all outcomes, health care quality improved over time (Figure 2); however, differences in improvements between intervention and control areas were close to zero and not statistically significant. The intention-to-treat analysis, which was of a randomized controlled study that was flawed by slow IMCI implementation, yielded no evidence that the study supports improved treatment quality.

Per-protocol analysis. Characteristics of exposure groups were generally similar, and small differences were an unlikely source of bias (supplemental Table C).

IMCI-trained health workers frequently used job aids, which reflected use of IMCI guidelines. In 91.0% (374 of 411) of consultations, health workers used the IMCI flipchart of clinical algorithms. The IMCI group receiving usual supports used IMCI recording forms in 84.9% (225 of 265) of consultations. By contrast, the IMCI group receiving study supports rarely (10 of 146, or 6.8%) used IMCI recording forms; instead, as intended, study
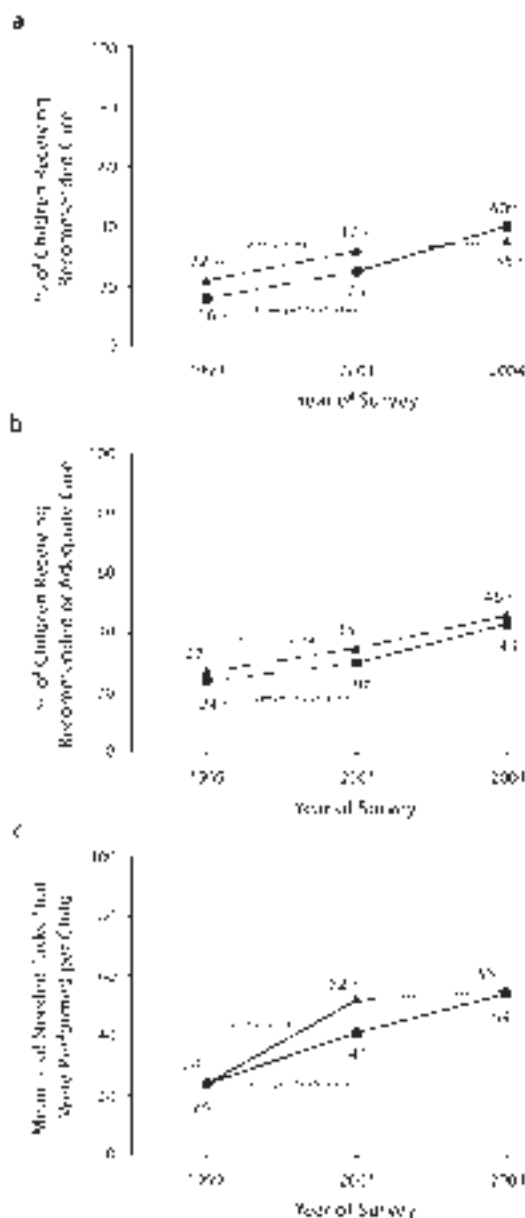
Note. 1999 was the baseline period (pre-IMCI); 2001–2004 was the follow-up period.

FIGURE 2—Intention-to-treat analysis of the effect of posttraining supports for health workers trained to use Integrated Management of Childhood Illness (IMCI) guidelines on (a) the percentage of children receiving recommended care, (b) the percentage of children receiving recommended or adequate care, and (c) the mean percentage of needed tasks performed per child: Benin, 1999–2004.

registers were almost always used (144 of 146, or 98.6%). Surprisingly, the IMCI group receiving study supports rarely used the study counseling guide (14 of 146, or 10.2% of consultations).

Recommended treatment improved over time in both IMCI groups (Table 1, Figure 3a; see also Tables D and E and Box D, available as supplements to the online version of this article at http://www.ajph.org). Improvements in the IMCI group receiving study supports were 27.3 percentage points (95% CI=10.8, 44.5) greater than in the IMCI group receiving usual supports, which reflected the effect of the study supports. Improvements in the IMCI group receiving usual supports were 19.1 percentage points (95% CI=4.2, 33.5) greater than in the group without IMCI training, which reflected the effect of IMCI training. Summing these effects reveals the large improvement attributable to IMCI training plus study supports (46.4 percentage points). Percentages for individual years are shown in supplemental Table D, and effect sizes for individual years (i.e., 1999 vs 2001, 1999 vs 2002, and 1999 vs 2004) are shown in supplemental Table E.

For recommended or adequate treatment and the adherence index (Figure 3), effects were roughly similar to those of recommended treatment, except that the effect of study supports did not reach statistical significance for recommended or adequate treatment (15.3 percentage points; 95% CI=−2.3, 33.5). In a sensitivity analysis for recommended or adequate treatment, which assumed dosage quality was adequate when prescriptions were incomplete, results were generally similar to the main analysis, except that effect sizes were smaller (results not shown).

Cost-effectiveness analysis. Costs per 100 000 consultations for health worker supports ($11 232–$27 046) were considerably less than for IMCI training ($132 617–$218 961), and study supports were only somewhat more expensive than usual supports (supplemental Table A). Compared with usual supports, study supports cost $0.58 (95% CI=$0.36, $1.46) per additional child receiving recommended treatment (i.e., the cost-effectiveness ratio; supplemental Table B). The cost-effectiveness ratio for recommended or adequate treatment was $1.03, although study supports could have
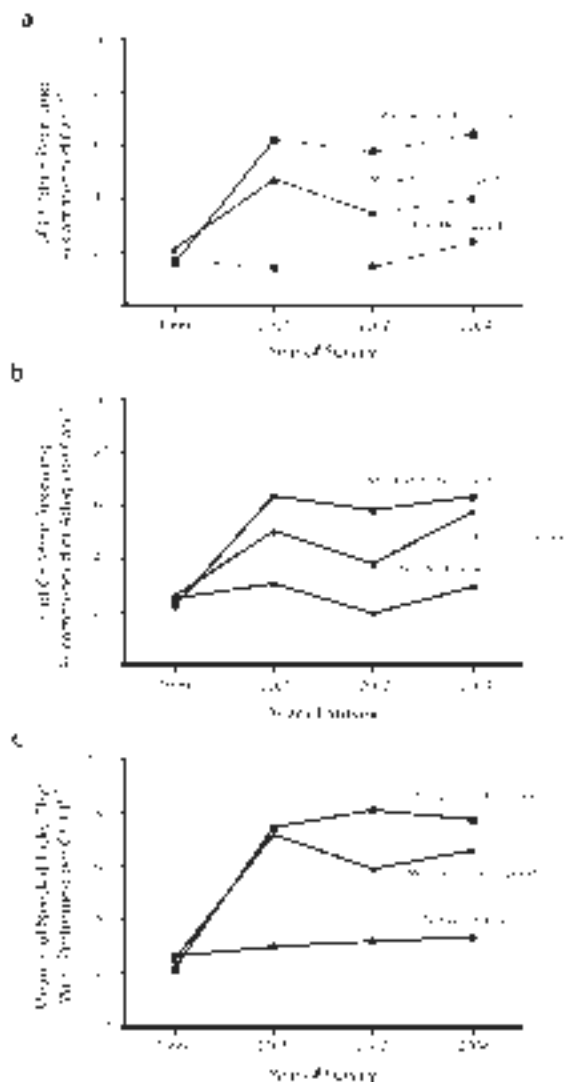
Note. 1999 was the baseline period (pre-IMCI); 2001–2004 was the follow-up period.
[a]All outcomes were adjusted for case complexity.
[b]Results for the IMCI group receiving study supports were significantly greater than those for the IMCI group receiving usual supports only for the comparison of 1999 versus 2004. Results for the IMCI group receiving usual supports were significantly greater than were those for the group without IMCI training only for the comparison of 1999 versus 2001. Results for the IMCI group receiving study supports were significantly greater than those for the group without IMCI training for all years.
[c]Results for the IMCI group receiving study supports were never significantly greater than those for the IMCI group receiving usual supports. Results for the IMCI group receiving usual supports were significantly greater than those for the group without IMCI training for the comparisons of 1999 versus 2001 and of 1999 versus 2004. Results for the IMCI group receiving study supports were significantly greater than those for the group without IMCI training for all years.
[d]Results for the IMCI group receiving study supports were significantly greater than those for the IMCI group receiving usual supports for the comparisons of 1999 versus 2002 and of 1999 versus 2004. Results for the IMCI group receiving usual supports were significantly greater than those for the group without IMCI training for all years. Results for the IMCI group receiving study supports were significantly greater than those for the group without IMCI training for all years.

FIGURE 3—Per-protocol analysis of the effect of training on Integrated Management of Childhood Illness (IMCI) guidelines and posttraining supports, by exposure to interventions on (a) the percentage of children receiving recommended care, (b) the percentage of children receiving recommended or adequate care, and (c) the mean percentage of needed tasks performed per child: Benin, 1999–2004.

had a small negative effect. Cost-effectiveness ratios comparing no IMCI to IMCI plus usual or study supports ranged from $5 to $8, although CIs were sometimes wide.

DISCUSSION

Although in-service training is often used to implement clinical guidelines, numerous studies show that training alone is insufficient for achieving high levels of adherence.[22] Thus, we addressed the question, "What should follow training?" Our study focused on IMCI, but the results (and challenges) are relevant to the broader issue of increasing health worker adherence to any clinical guideline.

Per-protocol analyses showed that study supports were significantly associated with an increase of 27 percentage points in recommended treatment and an increase of 16 percentage points in the proportion of IMCI tasks performed—increases that were in addition to improvements attributed to IMCI training with usual supports. A nonsignificant trend was noted toward improved recommended or adequate treatment (and thus reduced inadequate treatment). Compared with usual supports, the extra cost of study supports was relatively low: approximately $16 000 per 100 000 children with a potentially life-threatening illness, or less than $1 per additional child receiving recommended treatment. We are not aware of other published studies that evaluated supports after IMCI training; however, a review of strategies to improve health workers' use of pharmaceuticals in developing countries found a median maximum effect size of 27 percentage points (range: 16–56) among 6 studies of administrative or managerial interventions such as supervision.[14]

Regarding IMCI effectiveness, we found that IMCI training with usual supports was significantly associated with improvements of 19 to 35 percentage points for all 3 outcomes compared with no IMCI training. These results fall on the low end of the wide range of results from other studies that evaluated IMCI training without additional health worker or health system supports (effect sizes for correct oral antimicrobial use from 3 studies ranged from 28.6 to 94.0 percentage points [A.K. Rowe et al., unpublished data, October 2008]),

although varying outcome definitions and study designs complicate such comparisons. Compared with no IMCI, effect sizes for IMCI training with study supports were greater, ranging from 42 to 50 percentage points. These results compare favorably to those of other studies that evaluated IMCI training with additional health worker or health system supports (effect sizes for correct oral antimicrobial use from 7 studies ranged from 3.9 to 75.7 percentage points [A.K. Rowe et al., unpublished data, October 2008]).

Limitations

Our study had 2 main complications: the intervention and the study design changed. These issues illustrate the challenges of health systems research but also exemplify an important lesson on changing health systems. The intervention changed because little supervision occurred initially. We reasoned that doing nothing risked having intervention areas receive even less support than control areas, which was ethically unacceptable; we also believed that the timing was early enough that a new support (i.e., quarterly supervision workshops) could be introduced and still grouped with the original study supports.

The second complication arose because IMCI-trained health workers performed fewer than expected consultations. Initially, the explanation was training delays, but we later learned of other reasons, such as health workers without IMCI training being assigned busy weekday shifts and some health workers resisting IMCI guidelines (A.K. Rowe, unpublished data, May 2008). We shared these findings with government officials on several occasions, which resulted in only modest improvement. Regardless of the cause, we thought that changing from a randomized design (intention-to-treat analysis) to a pre–post study with nonrandomized controls (per-protocol analysis) would give a more accurate picture of our intervention's effect.[21]

Whenever an intention-to-treat analysis is substituted with one comparing participants who were or were not exposed to interventions, the relation between determinants of exposure and outcomes must be examined (e.g., in clinical trials, patients who are too ill to complete experimental treatment are more likely to die). During our study's follow-up period, whether

a child was seen by a health worker with no IMCI training or an IMCI-trained health worker receiving study or usual supports was essentially by chance, because it seemed highly unlikely that caretakers knew the training and support background of health workers. For health workers, IMCI exposure depended on government selection criteria for training: nursing aides were ineligible, all facilities needed at least 1 IMCI-trained health worker, and preference was given to health facility directors (to promote acceptance of IMCI) and health workers with high caseloads of ill children. Thus, although the per-protocol analysis might have introduced bias in comparisons of IMCI-trained and nontrained health workers, there were no obvious sources of bias in comparisons of study supports and usual supports.

Our study had other potential limitations. First, observation of consultations could have influenced health worker practices, perhaps overestimating quality somewhat[23]; this influence would likely have affected all study groups similarly, however, and thus probably did not substantially bias effect sizes. Second, prescriptions were sometimes incomplete, which probably led to the underestimation of quality for some consultations. Our sensitivity analysis suggested some bias in effect sizes, but overall conclusions were not affected. Third, it is difficult to assess the validity of the assumption that control-area supports generally reflected supports elsewhere. However, we described our study area and usual supports; readers can evaluate how applicable this assumption is to other settings.

Implications

From a programmatic perspective, despite our generally positive results, we do not necessarily recommend our supports for implementing IMCI or other guidelines. The experience and complications of this study underscored the importance of continuous monitoring so that managers can identify problems and evaluate whether solutions are working. For example, although we did not formally implement a monitoring system, our occasional observations revealed in late 2001 that almost no supervision was occurring and later that supervision increased after we implemented supervision workshops. This experience also highlighted the importance of being flexible and modifying

interventions when they fail. Therefore, programs should consider implementing specific interventions (e.g., the workshops, job aids, and incentives we studied) in the context of a quality-improvement process with ongoing plan–do–study–act cycles (i.e., develop and implement quality-improvement activities, monitor effects, and either continue or modify activities).[24]

Although our supervision protocol included some quality-improvement elements, we initially decided not to implement a formal quality-improvement process because it seemed complicated, and scant evidence supported its use in developing countries (some successes have since been described[25–27]). We now believe that such a process can be useful, or at least that not using it risks failure. Before the quality-improvement process is implemented widely, however, further evaluations are needed to better characterize its effectiveness and cost, how it should be operationalized in large health systems with weak infrastructure, and how it responds to common, intractable problems that might only be solved at the ministerial or international level (e.g., insufficient budgets). Given the size of new, exciting disease-control initiatives, such as those for AIDS and malaria, in which the provision of expensive medicines and commodities is being scaled up, implementation research on the quality-improvement process should be an urgent priority.

From a methodologic perspective, when analyzing results of dichotomous performance outcomes, we found it useful to construct logistic regression models that adjusted for confounders and then to estimate difference-of-differences effect sizes and CIs on an arithmetic scale with predicted probabilities from the models (supplemental Box C). To the best of our knowledge, ours was the first study of health worker performance to use this method. Such effect sizes are easy to understand and can be directly fed into cost-effectiveness analyses. This approach can be used with simpler study designs, such as controlled post-intervention–only studies.

Conclusions

Our study showed that training can be useful for implementing clinical guidelines but that it is not enough. Relatively inexpensive post-training supports can lead to additional improvements. Perhaps better still, programs should consider implementing supports in the context of a quality-improvement process. In other words, program managers should pay attention, act on results, and be flexible. Implementation research on the quality-improvement process should be an urgent priority. Finally, wherever IMCI training is implemented, program managers should ensure that IMCI-trained health workers perform consultations. ∎

About the Authors

Alexander K. Rowe is with the Malaria Branch, Division of Parasitic Diseases, Centers for Disease Control and Prevention, Atlanta, GA. Faustin Onikpo is with the Direction Départementale de la Santé Publique de l'Ouémè et Plateau [Departmental Direction of Public Health of Ouémè and Plateau], Ministry of Health, Porto-Novo, Benin. At the time of the study, Marcel Lama was with Africare-Benin, Porto-Novo. Dawn M. Osterholt is with the Division of General and Community Pediatric Research, Cincinnati Children's Hospital, Cincinnati, OH. Samantha Y. Rowe is with the Data Management Activity, Division of Parasitic Diseases, Centers for Disease Control and Prevention, Atlanta. Michael S. Deming is with the Parasitic Diseases Branch, Division of Parasitic Diseases, Centers for Disease Control and Prevention, Atlanta, GA.

Requests for reprints should be sent to Alexander K. Rowe, Centers for Disease Control and Prevention, Mailstop F22, 4770 Buford Highway, Atlanta, GA 30341-3724 (e-mail: axr9@cdc.gov).

This article was accepted August 31, 2008.

Note. *The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.*

Contributors

A.K. Rowe and M.S. Deming originated the study. A.K. Rowe, F. Onikpo, M. Lama, and M.S. Deming developed the protocol. A.K. Rowe, F. Onikpo, M. Lama, S.Y. Rowe, and M.S. Deming coordinated the field work. A.K. Rowe, D.M. Osterholt, and S.Y. Rowe analyzed the data. A.K. Rowe had primary responsibility for the initial draft of the article. All authors contributed substantially to the methods, intellectual content of the study, and writing and editing of the article.

Human Participant Protection

The study protocol was approved by the ethics committee of the Benin Ministry of Health and the Centers for Disease Control and Prevention's human subjects review board. The 1999 survey was considered program evaluation and written consent was not required; verbal consent, however, was requested from all participants (health workers and children's caretakers). Surveys from 2001 to 2004 were considered research, and written informed consent was requested from all participants.

References

1. Gove S for the WHO Working Group on Guidelines for Integrated Management of the Sick Child. Integrated management of childhood illness by outpatient health workers: technical basis and overview. *Bull World Health Organ.* 1997;75(suppl 1):7–24.

2. Bryce J, Boschi-Pinto C, Shibuya K, Black RE, WHO Child Health Epidemiology Reference Group. WHO estimates of the causes of death in children. *Lancet.* 2005;365:1147–1152.

3. El Arifeen S, Blum LS, Hoque DME, et al. Integrated Management of Childhood Illness (IMCI) in Bangladesh: early findings from a cluster-randomized study. *Lancet.* 2004;364:1595–1602.

4. Gouws E, Bryce J, Habicht JP, et al. Improving antimicrobial use among health workers in first-level facilities: results from the Multi-Country Evaluation of the Integrated Management of Childhood Illness strategy. *Bull World Health Organ.* 2004;82:509–515.

5. Armstrong Schellenberg J, Bryce J, de Savigny D, et al. The effect of Integrated Management of Childhood Illness on observed quality of care of under-fives in rural Tanzania. *Health Policy Plan.* 2004;19:1–10.

6. Naimoli JF, Rowe AK, Lyaghfouri A, Larbi R, Lamrani LA. Effect of the Integrated Management of Childhood Illness strategy on health care quality in Morocco. *Int J Qual Health Care.* 2006;18:134–144.

7. Armstrong Schellenberg JR, Adam T, Mshinda H, et al. Effectiveness and cost of facility-based Integrated Management of Childhood Illness (IMCI) in Tanzania. *Lancet.* 2004;364:1583–1594.

8. Amaral J, Gouws E, Bryce J, Leite AJM, da Cunha ALA, Victora CG. Effect of Integrated Management of Childhood Illness (IMCI) on health worker performance in Northeast-Brazil. *Cad Saude Publica.* 2004;20(suppl 2):S209–S219.

9. Pariyo GW, Gouws E, Bryce J, Burnham G, Uganda Impact Study Team. Improving facility-based care for sick children in Uganda: training is not enough. *Health Policy Plan.* 2005;20(suppl 1):i58–i68.

10. *Enquête Démographique et de Santé au Bénin [Benin Demographic and Health Survey] 2001.* Calverton, MD: Institut National de la Statistique et de l'Analyse Économique and ORC Macro; 2002.

11. United Nations Development Programme. *Human Development Report 2006. Beyond Scarcity: Power, Poverty and the Global Water Crisis.* New York, NY: Palgrave Macmillan; 2006.

12. Rowe AK, Lama M, Onikpo F, Geslin C, Deming M. *A Health Facility Survey to Evaluate the Management of Ill Children Seen as Outpatients in Ouémè Department, Benin, July 28–October 29, 1999. Final Report.* Atlanta, GA:

Centers for Disease Control and Prevention; January 9, 2002.

13. Brugha R, Zwi A. Improving the quality of private sector delivery of public health services: challenges and strategies. *Health Policy Plan.* 1998;13:107–120.

14. Ross-Degnan D, Laing R, Santoso B, Ofori-Adjei D, Lamoureux C, Hogerzeil H. Improving pharmaceutical use in primary care in developing counties: a critical review of experience and lack of experience. Paper presented at: International Conference on Improving Use of Medicines; April 1–4, 1997; Chiang Mai, Thailand.

15. Lomas J, Haynes RB. A taxonomy and critical review of tested strategies for the application of clinical practice recommendations: from "official" to "individual" clinical policy. *Am J Prev Med.* 1988;4(suppl 4):77–94.

16. Woodward CA. *Improving Provider Skills: Strategies for Assisting Health Workers to Modify and Improve Skills: Developing Quality Health Care–a Process of Change.* Geneva, Switzerland: Department of Organization of Health Services Delivery, World Health Organization; 2000. Issues in Health Services Delivery, Discussion Paper 1. WHO/EIP/OSD/00–1.

17. Marquez L. Helping healthcare providers perform according to standards. Operations Research Issue Paper 2(3). 2001. Published for the United States Agency for International Development by Quality Assurance Project, Center for Human Services, University Research Co. Available at: http://www.qaproject.org/pubs/PDFs/helphcpro3.pdf. Accessed December 6, 2007.

18. Rowe AK, Onikpo F, Lama M, Cokou F, Deming MS. Management of childhood illness at health facilities in Benin: problems and their causes. *Am J Public Health.* 2001;91:1625–1635.

19. *Prise en charge intégrée des maladies de l'enfant. Livret des tableaux [Integrated Management of Childhood Illness. Chart booklet].* Porto-Novo: Benin Ministry of Public Health; 2002.

20. Good PI. *Resampling Methods: A Practical Guide to Data Analysis.* 2nd ed. Boston, MA: Birkhäuser; 2001.

21. Victora CG, Habicht J-P, Bryce J. Evidence-based public health: moving beyond randomized trials. *Am J Public Health.* 2004;94:400–405.

22. Rowe AK, de Savigny D, Lanata CF, Victora CG. How can we achieve and maintain high-quality performance of health workers in low-resource settings? *Lancet.* 2005;366:1026–1035.

23. Rowe AK, Lama M, Onikpo F, Deming MS. Health worker perceptions of how being observed influences their practices during consultations with ill children. *Trop Doct.* 2002;32:166–167.

24. Massoud R, Askov K, Reinke J, et al. A modern paradigm for improving healthcare quality. QA Monograph Series 1(1). 2001. Available at: http://www.qaproject.org/pubs/PDFs/improhq601bk.pdf. Accessed July 16, 2002.

25. Weinberg M, Fuentes JM, Ruiz AI, et al. Reducing infections among women undergoing cesarean section in Colombia by means of continuous quality improvement methods. *Arch Intern Med.* 2001;161:2357–2365.

26. Whittaker S, Green-Thompson RW, McCusker I, Nyembezi B. Status of a health care quality review programme in South Africa. *Int J Qual Health Care.* 2000;12:247–250.

27. Salmon JW, Heavens J, Lombard C, Tavrow P. The impact of accreditation on the quality of hospital care: KwaZulu-Natal Province, South Africa. Operations Research Results 2(17). 2003. Published for the US Agency for International Development by the Quality Assurance Project, Center for Human Services, University Research Co. Available at: http://www.qaproject.org/pubs/PDFs/SAfricaAccred.pdf. Accessed March 24, 2004.

Motivating health workers through nutrition training: an example from Egypt

NICOLA F RUCK[1] AND OLFAT A DARWISH[2]

[1]Nuffield Institute, University of Leeds, UK and [2]High Institute of Public Health, Alexandria, Egypt

Inappropriate training of primary health care staff and underuse of health facilities are two widely recognized problems in Egypt. Collaboration between the regional health services, a university nutrition department and external technical assistance enabled a successful programme of nutrition training to be set up in the governorate of Alexandria. Locally adapted training materials were produced. The training improved teamwork in the health centre and increased levels of nutrition activities within mother and child health (MCH) care. This, together with wide publicity of the aims of the programme, increased activity, continuity of care and established mothers' groups, resulted in greater uptake of services, and better infant feeding practices.

Regular supervision of staff, using field staff as trainers, and constructive feedback were identified as factors which increased the motivation and morale of health centre personnel. The integration of the project with local health management structures ensured that the lessons learnt were well disseminated and incorporated into future planning. Recommendations are made in this paper on community consultation, supervision by health care managers, and on local analysis and relevance of the health information.

Human Resources for Health

RESEARCH   Open Access

CrossMark

Incentives to change: effects of performance-based financing on health workers in Zambia

Gordon C. Shen[1]*, Ha Thi Hong Nguyen[2], Ashis Das[2], Nkenda Sachingongu[3], Collins Chansa[2], Jumana Qamruddin[2] and Jed Friedman[4]

Abstract

Background: Performance-based financing (PBF) has been implemented in a number of countries with the aim of transforming health systems and improving maternal and child health. This paper examines the effect of PBF on health workers' job satisfaction, motivation, and attrition in Zambia. It uses a randomized intervention/control design to evaluate before–after changes for three groups: intervention (PBF) group, control 1 (C1; enhanced financing) group, and control 2 (C2; pure control) group.

Methods: Mixed methods are employed. The quantitative portion comprises of a baseline and an endline survey. The survey and sampling scheme were designed to allow for a rigorous impact evaluation of PBF or C1 on several key performance indicators. The qualitative portion seeks to explain the pathways underlying the observed differences through interviews conducted at the beginning and at the three-year mark of the PBF program.

Results: Econometric analysis shows that PBF led to increased job satisfaction and decreased attrition on a subset of measures, with little effect on motivation. The C1 group also experienced some positive effects on job satisfaction. The null results of the quantitative assessment of motivation cohere with those of the qualitative assessment, which revealed that workers remain motivated by their dedication to the profession and to provide health care to the community rather than by financial incentives. The qualitative evidence also provides two explanations for higher overall job satisfaction in the C1 than in the PBF group: better working conditions and more effective supervision from the District Medical Office. The PBF group had higher satisfaction with compensation than both control groups because they have higher compensation and financial autonomy, which was intended to be part of the PBF intervention. While PBF could not address all the reasons for attrition, it did lower turnover because those health centers were staffed with qualified personnel and the personnel had role clarity.

Conclusions: In Zambia, the implementation of PBF schemes brought about a significant increase in job satisfaction and a decrease in attrition, but had no significant effect on motivation. Enhanced health financing also increased stated job satisfaction.

Keywords: Performance-based financing, Pay-for-performance, Organizational behavior, Mixed methods, Human resources for health, Health system strengthening, Zambia

* Correspondence: Gordon.Shen@sph.cuny.edu
[1]Department of Health Policy and Management, Graduate School of Public Health and Health Policy, City University of New York, 55 West 125 Street Room 806, New York, NY 10027, United States of America
Full list of author information is available at the end of the article

Shen *et al. Human Resources for Health* (2017) 15:20

Page 2 of 15

Background

Progress towards improving maternal and child health (MCH) outcomes requires a certain level of human resources to deliver health care services, but this has been difficult in Zambia due to a human resources for health (HRH) crisis [1–3]. Zambia faces severe health worker shortages across all levels of health care, with 93 total clinical health care workers (HCW)[1] per 100,000 population ratio in 2009 [1]. This translates to a 60% gap in the required versus actual number of clinical health workers nationwide [4]. An average annual attrition rate of 4% from 2007 to 2009 effectively cancelled out gains made in the number of employees recruited [5]. HCWs are not evenly distributed between rural and urban parts of the country: 159 clinical health care workers per 100,000 population in urban areas versus 70 clinical health care workers per 100,000 in rural areas of the country [1]. The HRH shortage has been exacerbated by high levels of absenteeism (21%), tardiness (43%), dissatisfaction (44%), and vacancy (33.5%) rates in 2006 [6]. This situation is compounded by an imbalance in skill-mix among HCWs, and limited funding and training institutions. The implementation of HRH Strategic Plans 2006–2010 and Zambian Health Workers Retention Scheme resulted in increased staff recruitment, appointment, and retention. However, low salaries and poor working conditions continued to affect health workers' morale. Workforce maldistribution is further exacerbated by brain drain[2] and by increased demands placed on the health systems by patients with communicable and non-communicable diseases alike [7, 8].

From 2012 to 2014, the Zambian government introduced a large-scale performance-based financing (PBF) program to enhance the performance of existing health workers for MCH services. PBF programs typically use incentives to encourage providers to increase the provision of services and adopt best practices for quality by following explicit protocols and complying with a system of inspection and auditing.[3] Monetary or non-monetary incentives can be directed at individual health care workers or at the health facility as a whole, and therefore districts in Zambia were randomly assigned to one of three study groups: intervention districts (PBF), input-based financing districts (C1), and pure control districts (C2).[4] To date there is more evidence focused on the impact of PBF on patient outcomes [9–14] rather than on health care provider outcomes [15, 16]. This paper evaluates the effects of this PBF program on health workers' satisfaction, motivation, and attrition, and examines the potential causal pathways leading to such effects.

Theoretical framework

HRH is an important node in the causal pathway from PBF to desired service provision and ultimately population health outcomes. Figure 1 is a display of our theory of change which posits that HRH—at the individual or national level—changes as a result of the implementation of a PBF program in Zambia.[5] At the individual worker level, our model teases apart the type of incentives, as well as the combination of incentives, that could improve personnel shortage and low morale. At the national workforce level, we lay out a set of enabling and disabling conditions that are mediators of PBF and HRH. Introducing monetary incentives to designated health facilities could, in theory, help achieve systemic objectives to increase the availability, distribution, and performance of the workforce.

In this study we are interested in the differential effects of monetary incentives tied to the activities or efforts of workers (i.e., PBF bonuses) versus alternative financing modes' (i.e., enhanced financing, status quo) effects on two individual HRH outcomes determining national workforce performance (motivation, job satisfaction) and an individual HRH outcome (attrition) determining national workforce distribution, as shown in Fig. 1. Motivation is individuals' willingness to sustain efforts towards achieving pre-determined goals. Incentives can be a source of motivation because an individual or an organization would perform an action in order to attain a valued resource [17]. But health workers may burnout from increased demands on them to meet PBF targets in the long run. The empirical evidence of incentives on motivation is mixed,[6] though more recent empirical evidence from sub-Saharan Africa suggests that we would expect to see a spike in motivation early in the PBF program's implementation.[7] We therefore hypothesize that PBF will have a positive effect on Zambian health workers' motivation during our study period. We further hypothesize that enhanced financing would also have a positive effect on motivation, but with a lower magnitude than PBF because enhanced financing is targeted towards the health facility as a whole rather than individual health workers and is not linked directly to performance. Similar hypotheses can be made for job satisfaction.[8]

PBF is related to motivation and job satisfaction, which are predictive of turnover. The first two steps in Mobley's heuristic model of employee withdrawal decision process is evaluation of existing job and experienced job satisfaction or dissatisfaction [18]. Psychology studies conducted since have found that job satisfaction was predicted by the reward and cost values of the job [19], and that job satisfaction was correlated with job turnover [20].[9] High levels of motivation, like job satisfaction, reduced the risk of low- and middle-income country (LMIC) health workers' intent of leaving their jobs [21]. The motivation-turnover relationship is mediated by affective commitment [22] and moderated by
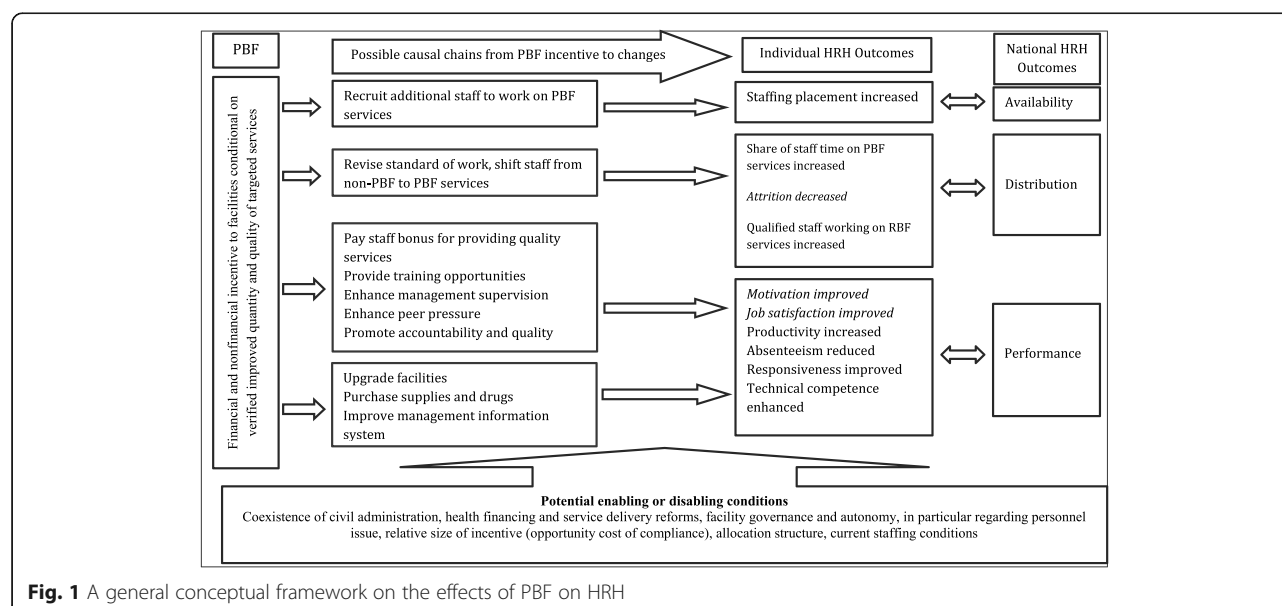
Shen *et al. Human Resources for Health* (2017) 15:20

Page 3 of 15

Fig. 1 A general conceptual framework on the effects of PBF on HRH

burnout [23]. These empirical studies that are conducted either in the lab or in the field cumulatively suggest that individual tenure in health care organizations is influenced by extrinsic motivation, and mediated by job satisfaction with their work setting. We thus hypothesize that PBF and enhanced financing would each have a negative effect on turnover, but enhanced financing would have a lower effect magnitude than PBF because satisfaction with compensation is a bigger determinant of turnover than other aspects of job satisfaction.

The hypothesized magnitude and direction of PBF influence on HRH are summarized in Table 1.[10] These hypotheses reflect the expectations given the organization behavior literature and features of Zambia's three-arm PBF design.

Methods

The study setting (i.e., Zambia) and study intervention (i.e., PBF in Zambia) are described in Additional file 1. We gathered quantitative and qualitative data from health workers and related health centers for this study. The procedures for linking findings from qualitative and

Table 1 Hypothesized magnitude and direction of PBF on HRH

	Intervention (PBF) group	Control 1, or enhanced financing not conditioned on outputs	Control 2, or "business-as-usual"
Motivation	++	+	
Job satisfaction	++	+	
Attrition	−	−	

There is a greater magnitude of effect for the intervention group than control 1 group, but the direction should remain the same. Control 2 cells are left blank because no changes are expected to occur

quantitative research and bringing out their complementarities can be manifold [24, 25]. Therefore, we chose to carefully interpret and triangulate the qualitative with the quantitative data because our aim is model (i.e., Fig. 1) testing [26].

Study design

This study is part of a broader impact evaluation study aimed at measuring the effects of PBF on MCH and other health system outcomes. The evaluation follows a quasi-experimental design: 30 districts in the country were triplet-matched on key health systems and outcome indicators and randomly allocated to each study arm. Thus there are 10 PBF, 10 C1, and 10 C2 districts. The district selection process, the resulting list of districts, their health facilities, and population under study are further described in Additional file 2.

Health centers in targeted pilot districts were eligible for PBF if it employed at least one qualified health worker by the end of the first quarter of 2012. Those health centers received PBF incentive payments and emergency obstetric care (EmOC) equipment. This PBF agreement is reinforced with an institution-level contract (and a business plan) signed by DMOs and health centers, and an individual-level "motivation contract" signed by health workers and their affiliated health center. The proportion of the individual PBF staff bonus to the individual government salary was on average 10% during the entire duration of the project [27].[11] The determination of health center payment and individual performance bonuses is further described in Additional file 3.

Shen *et al. Human Resources for Health* (2017) 15:20

Page 4 of 15

Health centers in the C1 group received additional financing intended to equal to the average RBF incentive payments in intervention districts, as well as EmOC equipment. This additional financing was not tied to performance, so health centers spent it as meal allowances or on rehabilitation of the health center, drugs, outreach activities, and equipment. Due to administrative bottlenecks in the financing and procurement processes adopted by the C1 districts, health facilities in the C1 group received on average a financing amount equal to 56% of the PBF group by the end of the study period.[12] Health centers in C2 group represent "business-as-usual" since they received neither additional financing nor EmOC equipment.

This study was supported by the MOH of Zambia. The research protocol was approved by the Institutional Ethics Committee of the University of Zambia. Written informed consent was collected from all respondents. We kept all personal information confidential, and no names were used in the resulting report or journal articles.

Quantitative data collection and analysis

Quantitative measures pertaining to the HRH outcomes of interest were assessed through surveys fielded in health centers at baseline (October–November 2011) and towards the end of the PBF pilot project (September–November 2014).[13] A total of 186 health centers were surveyed, consisting of 86 in the PBF group, 49 in C1 group, and 51 in C2 group. Up to two health workers providing MCH services on the day of visit were interviewed for the survey in every facility, for a total of 683 staff personnel interviewed in two rounds. Statistical power for the overall evaluation was calculated using population coverage of services as key outcomes for an impact evaluation of PBF in Zambia, but power was not calculated for HRH outcomes in this study.

Motivation and job satisfaction are derived from the individual worker questionnaire and attrition is based on the facility assessment. The questions for the motivation and satisfaction were based on two existing, validated tools: Minnesota Satisfaction Questionnaire [28] and Job Satisfaction Survey [29]. In addition, the variables on well-being were derived from the WHO Well-Being Index [30]. The development of the motivation and job satisfaction constructs are described in more details in Additional file 4. Attrition was assessed by the number of authorized staff reported to have left a health center in the previous 12 months in a health facility survey.

The effects of PBF on key outcome variables were estimated with difference-in-difference framework among the PBF, C1, and C2 arms for two rounds of data (baseline and endline). Facility fixed effects analysis was performed with standard errors clustered at a district level. District grouping was taken in to account in the analysis through stratification controls. The difference-in-difference model can be summarized in the form of a linear regression equation as follows:

$$Y_{ijtd} = \gamma_0 + \gamma_1 \text{PBF}_d + \gamma_2 \text{Period}_t + \gamma_3 (\text{PBF} * \text{Period})_{dt} + \text{DP}_d + X_{ijtd} + \varepsilon_{ijtd}$$

where Y is the outcome for health worker i under facility j at time t for district d; γ_0 is a constant; PBF is a binary variable taking the value of 1 for districts in the PBF treatment area and 0 otherwise; Period is a binary variable where it is 1 for the post-intervention period and 0 otherwise; γ_1 and γ_2 are the coefficients for treatment and period, respectively; the interaction term is γ_3 which indicates the difference-in-difference treatment effect; DP represents the district grouping stratification with a vector of dummy variables indicating district inclusion in particular province-level strata; X is a vector of worker level covariates (age, gender, and staff position); ε is the random error term. For most of the analysis, pairwise comparisons are separately estimated with PBF estimated with the C1 group as the default category, and then PBF with C2 as the default. The model comparing C1 with C2 groups is specified exactly the same except that PBF variable is replaced with a binary variable denoting C1. All statistical analyses were done with STATA version 13.

Results of the three-group comparisons are shown in Table 2 while results of the two-group comparisons are shown in Additional file 5. One-way ANOVA shows that at baseline there was no statistical difference among the three groups, indicating baseline balance in key characteristics that may mediate the impact of PBF on satisfaction, motivation, and attrition.

Qualitative data collection and analysis

The second objective of our study is to understand the possible channels through which financial incentives affect health care providers. The second objective is pursued through in-depth interviews conducted in health centers, District Medical Offices (DMOs), and provincial headquarter offices. Interviews were conducted at the beginning of PBF implementation ("baseline"; November 2011–March 2012) and three years following it ("endline"; January 2015).[14] Organization leaders were interviewed individually, whereas staff members in a similar level on the organization chart were interviewed in a group. The sampling goal is to reach theoretical saturation, during which all major concepts are identified and additional interviews reveal no new information. A total of 81 interviews were conducted at baseline and 54 interviews were conducted at endline. The interviewees' demographic information for baseline and endline is

Shen *et al. Human Resources for Health* (2017) 15:20

Page 5 of 15

Table 2 Mean statistics of workers' characteristics at baseline and endline in three groups (*N* = 683)

Variable	Baseline			Endline		
	Intervention (*n* = 147)	Control 1 (*n* = 87)	Control 2 (*n* = 92)	Intervention (*n* = 166)	Control 1 (*n* = 92)	Control 2 (*n* = 99)
Female	0.42	0.38	0.42	0.41	0.36	0.49
Education-primary	0.06	0.08	0.05	0.04	0.01	0.05
Education-secondary	0.40	0.40	0.30	***0.35***	***0.49***	***0.27***
Education-college	0.52	0.49	0.63	**0.60**	**0.49**	**0.68**
Clinical officer	0.03	0.02	0.04	0.06	0.04	0.03
Nurse	0.25	0.26	0.25	0.33	0.35	0.45
Midwife	0.11	0.13	0.14	0.12	0.09	0.15
Environmental health technicians (EHTs)	0.15	0.09	0.16	0.13	0.08	0.10
Classified daily employees (CDEs)	0.33	0.41	0.32	*0.31*	*0.38*	*0.22*
Other staff	0.67	0.59	0.69	*0.69*	*0.62*	*0.78*
Age	37.43	38.01	36.21	*35.82*	*38.51*	*35.49*
Work-absence	1.20	1.44	1.59	1.12	1.10	1.74
Work-days	5.82	6.26	6.13	6.00	6.24	6.27
Work-hours	51.45	55.90	54.55	52.07	50.33	49.61
Supervision frequency from previous year	4.52	4.32	6.65	5.62	4.58	4.54
Work experience-total	10.06	11.04	9.76	8.03	9.03	7.95
Work experience-current facility	4.55	5.40	4.39	4.27	4.67	5.09

ANOVA test of balance among three groups was performed separately for baseline and endline. Statistical significance is denoted by bold italic ($p < 0.01$); bold ($p < 0.05$); italic ($p < 0.1$)

shown in Table 3. F4 software was used for transcription, and NVivo 10 software (QSR International Pty Ltd, Australia) was used for thematic analysis.

Results

In this section, we present results for the three HRH dimensions (motivation, job satisfaction, attrition), study group differences for each dimension's general construct scores, and for each construct's constituent variables. Figure 2 summarizes the intermediary factors that emerged from interviews, which we will explain along with the regression analysis results.

Motivation

We did not find support for our hypotheses for any of the eight motivation constructs with one exception: respondents in the PBF group reported, out of 100%, 2.42% ($p < 0.1$) higher on the personal well-being scale between baseline and endline than those in the C2 group (Table 4). This aggregate finding is driven by respondents in the PBF group who felt more calm and relaxed in the 2 weeks prior to reporting between baseline and endline than those in the C1 group (9.48% higher; $p < 0.1$) or those in the C2 group (5.69% higher; $p < 0.05$). The group differences for the eight motivation constructs are summarized in Table 4.

Looking specifically at the individual questions under each motivation construct (Additional file 6), the PBF appears to have encouraged staff to willingly give their time and help each other out when someone fell behind or had difficulties with his or her work; 3.77% higher ($p < 0.05$) between baseline and endline for the PBF than for the C2 group. Finally, three of the motivation questions seemed to discern group differences, which could be used and elucidated in future PBF research. The three questions are as follows: "I would prefer to work somewhere else than in this facility" (12.27% lower between baseline and endline for the PBF group than for the C1 group; $p < 0.1$); "My facility is a very dynamic and innovative place. People are willing to take risks to do a job well done" (5.06% higher between baseline and endline for the PBF group than for the C2 group; $p < 0.1$); and "Following procedures and rules is very important in my facility" is 1.95% ($p < 0.1$) and 4.26% ($p < 0.1$) higher between baseline and endline for the PBF and C1 group when each of them was compared with the C2 group.

Interviews, in accordance with the null effects of PBF on motivation, revealed that remuneration alone could not adequately address two causes of de-motivation: high workload and low staffing levels. Financial bonuses paid out by the PBF program were adjusted by workload, but they were not directly tied to the staffing level. This

Shen *et al. Human Resources for Health* (2017) 15:20

Page 6 of 15

Table 3 Interviewee characteristics of the qualitative sample

Facility	Baseline	Endline
Assignment		
RBF	23 (30%)	32 (59%)
Control 1	23 (30%)	13 (24%)
Control 2	30 (40%)	9 (17%)
Type		
District Community Medical Office (DCMO)	10 (13%)	12 (22%)
Health center	66 (87%)	42 (78%)
Worker		
DCMO		
District community medical officer	2 (20%)	2 (17%)
Nursing officer	2 (20%)	2 (17%)
Human resource officer	3 (30%)	3 (25%)
Others (planner, information officer, EHT)	3 (30%)	5 (40%)
Health center		
Clinical officer	3 (5%)	2 (5%)
Registered nurse	2 (3%)	1 (2%)
Enrolled midwife	15 (23%)	4 (10%)
Enrolled nurse	15 (23%)	5 (12%)
Environmental health technician (EHT)	17 (26%)	7 (17%)
Classified daily employee (CDE)	12 (18%)	7 (17%)
Lab technician	2 (3%)	16 (28%)
Gender		
Male	42 (55%)	27 (50%)
Female	34 (45%)	27 (50%)
Highest academic/professional qualification		
Degree	3 (4%)	3 (6%)
Diploma	29 (38%)	18 (33%)
Certificate	32 (42%)	17 (31%)
Senior secondary education	2 (3%)	9 (17%)
Junior secondary education	10 (13%)	7 (13%)
Total	76 (100%)	54 (100%)
Job experience (in years)		
Mean (*n*; standard deviation)	10.6 (76; 9.2)	9.8 (54; 8.7)
Number of years working in district		
Mean (*n*; standard deviation)	8.2 (76; 8)	7.9 (54; 6.9)
Number of years working in a health facility		
Mean (*n*; standard deviation)	5.2 (76; 4)	4.9 (54; 5.1)

became problematic in health care settings where the workload rose but staffing levels remained the same:

> There is a small clinic…with [urban clinics having] more nurses than we have here. We have tried to tell them, 'you guys give us some more nurses because we are over worked here'. However, they behave as if

there is more work there than there is here. —Nurse, Gwembe (PBF group)

Rural health workers felt they worked longer hours compared to their urban counterparts who worked in shifts because urban clinics were better staffed. As a result, they were not able to get any days off, rest after completing work, or have some time for personal responsibilities. High workload, exacerbated by chronic staff shortages, ultimately compromised health care workers' motivation to provide high-quality services.

Respondents provided reasons other than monetary incentives for remaining in the health workforce during the interviews, namely professional training and obligation to serve patients:

> First of all you have to be proud about your own profession and if you leave it who will handle it? … [If] I leave my job because of the small salary and whatever. I think that's not right. I am just happy to be what I am as a doctor. The profession itself is a motivating factor. —Provincial Medical Officer, Livingstone (not in a study group)

> Even when it is over our working hours, we still come to the clinic and attend to our patients because we would not know what would happen; maybe the patient's condition can be worsen if we do not attend to them early enough. —CDE, Itezhi-Tezhi (C1 group)

Our results thus raise important secondary questions regarding the influence of extrinsic motivators (e.g., bonuses from PBF scheme) versus that of intrinsic motivators (e.g., workers' internal desire) for serving patients and the community at large.[15] We find Zambian health workers' performance appears to have been driven more by internal rewards, such as passion for their job or professional integrity, and are largely unaffected by the PBF bonuses or enhanced financing.[16] We echo Judson et al. point that it is complex to determine the right balance of extrinsic and intrinsic motivators in order to achieve the "value goal" in PBF schemes [31].

Job satisfaction

We found support for hypotheses with overall job satisfaction and compensation (see Table 5).

More specifically, we estimated a statistically significant increase of 4.75% ($p < 0.05$) in overall job satisfaction between baseline and endline for the PBF versus C2 group. The same effect was more pronounced—10.31% ($p < 0.05$) higher—between baseline and endline for C1 versus C2 group. Though not statistically significant, there is a 0.48% lower overall job satisfaction between baseline and endline for the PBF than C1 group. Overall

Shen *et al. Human Resources for Health* (2017) 15:20

Page 7 of 15

Fig. 2 Mediators of PBF and HRH
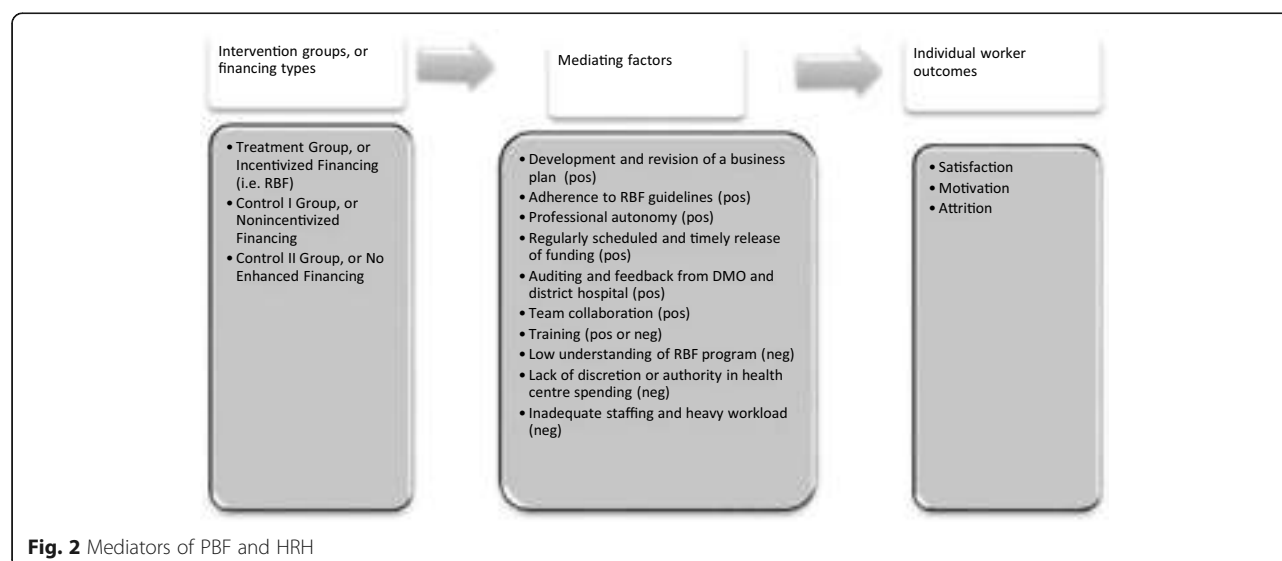
job satisfaction was found in the following order, from highest to lowest: enhanced financing, PBF, and pure control. This order for overall job satisfaction is contrary to what we hypothesized and contrary to the order we found for satisfaction with compensation.

For compensation, respondents in the C1 group reported an average of 8.64% ($p < 0.05$) lower between baseline and endline for being rewarded for their hard work than their counterparts in the PBF group. Likewise, respondents in the C2 group reported 3.88% ($p < 0.1$) lower points between baseline and endline for compensation than those in the C1 group. There was not a statistically significant difference between the C1 and C2

groups. As expected, we observed higher average satisfaction with compensation in the PBF group than in the C1 group, followed by C2 group. Full results for all questions under each satisfaction construct are in Additional file 7.

The PBF program added monetary incentives whereas enhanced financing provided material resources to improve health infrastructure, both of which increased workers' job satisfaction. PBF and, to a lesser degree, enhanced financing groups both had a consistently positive effect on satisfaction with working conditions. Contrary to what we hypothesize though, C1 was not statistically different than either the PBF or the C2

Table 4 Estimated effect of PBF and enhanced financing on motivation

	Intervention v. control 1 (N = 448)	Intervention v. control 2 (N = 462)	Control 1 v. control 2 (N = 345)
	β (standard error)	β (standard error)	β (standard error)
Teamwork	0.39 (3.13)	0.93 (1.43)	1.62 (3.51)
Autonomy	0.82 (4.31)	1.31 (1.77)	1.30 (4.49)
Recognition	−0.38 (3.28)	−0.84 (1.33)	−0.89 (2.85)
Change	−2.10 (2.66)	1.03 (1.24)	3.83 (2.64)
Self concept	−0.73 (1.87)	0.77 (1.08)	2.21 (2.36)
Work environment	−1.79 (2.60)	1.26 (1.26)	4.31 (3.03)
Leadership	−3.08 (4.89)	1.21 (2.61)	5.55 (5.15)
Well-being	1.10 (2.98)	2.42* (1.24)	3.93 (2.50)

Coefficients, standard errors, and *p* values are for the interaction between the random assignment (intervention, control 1, control 2) and study period (baseline, endline). They are obtained from pair-wise regressions—facility fixed effect models controlling for workers' characteristics. Robust standard errors are clustered at the district level

*$p < 0.1$

Table 5 Estimated effect of PBF and enhanced financing on job satisfaction

	Intervention v. control 1 (N = 448)	Intervention v. control 2 (N = 462)	Control 1 v. control 2 (N = 345)
	β (standard error)	β (standard error)	β (standard error)
Relationship outside facility	1.64 (2.96)	0.43 (1.49)	−0.59 (3.12)
Relationship within facility	−4.16 (2.82)	0.48 (1.02)	4.94* (2.59)
Work conditions	6.39 (5.12)	4.37* (2.18)	2.20 (5.90)
Recognition	1.44 (2.84)	0.09 (1.32)	−1.44 (2.24)
Opportunities	4.69 (4.18)	3.64* (2.00)	2.30 (5.24)
Compensation	8.64** (4.08)	3.88* (1.99)	−0.82 (4.87)
Overall satisfaction	−0.48 (3.96)	4.75** (2.14)	10.31** (3.94)

Coefficients, standard errors, and *p* values are for the interaction between the random assignment (intervention, control 1, control 2) and study period (baseline, endline). They are obtained from pair-wise regressions—facility fixed effect models controlling for workers' characteristics. Robust standard errors are clustered at the district level

*$p < 0.1$; **$p < 0.05$

Shen et al. Human Resources for Health (2017) 15:20

Page 8 of 15

group in terms of satisfaction with work conditions. Those in the PBF group had increased satisfaction over availability of supplies between baseline and end-line relative to those working in health centers that received enhanced financing (12.97% higher; $p < 0.1$) or to those who did not receive additional financing (7.73% higher; $p < 0.05$). This finding is surprising given that the PBF and C1 groups received the same EmOC equipment, and C1 additionally received financing not tied to performance. But it makes sense in light of an unintended effect revealed in the interviews: staff workers used personal PBF bonuses as "re-investment funds" to improve their own working environment, as is the case in Gwembe.

PBF respondents reported lower overall job satisfaction than enhanced financing respondents for two reasons. First, health care workers felt improving working conditions was more important than focusing on monetary incentives. The shortages and/or lack of infrastructure and equipment were major barriers to the delivery of quality health services:

> When I lose a client [dies] as a result of a situation about which I could have been able to do something but there is nothing to use, that de-motivates. It's better if a client dies from malaria in a situation where you were able to give him/her quinine or Coartem. Not where you are supposed to prescribe the drugs and they are not there; that is really de-motivating. —Nurse, Gwembe (PBF group)

The availability of transport was also reported as important for job satisfaction given that many of the rural health centers were hard to reach. Motorbikes enabled health workers to travel to outlying areas to conduct their outreach activities.

Second, the high frequency of administrative audits and quality assessments tied to the PBF program also affected overall job satisfaction. All health centers in Zambia are supposed to receive supervision and support in the form of an administrative audit from the DMO once a month and a quality assessment from the hospital once a quarter, but we found that the C1 and C2 groups received less frequent visits than the PBF group.[17] The audits and assessments had their drawbacks for the PBF group. Respondents felt that the visits happened too frequently for any observable difference to be observed. Further, some respondents complained that the verification teams would visit unannounced (intended to prevention falsification of results) when the staff were inundated with work, when the health center is short of staff, or when some staff conversant with PBF issues and processes were working outside the health center. Finally, some of the

health centers resented the DMO meddling with their internal affairs:

> We were told by the DMO we could include allowances [in the business plan] only with an authority letter from PBF. So when you look at it … strictly speaking, autonomy was not there. —Nurse, Isoka (PBF group)

This nurse received the DMO's guidance as a directive. Countering this, respondents representing the DMO felt that some health centers spent money outside the parameters of their business plans, and therefore they had to be corrected.

Nonetheless, PBF group had more autonomy over the allocation of resources than either one of the control groups, by design.[18] They had access to their account balance, and could therefore plan ahead:

> For the percentage that was there under PBF; it was not for the DMO to plan for us. When we got that money; 25[19] percent of that money was for the center to plan what to buy since we knew the things that we did not have. This has been a plus, because we were able to buy things on our own. —Midwife, Gwembe (PBF group)

PBF funds provided this respondent with a sense of security because health center staff members were given spending discretion, but they still had to disburse the funds in a timely manner. If there was a delay in disbursing government funds, as was the case in Chipepo and Gwembe, health centers have had to use part of their PBF funds to cover activities outside the scope of their original business plan.

The C1 group had less financial autonomy than the PBF group. Health centers in the C1 group still followed the traditional protocol of determining their internal needs, then submitting their purchasing requests to the local DMO for approval:

> We don't directly receive that [equivalent of PBF amount of] money for us to buy our stuff. The district buys for us…I think that the person receiving it on the other end [in DMO] would not see the importance and may just leave it out. Therefore, we should have been receiving that money directly ourselves; since we are the ones working here and we are the ones who know what we need and what we don't need. —Staff, Itezhi-Tezhi (C1 group)

This respondent simply did not think the Itezhi-Tezhi DMO, acting as a middleman between the MOH and the health center, honored his or her health center's

Shen *et al. Human Resources for Health* (2017) 15:20

Page 9 of 15

needs and the needs of the wider community. In sum, our qualitative assessment revealed individual job satisfaction and the relationship between health centers and DMOs were both affected by the amount of available resources, PBF program-related assessments, and autonomy to control financial resources. On net it appears that overall satisfaction was most elevated in the C1 group, followed closely behind by the PBF group.

Worker attrition

As shown in Table 6, the coefficients in the comparison between PBF and either C1 or C2 all have the expected negative signs, interpreted as less staff leaving the PBF health centers than the ones in the two control groups. However, only two professional categories were statistically significant. There were 0.10 ($p < 0.05$) fewer administrators on average who left health centers in the PBF group than in the C1 group. The PBF intervention group also had lower turnover of nurses, with 0.14 ($p < 0.05$) fewer nurses on average who left when compared with the C2 group.

Low compensation was a reason to look for another job. Health workers in rural areas further felt that they were in a disadvantaged position compared to their counterparts in urban areas because they had poor access to the media, information, and training opportunities. This is tied to other reasons for staff turnover reported such as retirement, illness, marriage, schooling for workers' children and dependents, lack of accommodation, or the need to pursue further academic studies or professional training.

The HRH situation generally improved after the PBF program was introduced to their district:

> For the past two years that we have been with this PBF, I have never heard any staff saying they want to go to the hospital...the same people are comfortable

in the health centre...nobody has requested for any transfer or even talking about it. -Nurse, Isoka (PBF group)

Many health workers reported engaging in parallel income generation activities such as farming and business during the baseline interviews. This corresponds to 21% of a nationally representative sample of health workers reported being involved in income-augmenting activities in 2006 [6].[20] But health centers became more attractive as places to work in than district hospitals due to the incentives from the PBF program.

Staff shortages and understaffing are problems strongly endorsed during the baseline interviews. Managers started paying closer attention to staffing because the allocation of bonuses through the PBF program depended heavily on the availability and placement of qualified staff members in the health center.

> Sometime back, some centers used to be manned by unqualified staff but when the [PBF] program came, management was pressured to the extent that we needed to find where we could source some qualified staff, such as from the hospitals to go to the [health] centers... Things have changed now compared to the past because every health facility now has a qualified health staff but then, they are not enough. —DMO, Isoka (PBF group)

> But with the emphasis on quality as in skilled personnel; that [PBF program] has helped us put every member of staff where they are supposed to be.—EHT, Gwembe (PBF group)

Having qualified co-workers and greater role clarity prevented job turnover, especially in the PBF group.

In some of the health centers, such as the three we visited in Isoka, health cadres chose to give up part of their individual bonuses to hire non-specialized yet qualified staff out of institution-wide funds. By doing so, they hoped to improve the amount of bonus points earned the following quarter and, in turn, it would pay off in higher individual bonuses in the long run. This is a double gain in that the health center is better staffed to provide quality services and it helped increase the relative size of bonus that everyone on staff can earn. Not all health centers in the PBF group were able to do the same because the bonuses they earned were inadequate due to low catchment population, low performance, lack of a midwife, etc.

Table 6 Estimated effect of PBF and enhanced financing on attrition

	Intervention v. control 1 (n = 448)	Intervention v. control 2 (n = 462)	Control 1 v. control 2 (n = 345)
	β (standard error)	β (standard error)	β (standard error)
All staff	−0.03 (0.05)	−0.02 (0.02)	−0.00 (0.06)
Clinical officer	−0.05 (0.05)	0.04 (0.03)	0.14* (0.08)
Administrator	−0.10** (0.05)	−0.01 (0.01)	0.07 (0.05)
Nurse	−0.19 (0.15)	−0.14** (0.06)	−0.09 (0.15)

Coefficient denotes number of staff in each category who left the facility permanently in the last 12 months. Coefficients, standard errors, and *p* values are for the interaction between the random assignment (intervention, control 1, control 2) and study period (baseline, endline). They are obtained from pair-wise regressions—facility fixed effect models controlling for workers' characteristics. Robust standard errors are clustered at the district level
*p < 0.1; **p < 0.05

Discussion

In this mixed-methods study, we investigated whether a national government-implemented PBF scheme

Shen *et al. Human Resources for Health* (2017) 15:20

Page 10 of 15

improved three HRH outcomes in Zambia: motivation, job satisfaction, and attrition. Our econometric estimates suggest that PBF led to increased job satisfaction for a small number of constructs and decreased attrition of administrative staff and nurses, but PBF did not lead to marked effects on motivation. We also found support for overall job satisfaction and compensation, with both PBF and enhanced financing experiencing a more positive effect compared to pure control. However, the gains were slightly lower for the PBF than for the C1 group. For attrition, we observed lower turnover for administrators in the PBF group compared to either of the control groups. Incentive schemes may not have the same effect on HRH outcomes in another national context, which differ on labor market conditions including changes in staff salaries, retirement age, transfers within and across districts, and education status [32, 33].[21]

There are indications that PBF has a minor impact on elicited motivation, which is also what Dale found for Afghanistan's performance-based payment program [34]. One channel through which motivation is affected is when individuals feel strained because they are held accountable for outcomes not under their direct control, which we did not find either quantitative or qualitative evidence of [35]. A second concern is that a large enough financial incentive package would diminish personal reasons to work [36–39]. But our interviews revealed a general balance of both extrinsic and intrinsic sources of motivation. Some interviewees revealed self-introspection, which helped us to ascertain how people energize themselves to persist working at healthcare delivery.

Complementary to econometric results, our qualitative assessment shows positive evidence on health workers' job satisfaction and attrition from PBF and, to some extent, from enhanced financing. The evidence suggests that in response to PBF, health care providers worked harder and some also increased community outreach activities in order to earn more bonuses. However, a higher workload as an imperative to earn points added pressure on health workers. Among PBF respondents, there was a sentiment that the district supervision visit was too frequent and sometimes too stringent, thus decreasing overall job satisfaction. Those in the PBF group did enjoy autonomy to solve their own problems, which was not there in practice and thus lessened job satisfaction with compensation for those in the control groups. Ultimately, PBF made health centers more attractive to work in than hospitals, and with more specialized and non-specialized positions filled, it allowed skilled providers to focus on caring for patients. Health workers appreciate working in a PBF health center not only because of the financial incentives, but because of professional dedication, capacity to serve the community, and opportunities for professional development.

We can envision at least four limitations of this study. The district pairing design could be somewhat compromised with "contamination" across groups.[22] However, baseline characteristics were similar among workers across the three groups in Table 1, which lends confidence that results were not susceptible to confounding bias. Furthermore, as the PBF and C1 interventions were administered at the district level, communications between health staff were much greater within than across districts.

Second, as this is an observational study, recall bias could affect the accuracy of our estimates, especially because a recall period was not specified in the survey for the questions related to motivation and job satisfaction. However, we believe such psychometric properties would not differ for the three study groups since all of the respondents completed the same survey in the same time period. Third, study instruments could be improved to deepen the understanding of HRH and MCH outcomes. Designing the interview guide so that interviews are carried out with non-managerial staff on a one-on-one basis would minimize normative bias. Also, mediation analysis can be used in future studies to test whether, and to what extent, motivation or job satisfaction mediates the relationship between PBF and attrition or PBF and staff performance. This would not only improve upon our theory of change but, from a performance management standpoint, improve the design of systems of incentives and appraisal put in place to produce the level of performance necessary to achieve health service objectives.

Lastly, job satisfaction and motivation are abstract concepts. We expect job satisfaction and motivation to increase with additional funding, and indeed we do find evidence supporting this for job satisfaction. But staff responses to our survey are nuanced in that they are responding to different levels of pay and to the conditions of the overall health system. PBF increases demands on their job roles and pressure to meet PBF targets. This stress has an impact on worker productivity, turnover, and well-being over and above the direct extrinsic rewards of provider incentives. Therefore, future research should examine a confluence of factors related to staff responses such as employee involvement in setting PBF-related targets, ability to control the factors which affect meeting those targets, their perception of the transparency of performance evaluation process and fairness of reward process, and adequacy of program funding level. Although the fields of organization behavior, management, and industrial and organizational psychology have made progress on this topic, it is still a challenge to quantify health workers' job satisfaction and motivation, especially in health contexts of LMICs.

Shen *et al. Human Resources for Health* (2017) 15:20

Page 11 of 15

Conclusions

This study contributes to the nascent literature on the effects of PBF on health worker outcomes in LMICs. The Zambia pilot studied here conferred both financial and non-financial rewards, such as raising standards of performance, developing accurate performance measurement systems, and training managers on how to give effective feedback. Enhanced financing, which was used to improve work conditions, can also encourage health personnel to work harder and stay in rural communities. Our study calls for a careful examination of the contextual factors which form the sufficient conditions to make the desirable effects of performance-based or enhanced financing manifest. While some of the conditions are beyond the immediate Zambian program implementers' span of control, such as staffing shortages, many are under their purview, such as the quality of supervision, communication, and refresher trainings for staff.

The adoption of PBF is part of health system reforms [40, 41]. The research literature has not explicitly focused on an important mediator between PBF incentives and desired health services outcomes: HRH. The Zambia PBF program offered incentives to achieve desired MCH outcomes and, in the process, modified individual health care provider behavior and investments in entire health centers. We drew the link between PBF and three HRH outcomes because poor job satisfaction and motivation lead to poor performance and higher attrition, thus disrupting continuity of care for patients and, in aggregate, incurring higher costs for the health system. Our study not only highlights effective and sustainable ways to strengthen the health workforce in Zambia, but it has implications on how to strengthen HRH's relationship with other health system building blocks in LMICS.

Endnotes

[1]Clinical health worker encompasses 12 categories: clinical officers, dental surgeons, doctors, nutritionists, lab scientists, pharmacists, physical therapists, radiographists, midwives, nurses, environmental health personnel, and oral health. Clinical health workers are not the same as administrators, who also work in health facilities.

[2]Poor staff morale and weak incentives lead to emigration or migration, which in turn result in a health worker shortage [54, 55]. An initial wave of Zambian health workers migrated to countries in sub-Saharan Africa, such as South Africa, Botswana, and Namibia [56]. Subsequent waves migrated to Europe, North America, Australia, and New Zealand. An exodus of health professionals has also been observed within Zambia from rural to urban areas, from the public to the private sector, and from curative to preventive care [57, 58].

[3]PBF is a strategy to address inadequate performance-reward linkages and, more generally, health system reform [40, 59]. In this paper we adopt Soeter et al.'s definition of PBF as "fee-for-service conditional on quality of care" [60].

[4]Monetary incentives (i.e., bonus payment) can either be awarded for achievement of predefined performance targets or withheld if targets are not reached. Individuals and organizations may also respond to non-monetary incentives of PBF schemes such as enhanced supervision, data system development, and institutional rankings [61, 62].

[5]A wide array of moderators on the "meso-levels," or intermediary levels, that could weigh on PBF's influence on worker outcomes, which we acknowledge them though not account for them explicitly in this study. Beyond concerns over PBF implementation is fungibility, i.e., whether health managers allocate revenue to health worker bonuses or to other assets of equivalent value, say, equipment, supplies, and capital improvements to the health care facility. Toonen et al. considered autonomy, management capacity, and an understanding of PBF concepts to be important for implementing PBF programs in sub-Saharan Africa's health sector [63]. Mohammed et al. urged a closer look at the "know–do" gap, or the gap between what health workers know how to do—and actually do (Mohammed RL, Herbst C, Leonard K, Goldberg J.: Crossing the Three-Gap Divide with PBF, unpublished). PBF interventions can reduce this gap through improved accountability and supervision structures, and more generally via an improved working environment.

[6]Eisenberger et al. argued that rewards could have a positive, negative or null effect on motivation depending on the nature of the task assigned in controlled laboratory settings [64]. Woolhandler et al. further questioned the causal direction posed by rewards on motivation in health care settings in high-income countries [65].

[7]We make this assertion following Bhatnagar and George's observations in Nigeria [66] and Kalk et al.'s observations in Rwanda [67].

[8]Job satisfaction is workers' personal satisfaction relative to their work situation [68]. The correlation between income and subjective well-being has been observed both within and across countries [69]. Yet job satisfaction is a multi-faceted concept. Heneman et al.'s results indicated a positive relationship between pay-for-performance perceptions and pay satisfaction [70]. Judge et al.'s meta analysis results suggested that pay level is only marginally related to job satisfaction [71]. Job satisfaction is not just about job conditions but also personality. In an earlier study, Judge et al. found that traits of core self-evaluations, or positive self-concept, are positive dispositional predictors of job satisfaction [72]. The PBF scheme in Zambia primarily responds workers' satisfaction with their compensation, but it might also

Shen *et al. Human Resources for Health* (2017) 15:20

Page 12 of 15

respond to the other six aspects of job satisfaction we measure. Therefore, like motivation, we hypothesize that PBF has a positive effect on job satisfaction. We further hypothesize that enhanced financing would also have a positive effect on job satisfaction, but with a lower magnitude than PBF because enhancing financing primarily addresses one aspect of job satisfaction, or satisfaction with work conditions.

[9]Porter et al.'s longitudinal study results further suggested that satisfaction with pay is most acute at time points closest to when psychiatric technicians intend to leave their organization [73].

[10]We expect to see stronger effects on HRH results for the intervention (PBF) group than for the control 1 (C1; enhanced financing) group, but the direction is expected to remain the same for the following reason: RBF can be interpreted by health workers as a reward for their individual efforts, whereas enhanced financing can be interpreted by them as a signal of recognition for collective efforts through improvements on working conditions. Both incentive schemes are expected have positive, knock-on effects on HRH outcomes compared with the control 2 (C2; pure control) group.

[11]The amount of bonus received by each staff member was dependent on a number of factors: individual performance scores taken during a performance appraisal, actual PBF income made, investment priorities, the number and composition of staff at the health center, and individual government salary levels. The ratio was higher at the start of the PBF project but dropped after about 6 months of the PBF project due to an increase in government salaries ranging from 100 to 200% [27]. Nonetheless, PBF staff bonuses led to an absolute increase in the personal income for staff but by different margins/percentages across staff and health centers.

[12]It should also be noted that, unlike the PBF districts, health centers in C1 districts did not have devolved autonomy, enhanced supervision, training, access to PBF reference materials, and data monitoring and verification that were also part of the PBF intervention.

[13]The surveys collected information on human resources and physical capacity, facility governance, practitioner knowledge, outreach activities and other initiatives, and quality of care and practitioner behavior through patient exit interviews.

[14]At baseline, health centers and DMO offices in Gwembe (PBF group), Itezhi-Tezhi (C1 group) and Mazabuka (C2 group) in the Southern Province of Zambia were included in the sample. Southern Province reflects the median levels of socio-economic status and health indicators across all the ten Zambian rural provinces, so focusing data collection efforts on this province enabled easier identification of cross-cutting issues for PBF and human resources. Five additional interviews

with conducted with Provincial Medical Officers in Livingstone. At endline, health centers in four districts (Isoka, Gwembe, Itezhi-Tezhi, Mazabuka) were purposely sampled based on a multitude of characteristics such as remoteness, size of catchment area, urban/rural split, performance, and staff-mix.

[15]Cognitive evaluation theory (CET) predicts that extrinsic rewards would diminish, if not displace, intrinsic interest [36]. Deci et al.'s meta analysis concluded that extrinsic awards decreased intrinsic motivation regardless of the form of incentive: engagement-, completion-, or performance-contingent awards [39]. Decreased intrinsic motivation negatively affects worker autonomy, purpose, altruism and competence [74]. Huillery and Seban found lower staff attendance and on-the-job effort after the PBF pilot ended in the Democratic Republic of Congo, which they attribute to not only lowered motivation, but a switch from intrinsic to extrinsic motivation on the workers' behalf [75]. However we do not find evidence in support of CET.

[16]Likewise, Brock et al. have found that peer scrutiny and encouragement alone can determine quality of care provided by clinicians in their sample [76].

[17]During administrative audit and quality assessment visits, the verifiers would look at all aspects of PBF program implementation and see how health centers were performing against standards and benchmarks. After their visit, the verifiers would debrief health center staff on their strengths and weaknesses, and with the health center cadres devise potential solutions.

[18]PBF funds were determined from performance and then disbursed from the MoH directly into each health center's bank account. PBF funds did not pass through the DMO. The health cadres of Isoka and Gwembe districts, both PBF groups, had high involvement in prioritizing needs and use of PBF money without having to wait for the DMO to tell them what to do.

[19]The amount should be 40%.

[20]Health staff who were engaged in income-generating activities in order to augment their salaries has also been observed in Democratic Republic of Congo [77], in Sierra Leone [78], and in Tanzania [79].

[21]For example, Zambia raised salaries for all government workers in 2011 and in 2013 by between 100 to 200% which had an effect on the size of the staff bonus.

[22]For example, health workers from either of the control groups may have sought employment in one of the health centers in the PBF group. Health workers across the three study groups could also have been sharing information about how to generate additional income from means other than the PBF program [80].

Shen *et al. Human Resources for Health* (2017) 15:20

Page 13 of 15

Additional files

Additional file 1: Description of Zambia and PBF in Zambia [1, 27, 42–52]. (DOCX 150 kb)

Additional file 2: District selection of Zambia's PBF Program. (DOCX 41 kb)

Additional file 3: Determination of performance bonuses to individual staff members of health centers. (DOCX 139 kb)

Additional file 4: Description of motivation and job satisfaction constructs and variables [53]. (DOCX 135 kb)

Additional file 5: Mean statistics of health worker characteristics at baseline and endline, two-group comparisons. (DOCX 89 kb)

Additional file 6: Regression results for motivation variables. (DOCX 82 kb)

Additional file 7: Regression results for job satisfaction variables. (DOCX 83 kb)

Abbreviations
ANC: Antenatal care; CDE: Classified daily employees; CET: Cognitive Evaluation Theory; CSO: Central Statistical Office; DMO: District Medical Office; EmOC: Emergency obstetric care; HMIS: Health Information Management System; HRH: Human Resources for Health; LMICs: Low- and middle-income countries; MCH: Maternal and child health; MOH: Ministry of Health; P4P: Pay For Performance; PBF: Performance-based financing; PMO: Provincial Medical Office; PNC: Postnatal care

Availability of data and materials
The datasets analyzed during the current study are available from Jed Friedman (jfriedman@worldbank.org), the senior author, on reasonable request.

Authors' contributions
GS and HN designed the study. JF designed the impact evaluation on which this study is based. AD performed the statistical analysis and NS performed the interview data analysis. All authors were involved in the drafting of the manuscript. And all authors read and approved the final manuscript.

Competing interests
The authors declare that they have no competing interests.

Author details
[1]Department of Health Policy and Management, Graduate School of Public Health and Health Policy, City University of New York, 55 West 125 Street Room 806, New York, NY 10027, United States of America. [2]Health, Nutrition, and Population Global Practice, The World Bank Group, 1818 H Street, NW, Washington, DC 20433, United States of America. [3]Department of Gender Studies, University of Zambia, P.O. Box 32379, Lusaka, Zambia. [4]Development Research Group, The World Bank Group, Washington, DC, United States of America.

References
1. Zambia Ministry of Health. National Health Strategic Plan 2011-2015. Zambia Ministry of Health: Lusaka; 2011.
2. Bangdiwala SI, Fonn S, Okoye O, Tollman S. Workforce resources for health in developing countries. Public Health Rev. 2010;32(1):296–318.
3. World Health Organization. The World Health Report 2006: Working Together for Health. Geneva, Switzerland: World Health Organization; 2006.
4. World Health Organization. African Health Observatory. Human resources for health country profile: Zambia. Geneva: World Health Organization; 2010.
5. Zambia Ministry of Health. National Human Resources for Health Strategic Plan 2011-2015. Zambia Ministry of Health: Lusaka; 2011.
6. Picazo OF, Zhao F. Zambia health sector public expenditure review: accounting for resources to improve effective service coverage. Washington DC: World Bank; 2009.
7. Bruckner TA, Scheffler RM, Shen G, Yoon J, Chisholm D, Morris J, Fulton BD, Dal Poz MR, Saxena S. The mental health workforce gap in low-and middle-income countries: a needs-based approach. Bull World Health Organ. 2011;89(3):184–94.
8. Samb B, Desai N, Nishtar S, Mendis S, Bekedam H, Wright A, et al. Prevention and management of chronic disease: a litmus test for health-systems strengthening in Low-income and middle-income countries. Lancet. 2010;376(9754):1785–97.
9. Werner RM, Kolstad JT, Stuart EA, Polsky D. The effect of pay-for-performance in hospitals: lessons for quality improvement. Health Aff. 2011;30(4):690–8.
10. Campbell SM, Reeves D, Kontopantelis E, Sibbald B, Roland M. Effects of pay for performance on the quality of primary care in England. N Engl J Med. 2009;361(4):368–78.
11. Glickman SW, Ou FS, DeLong ER, Roe MT, Lytle BL, Mulgund J, et al. Pay for performance, quality of care, and outcomes in acute myocardial infarction. JAMA. 2007;297(21):2373–80.
12. Basinga P, Gertler PJ, Binagwaho A, Soucat ALB, Sturdy J, Vermeersch CMJ. Effect on maternal and child health services in Rwanda of payment to primary health-care providers for performance: an impact evaluation. Lancet. 2011;377:1421–8.
13. Ireland M, Paul E, Dujardin B. Can performance-based financing be used to reform health systems in developing countries? Bull World Health Organ. 2011;89(9):695–8.
14. Petersen LA, Woodard LD, Urech T, Daw C, Sookanan S. Does pay-for-performance improve the quality of health care? Ann Intern Med. 2006;145(4):265–72.
15. Lemiere C, Herbst C, Torsvik G, Maestad O, Soucat A, Leonard K. Evaluating the impact of performance-based financing on health workers performance. Washington, DC: World Bank; 2012.
16. Bertone MP, Witter S. The complex remuneration of human resources for health in low-income settings: policy implications and a research agenda for designing effective financial incentives. Hum Resour Health. 2015;13(1):1.
17. Flodgren G, Eccles MP, Shepperd S, Scott A, Parmelli E, Beyer FR. An overview of reviews evaluating the effectiveness of financial incentives in changing healthcare professional behaviours and patient outcomes. Cochrane Database Syst Rev. 2011;7(7). Art. No.: CD009255. doi:10.1002/14651858.CD009255.
18. Mobley WH. Intermediate linkages in the relationship between job satisfaction and employee turnover. J Appl Psychol. 1977;62(2):237–40.
19. Farrell D, Rusbult CE. Exchange variables as predictors of job satisfaction, job commitment, and turnover: the impact of rewards, costs, alternatives, and investments. Organ Behav Hum Perform. 1981;28(1):78–95.
20. Chatman JA. Matching people and organizations: selection and socialization in public accounting firms. Adm Sci Q. 1991;36:459–84.
21. Willis-Shattuck M, Bidwell P, Thomas S, Wyness L, Blaauw D, Ditlopo P. Motivation and retention of health workers in developing countries: a systematic review. BMC Health Serv Res. 2008;8(1):247–54.

Shen *et al. Human Resources for Health* (2017) 15:20

Page 14 of 15

22. Tett RP, Meyer JP. Job satisfaction, organizational commitment, turnover intention, and turnover: path analyses based on meta-analytic findings. Pers Psychol. 1993;46(2):259–93.

23. Janssen PP, De Jonge J, Bakker AB. Specific determinants of intrinsic work motivation, burnout and turnover intentions: a study among nurses. J Adv Nurs. 1999;29(6):1360–9.

24. Brady HE, Collier D. Rethinking social inquiry: diverse tools, shared standards. New York, NY: Rowman & Littlefield Publishers; 2010.

25. King G, Keohane RO, Verba S. Designing social inquiry: scientific inference in qualitative research. Princeton, NJ: Princeton University Press; 1994.

26. Mahoney J. After KKV: the new methodology of qualitative research. World Politics. 2010;62(01):120–47.

27. Zambia Ministry of Health's Central Statistical Office (CSO). Living Conditions Monitoring Survey Report 2006-2010. Lusaka: CSO; 2012.

28. Weiss DJ, Dawis RV, England GW, Lofquist LH. Manual for the Minnesota Satisfaction Questionnaire. Minnesota Studies in Vocational Rehabilitation. Minneapolis: University of Minnesota Industrial Relations Center; 1967.

29. Spector PE. Measurement of human service staff satisfaction: development of the job satisfaction survey. Am J Community Psychol. 1985;13:693.

30. World Health Organization. WHO-5 Well-Being Index. 2012. http://www.who-5.org/. Accessed 28 Oct 2016.

31. Judson TJ, Volpp KG, Detsky AS. Harnessing the right combination of extrinsic and intrinsic motivation to change physician behavior. JAMA. 2015;314(21):2233–4.

32. Soucat A, Scheffler R. The labor market for health workers in Africa: a new look at the crisis. Washington DC: World Bank Publications; 2013.

33. Herbst CH, Vledder M, Campbell K, Sjöblom M, Soucat A. The human resources for health crisis in Zambia: an outcome of health worker entry, exit, and performance within the national labor health market, Working Paper 214. Washington, DC: World Bank; 2011.

34. Dale E. Performance-based payment, provider motivation and quality of care in Afghanistan. Baltimore, MD: Johns Hopkins Bloomberg School of Public Health; 2014.

35. Jones RS, Brown C, Opelka F. Surgeon compensation: "Pay for performance", the American College of Surgeons National Surgical Quality Improvement Program, the Surgical Care Improvement Program, and other considerations. Surgery. 2005;138(5):829–36.

36. Deci EL, Ryan RM. Intrinsic motivation and self-determination in human behavior. New York: Plenum Press; 1985.

37. Ranson MK, Chopra M, Atkins S, Dal Poz MR, Bennett S. Priorities for research into human resources for health in low- and middle- income countries. Bull World Health Organ. 2010;88:435–43.

38. Young GJ, Meterko M, Beckman H, Baker E, White B, Sautter KM, et al. Effects of paying physicians based on their relative performance for quality. J Gen Intern Med. 2007;22(6):872–6.

39. Deci EL, Koestner R, Ryan RM. A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. Psychol Bull. 1999;125(6):627.

40. Meessen B, Soucat A, Sekabaraga C. Performance-based financing: just a donor fad or a catalyst towards comprehensive health-care reform? Bull World Health Organ. 2011;89:153–6.

41. Witter S, Toonen J, Meessen B, Kagubare J, Fritsche G, Vaughan K. Performance-based financing as a health system reform: mapping the key dimensions for monitoring and evaluation. BMC Health Serv Res. 2013;13(1):1.

42. The World Bank. World Bank Open Data 2014. Zambia country profile [Data file]. Retrieved from http://data.worldbank.org/country/zambia. Accessed July 5, 2016.

43. Zambia Ministry of Health's Central Statistical Office (CSO). Zambia Demographic and Health Survey 2013-14, Key Findings. Lusaka: CSO; 2014.

44. World Health Organization. Global Health Observatory 2015. Zambia: WHO statistical profile. Retrieved from: http://www.who.int/gho/countries/zmb.pdf. Accessed 6 July 2016.

45. World Health Organization. Global Health Expenditure database. 2013. http://apps.who.int/nha/database. Accessed 7 Oct 2015.

46. World Health Organization. African Health Observatory (2016). Comprehensive Analytical Profile: Zambia. Retrieved from: http://www.aho.afro.who.int/profiles_information/index.php/Zambia:Index. Accessed July 6, 2016.

47. Bazant E, Sarkar S, Banda J, Kanjipite W, Reinhardt S, Shasulwe H, et al. Effects of a performance and quality improvement intervention on the work environment in HIV-related care: a quasi-experimental evaluation in Zambia. Hum Resour Health. 2014;12(1):73.

48. McPake B, Witter S, Ensor T, Fustukian S, Newlands D, Martineau T, et al. Removing financial barriers to access reproductive, maternal and newborn health services: the challenges and policy implications for human resources for health. Hum Resour Health. 2013;11(1):46.

49. Brenzel L, Measham A, Naimoli J, Batson A, Bredenkamp C, Skolnik R. Taking stock: world bank experience with performance-based financing (PBF) for health. Washington, DC: The World Bank; 2009.

50. Eldridge C, Palmer N. Performance-based payment: some reflections on the discourse, evidence and unanswered questions. Health Policy Plan. 2009;24:160.

51. Canavan A, Toonen J, Elovainio R. Performance-based financing: an international review of the literature. Amsterdam: KIT (Royal Tropical Institute); 2008.

52. World Bank. Impact evaluation of Zambia's health performance-based financing pilot project. Washington DC: World Bank; 2016.

53. Vujicic M, Addai E, Bosomprah S. Measuring health workforce productivity: application of a simple methodology in Ghana. Washington, DC: World Bank; 2008.

54. Callaghan M, Ford N, Schneider H. A systematic review of task-shifting for HIV treatment and care in Africa. Hum Resour Health. 2010;8:8.

55. Zachariah R, Ford N, Philips M, Lynch S, Massaquoi M, Janssens V, et al. Task shifting in HIV/AIDS: opportunities, challenges and proposed actions for sub-Saharan Africa. Trans R Soc Trop Med Hyg. 2009;103(6):549–58.

56. Ammassari S. Migration and development: New strategic outlooks and practical ways forward—the case of Angola and Zambia. Geneva, Switzerland: International Organization for Migration; 2005.

57. Kamwanga J, Koyi G, Mwila J, Musonda M, Bwalya R. Understanding the labour market of human resources for health in Zambia. Geneva, Switzerland: Department for Health Systems Policies and Workforce, World Health Organization; 2013.

58. Ferrinho P, Siziya S, Goma F, Dussault G. The human resource for health situation in Zambia: deficit and maldistribution. Hum Resour Health. 2011;9(1):30.

59. Rosenthal MB, Frank RG, Li Z, Epstein AM. Early experience with pay-for-performance: from concept to practice. JAMA. 2005;294(14):1788–93.

60. Soeters R, Habineza C, Peerenboom PB. Performance-based financing and changing the district health system: experience from Rwanda. Bull World Health Organ. 2006;84(11):884–9.

61. Savedoff WD. Incentive proliferation?: Making sense of a new wave of development programs. Washington, DC: Center for Global Development; 2011.

62. Paul E, Sossouhounto N, Eclou DS. Local stakeholders' perceptions about the introduction of performance-based financing in Benin: a case study in two health districts. Int J Health Policy Manage. 2014;3:207–14.

63. Toonen J, Canavan A, Vergeer P, Elovainio R. Performance-based Financing for Health: Lessons from Sub-Saharan Africa. Royal Tropical Institute, Cordaid and the World Health Organization. Amsterdam: KIT (Royal Tropical Institute); 2009.

64. Eisenberger RW, Pierce WD, Cameron J. Effects of reward on intrinsic motivation—negative, neutral, and positive: Comment on Deci, Koestner, and Ryan (1999). Psychol Bull. 1999;125(6):677–91.

65. Woolhandler S, Ariely D, Himmelstein DU. Why pay for performance may be incompatible with quality improvement. BMJ. 2002;345:e5015.

66. Bhatnagar A, George AS. Motivating health workers up to a limit: partial effects of performance-based financing on working environments in Nigeria. Health Policy Plan. 2016;31(7):868–77.

67. Kalk A, Paul FA, Grabosch E. 'Paying for performance' in Rwanda: does it pay off? Tropical Med Int Health. 2010;15(2):182–90.

68. Judge TA, Thoresen CJ, Bono JE, Patton GK. The job satisfaction–job performance relationship: a qualitative and quantitative review. Psychol Bull. 2001;127(3):376.

69. Diener E. Subjective well-being: the science of happiness and a proposal for a national index. Psychol Bull. 1999;125(2):276–302.

70. Heneman RL, Greenberger DB, Strasser S. The relationship between pay-for-performance perceptions and pay satisfaction. Pers Psychol. 1988;41(4):745–59.

Shen *et al. Human Resources for Health* (2017) 15:20

Page 15 of 15

71. Judge TA, Piccolo RF, Podsakoff NF, Shaw JC, Rich BL. The relationship between pay and job satisfaction: a meta-analysis of the literature. J Vocat Behav. 2010;77(2):157–67.

72. Judge TA, Bono JE. Relationship of core self-evaluations traits—self-esteem, generalized self-efficacy, locus of control, and emotional stability—with job satisfaction and job performance: a meta-analysis. J Appl Psychol. 2001;86(1):80–92.

73. Porter LW, Steers RM, Mowday RT, Boulian PV. Organizational commitment, job satisfaction, and turnover among psychiatric technicians. J Appl Psychol. 1974;59(5):603–9.

74. Oxman AD, Fretheim A. An overview of research on the effects of performance-based financing. Oslo: Norwegian Knowledge Centre for the Health Services; 2008.

75. Huillery E, Seban J. Performance-based financing for health: experimental evidence from the Democratic Republic of Congo, ENS-France Working paper. 2013.

76. Brock MJ, Lange A, Leonard KL. Generosity norms and intrinsic motivation in health care provision: evidence from the laboratory and field, Working Paper 147. 2013.

77. Bertone MP, Lurton G, Mutombo PB. Investigating the remuneration of health workers in the DR Congo: implications for the health workforce and the health system in a fragile setting. Health Policy Plan. 2016; czv131.

78. Bertone MP. Financial incentives for human resources for health: what do we know? what do we do? the case of Sierra Leone. BMC Health Serv Res. 2014;14(2):1.

79. Mæstad O, Mwisongo A. Informal payments and the quality of health care: mechanisms revealed by Tanzanian health workers. Health Policy. 2011;99(2):107–15.

80. Ferrinho P, Van Lerberghe W. Providing health care under adverse conditions: Health personnel performance & individual coping strategies. Stud Health Services Organisation Policy. 2000;16:247.

Appealing to altruism: an alternative strategy to address the health workforce crisis in developing countries?

Richard Smith[1], Mylene Lagarde[1], Duane Blaauw[2], Catherine Goodman[1], Mike English[3], Kethi Mullei[3], Nonglak Pagaiya[4], Viroj Tangcharoensathien[4], Ermin Erasmus[2], Kara Hanson[1]

[1]Department of Global Health and Development, London School of Hygiene and Tropical Medicine, 15-17 Tavistock Place, London WC1H 9SH, UK
[2]Centre for Health Policy, University of Witwatersrand, Johannesburg, South Africa
[3]Kenya Medical Research Centre, Nairobi, Kenya
[4]International Health Policy Programme, Bangkok, Thailand
Address correspondence to Richard Smith, E-mail: richard.smith@lshtm.ac.uk

ABSTRACT

Background Recruitment and retention of health workers is a major concern. Policy initiatives emphasize financial incentives, despite mixed evidence of their effectiveness. Qualitative studies suggest that nurses especially may be more driven by altruistic motivations, but quantitative research has overlooked such values. This paper adds to the literature through characterizing the nature and determinants of nurses' altruism, based on a cross-country quantitative study.

Methods An experimental 'dictator game' was undertaken with 1064 final year nursing students in Kenya, South Africa and Thailand between April 2007 and July 2008. This presents participants with a real financial endowment to split between themselves and another student, a patient or a poor person. Giving a greater share of this financial endowment to the other person is interpreted as reflecting greater altruism.

Results Nursing students gave over 30% of their initial endowment to others (compared with 10% in similar experiments undertaken in other samples). Respondents in all three countries showed greater generosity to patients and the poor than to fellow students.

Conclusions Consideration needs to be given to how to appeal to altruistic values as an alternative strategy to encourage nurses to enter the profession and remain, such as designing recruitment strategies to increase recruitment of altruistic individuals who are more likely to remain in the profession.

Keywords economics, health services

Measuring the quality of supervisor–provider interactions in health care facilities in Zimbabwe

PAULA TAVROW[1], YOUNG-MI KIM[2] AND LYNETTE MALIANGA[1]

[1]Quality Assurance Project, Center for Human Services, Bethesda, MD, [2]Johns Hopkins Center for Communication Programs (CCP), Baltimore, MD, USA

Abstract

Objective. Measuring performance is the first step on the road to improving it. This report presents the results of an exploratory study sponsored by the Quality Assurance (QA) Project to describe and quantify the quality of supervisor–provider interactions in health care facilities in Zimbabwe in 1999. Supervisors were district and municipal nursing officers who are responsible for guiding, assisting, and motivating health providers at government and missionary health facilities.

Design. The study's design was qualitative. It involved the triangulation of data from various sources: structured observations of supervisors, audiotaping of supervisor–provider interactions, recording of all supervisory activities, and interviews with supervisors and supervisees. A team composed of current and past supervisors, along with researchers, determined the supervisory practices that would be measured.

Study participants. Sixteen district-level government, municipality, and Zimbabwe National Family Planning Council supervisors from four provinces participated in the study.

Results. The study found that supervisors devoted <5% of their time to patient care issues. The supervisors' main strengths were in giving feedback on technical standards, discussing and analyzing data, and developing a rapport with the providers. They were most deficient in making suggestions, seeking client input, problem solving with the providers, and building on previous (and future) supervisory visits. None of the supervisors observed achieved the threshold set in advance by the team for exemplary performance.

Conclusion. The study concludes with recommendations to the Ministry of Health and Child Welfare on how the quality of supervision in Zimbabwe could be improved.

Keywords: developing countries, measuring performance, quality, supervision, Zimbabwe

Physician shortages in rural Vietnam: Using a labor market approach to inform policy

Marko Vujicic [a], Bakhuti Shengelia [a,*], Marco Alfano [b], Ha Bui Thu [c]

[a] The World Bank, Human Development Network, 1818 H St NW, Washington DC, 20433, USA
[b] Department of Economics, University College London, 30 Gordon Street, London WC1H 0AX, UK
[c] Hanoi School of Public Health, Vietnam

ARTICLE INFO

ABSTRACT

This paper investigates labor market dynamics for physicians in Vietnam, paying particular attention to geographic distribution and dual job holding. The analysis is based on a survey of a random sample of physicians in 3 regions in 2009–10. We found that the labor market for physicians in Vietnam is characterized by very little movement among both facility levels and geographic areas. Dual practice is also prominent, with over one-third of physicians holding a second job. After taking account of the various sources of income for physicians and controlling for key factors, there is a significant wage premium associated with locating in an urban area. This premium is driven by much higher earnings from dual job holding rather than official earnings in the primary job. There are important policy implications that emerge. With such low job turnover rates, policies to increase the number of physicians in rural areas could focus on initial recruitment. Once in place, physicians tend to remain in their jobs for a very long time. Lastly, findings from an innovative discrete choice experiment suggest that providing long-term education and improving equipment are the most effective instruments to recruit physicians to work in rural areas.

A HEALTH POLICY AND SYSTEMS RESEARCH READER ON HUMAN RESOURCES FOR HEALTH

HUMAN RESOURCES
FOR HEALTH

CH 4|5|6

RESEARCH

Open Access

Paying health workers for performance in Battagram district, Pakistan

Sophie Witter[1,2*], Tehzeeb Zulfiqur[3], Sarah Javeed[4], Amanullah Khan[5] and Abdul Bari[6]

Abstract

Background: There is a growing interest in using pay-for-performance mechanisms in low and middle-income countries in order to improve the performance of health care providers. However, at present there is a dearth of independent evaluations of such approaches which can guide understanding of their potential and risks in differing contexts. This article presents the results of an evaluation of a project managed by an international non-governmental organisation in one district of Pakistan. It aims to contribute to learning about the design and implementation of pay-for-performance systems and their impact on health worker motivation.

Methods: Quantitative analysis was conducted of health management information system (HMIS) data, financial records, and project documents covering the period 2007-2010. Key informant interviews were carried out with stakeholders at all levels. At facility level, in-depth interviews were held, as were focus group discussions with staff and community members.

Results: The wider project in Battagram had contributed to rebuilding district health services at a cost of less than US$4.5 per capita and achieved growth in outputs. Staff, managers and clients were appreciative of the gains in availability and quality of services. However, the role that the performance-based incentive (PBI) component played was less clear–PBI formed a relatively small component of pay, and did not increase in line with outputs. There was little evidence from interviews and data that the conditional element of the PBIs influenced behaviour. They were appreciated as a top-up to pay, but remained low in relative terms, and only slightly and indirectly related to individual performance. Moreover, they were implemented independently of the wider health system and presented a clear challenge for longer term integration and sustainability.

Conclusions: Challenges for performance-based pay approaches include the balance of rewarding individual versus team efforts; reflecting process and outcome indicators; judging the right level of incentives; allowing for very different starting points and situations; designing a system which is simple enough for participants to comprehend; and the tension between independent monitoring and integration in a national system. Further documentation of process and cost-effectiveness, and careful examination of the wider impacts of paying for performance, are still needed.

Background

Improving the performance of health care delivery systems is an important objective, both in high-income settings but even more critically in low- and middle-income settings, where resources for health are much more constrained.

Pay-for-performance is currently receiving increased attention as a strategy for improving the performance of healthcare providers, organisations and governments. It is also promoted as an important tool for achieving the health Millennium Development Goals, and for improving the effectiveness of development aid. However, there is currently a lack of rigorous evidence on the effectiveness of these strategies in improving health care and health, particularly in lower income countries [Witter et al, Paying providers for performance in health care in low and middle income countries: a systematic review, submitted to Cochrane Collaboration, 2011; [1,2]].

Pay-for-performance refers to the transfer of money or material goods conditional on taking a measurable

* Correspondence: sophiewitter@blueyonder.co.uk
[1]Oxford Policy Management, Oxford, UK
Full list of author information is available at the end of the article

BioMed Central

action or achieving a predetermined performance target [3]. While paying for performance is relatively a simple concept, it includes a wide range of interventions that vary with respect to the level at which the incentives are targeted (recipients of healthcare, individual providers of healthcare, health care facilities, private sector organizations, public sector organizations and national or sub-national levels). The types of outputs or outcomes targeted can also vary widely, as can the type of accompanying measures (such as investments in training, equipment and overall resources).

In OECD countries, paying for performance is generally described as a tool for improving quality [4]. In low and middle income countries, however, it generally has wider objectives [Witter et al, Paying providers for performance in health care in low and middle income countries: a systematic review, submitted to Cochrane Collaboration, 2011], including:

  • to increase the allocation efficiency of health services (by encouraging the provision of high priority and cost effective services)
  • to increase the technical efficiency (by making better use of existing resources such as health staff)
  • to improve equity of outcomes (for example, by encouraging expansion of services to hard-to-reach groups)

Independent evaluations of pay-for-performance schemes–their design, implementation and cost-effectiveness–are important to inform the policy debate about the different modalities of paying for performance and their likely contribution in different contexts. They also contribute to the wider discussion of the relative role of financial and non-financial incentives in motivating health worker [6,7].

This article aims to contribute to published experiences of paying providers for performance in low-income settings, based on an independent review of a district-based pay-for-performance health project in Pakistan.

The project
Save the Children US (SC US) started working in Battagram district, North-West Frontier Province, Pakistan, after the earthquake of 8 October 2005. Battagram has a total land area of 1301 square kilometres. The estimated population of Battagram in 2004-2005 was 361 000, with 277 inhabitants per square kilometre. In April 2008, following the initial emergency and relief phase, SC US entered a public-private partnership to revitalise primary health care in the district through reconstruction, equipment, provision of supplies, management support and training.

The project was funded by the World Bank and Japan International Cooperation Agency with an overall budget of just under $3 million. It was planned for a period of two years, ending in June 2010.

The district health system in Pakistan is composed of two tiers of public healthcare facilities. The primary health care services are provided at dispensaries, basic health units (BHUs) and rural health centres (RHCs). Secondary care–including first and second referral facilities providing acute, ambulatory and inpatient care–are provided through Tehsil and district headquarter hospitals (DHQs). An important feature of the project was that the provincial government agreed to transfer the district health budget to the Save the Children account. Save the Children was authorized to organize and manage the healthcare services (including human resource management, and maintenance of health facilities); procure and supply medicines; implement the health management information system; and monitor and supervise the health system in Battagram.

As part of project implementation the district was divided into four 'hubs', centred around the rural health centres. The hub centres acted as referral facilities for the attached basic health centres, civil dispensaries, maternal and child health centres and tuberculosis control centres located in their catchment areas. The hubs' centres were provided with adequate staff and services, including basic emergency obstetric and newborn care and 24-hour emergency services. All the hub centres were equipped with an ambulance. Staff were hired to fill the vacant sanctioned posts (funded from the district health budget), and additional staff were hired, paid from project funds.

In addition, from July 2008, Save the Children started a performance-based incentive (PBI) scheme, whereby all government-employed health facility workers were entitled to receive an additional 20-35% of their pay, according to performance criteria.

Staff hired directly by SC US were not entitled to incentives, but were paid a higher basic salary (43 staff were hired directly by SC US during the project lifetime–some 13% of the health workforce of the district).

The PBI component was designed around two measurement tools–one is a supervisory checklist, which was filled each month by an independent monitor (often from SC US), who checked on qualitative issues such as the hygiene of the facility, functionality of equipment, and maintenance of registers (see Table 1). The second was a set of targets set for preventive services, including coverage of antenatal care, deliveries by skilled birth attendants, post-natal care, newborn weighing, growth monitoring for under-threes, and three immunisation indicators (second maternal tetanus toxoid immunization (TT2) completed, infant immunisation started and

Table 1 Supervision checklist and scorecard

S. No	Activity/Task	Observation	Total obtained
1	Centre functional	Open (5) Closed (0)	5
2	Out-look of the Centre	Poor (0) Satisfactory (1) Good (2) Excellent (3)	3
3	Cleanliness of the centre	I/C room (1) Pt. Waiting Area (1) LHV room(1) EPI room (1) Store (1)	5
4	Staff uniform	Yes (1) No (0)	1
5	Necessary information display	I/C (1) LHV (1) EPI (1)	3
6	Attendance register maintained	Yes (2) No (0)	2
7	Staff leave record maintained	Yes (1) No (0)	1
8	Absent staff report submitted	Yes No	If not, state reason
9	Sufficient office furniture	Available Not available	If not, state reason
10	Diagnostic set	Available Not available	If not, state reason
11	Registers HMIS maintained	OPD (1) EPI (1) Mother health (1) Child health (1) Birth register (1) Family planning (1) Stock register(1) Medicines register (1)	8
12	OPD tickets (properly used)	Yes (1) No (0)	1
13	Last month HMIS report	Complete (1) Incomplete (0)	1
14	DEWS reports	Submitted (1) Not submitted (0)	1
15	Monthly staff meeting held	Yes (1) No (0)	1
16	Cold chain equipments	Functional Non-functional	If not, state reason
17	Vaccine availability	Available Not available	If not, state reason
18	Vaccine properly placed	Yes (1) No (0)	1
19	EPI Tech. following Monthly Tour Program	Yes (1) No (0)	1
20	EPI motor-cycle Log-book Maintained	Yes (1) No (0)	1
21	Delivery table available & clean	Yes (1) No (0)	1
22	Delivery kit available & clean	Yes (1) No (0)	1
23	Baby weighing machine available & functional	Yes No	If not, state reason
24	Physical Store verification	Correct (1 No (0)	2
25	Bin cards display	Yes No	1
26	X-ray	Functional Non-functional	If not, state reason
27	Laboratory	Functional Non-functional	If not, state reason
	Total		40

immunisation completed). These were scored using information from the health management information system (HMIS). Table 2 illustrates how points were awarded in relation to these activities. Staff attendance records were also monitored.

An overall weight of 40% was given to the 27 qualitative indicators and 60% to the 8 quantitative. According to the combined score reached, staff received a monthly supplement to basic pay of 20-35%, paid to all staff on the government payroll (which was managed in the district by SC US during the project duration). An average of 323 (between 320 and 415) health workers received performance based incentives over the project lifetime, paid direct into their bank accounts monthly.

As the project drew to a close in 2010, Save the Children US commissioned a review of the project, with particular emphasis on the PBI component.

Table 2 Performance assessment formula

PL registered for ANC

Target	Achievement	%	Score
Expected pregnancies Catchment population/270	PL registered for ANC	Achievement/target x100	total = 10 IF > = 70,"10", IF > = 51,"8", IF > = 41,"6", IF > = 36,"4", IF > = 31,"3", IF > = 26,"2", IF > = 20,"1", IF < 20="0"

PL completed TT2

Target	Achievement	%	score
Expected pregnancies catchment population/270	PL completed TT2	Achievement/target × 100	Total = 8 IF > = 60,"8", IF > = 51,"6", IF > = 41,"5", IF > = 36,"4", IF > = 31,"3", IF > = 26,"2", IF > = 20,"1", IF < 20="0"

Deliveries by skilled birth attendants

Target	Achievement	%	Score
Expected deliveries catchment population/300	Deliveries by skilled birth attendants	Achievement/target × 100	Total = 10 IF > = 60,"10", IF > = 51,"8", IF > = 41,"6", IF > = 36,"4", IF > = 31,"3", IF > = 26,"2", IF > = 20,"1", IF < 20="0"

Newborn weighed

Target	Achievement	%	Score
Total births catchment population/300	Newborn weighed	Achievement/target × 100	Total = 6 IF > = 60,"6", IF > = 55,"5", IF > = 46,"4", IF > = 38,"3", IF > = 30,"2", IF > = 20,1, IF < 20,"0"

Post natal visits

Target	Achievement	%	Score
Deliveries in last month	Postnatal visits	Achievement/target × 100	Total = 6 IF > = 60,"6", IF > = 55,"5", IF > = 46,"4", IF > = 38,"3", IF > = 30,"2", IF > = 20,1, IF < 20,"0"

Infants started immunization

Target	Achievement	%	Score
Infants in population 3.5/100 × patchment population	Infants started immunization	Achievement/target × 100	Total = 6 IF > = 81,"6", IF > = 65,"5", IF > = 50,"4", IF > = 35,"3", IF > = 20,2, IF < 20,"0"

Infants completed immunization

Target	Achievement	%	Score
3.5/100 × Catchment population/12	Infants completed immunization	Achievement/Target × 100	Total = 8 IF > = 81,"8", IF > = 71,"7", IF > = 61,"6", IF > = 51,"5", IF > = 41,"4", IF > = 31,"3", IF > = 20,2, IF < 20,"0"

Children < 3 weighed for growth monitoring

Target	Achievement	%	Score
11/100× Catchment Population/12	Children < 3 years weighed for GM	Achievement/Target × 100	Total = 6 IF > = 60,"6", IF > = 55,"5", IF > = 46,"4", IF > = 38,"3", IF > = 30,"2", IF > = 20,1, IF < 20,"0"

Methods

A mix of qualitative and quantitative research methods was used. Question guides were prepared for all of the qualitative research. For the quantitative, a framework of indicators guided the analysis.

The review was carried out in June 2010. Quantitative analysis was conducted of health management information system (HMIS) data, financial records, monthly progress reports, records of supervisory and performance scores of facilities, and project documents covering the period 2007 - mid-2010. In addition, eleven key informant interviews were carried out with stakeholders at SC US, the World Bank, provincial and district offices, and one local association.

The health facilities were chosen to represent the four hub areas, but also the stratification of performance: one was chosen from each of categories (very good, good, satisfactory and poor). At facility level, in-depth interviews were held with seven managers and other staff working at four facilities (three basic health units and one rural health centre). Eleven focus group discussions with staff (male and female) and community members (male and female) were also held. Data was collected by a team of three field researchers, together with the

OPM consultant, while SC US provided one of their team members as a facilitator.

Analysis of quantitative data was undertaken using Excel. Qualitative reports were analysed thematically. The calculation of the performance indicators and of incentives changed after the first two months. Therefore the analysis omitted these two months so as not to bias trends, and covered July 2008-April 2010.

Results

The findings are structured by a set of eight questions which should be asked of all pay-for-performance approaches. The first relates to design, and whether the targeted indicators were the right ones. Next we consider whether the system was well implemented. The third question is whether payments were in practice responsive to performance variation across the facilities. Fourth, did the payments motivate staff to change their behaviour, as was their primary goal? The fifth question is whether the approach was acceptable to the main local stakeholders. We then consider the core question of whether the PBI component improved overall performance of the health system. Evidence of possible perverse effects is also considered. Finally, we discuss the sustainability of the project.

Did the PBI reward the right targets?

In terms of design, the use of two different scoring methods—one based broadly on 'process factors', which staff can directly influence (such as the cleanliness of the facility), and the other based on outputs, which are important but can only be partly influenced by supply-side actions—was seen by evaluators to represent a good balance. Average scores were higher for the supervision scores (73%) than the performance ones (46%), as performance indicators are 'stickier' and change more slowly (especially skilled deliveries, which are affected by important community beliefs, as well as cost and other access barriers). Differential thresholds for targets allowed for the fact that some indicators (e.g. ANC) started at much higher levels than others (e.g. facility deliveries).

The two scores were correlated, as would be expected—generally, facilities with higher average supervision scores also had higher average performance scores, although the range was much greater for the latter (5%-48%), while supervision only spanned 20%-37% (see Figure 1).

Was the PBI monitoring system well implemented?

The PBI component relied on monthly assessment by an independent monitor (often a SC US representative), based on observation and the facility registers. The process for measuring performance appears to have been reasonably regular for the Basic Health Units and Rural Health Centres, although there were months in which no assessment was made (and facilities received an automatic score, with staff receiving 20% incentives, which clearly undermines the approach). The average number of months for which supervisions were missed, per facility over the project lifetime, was 1.5, but for some facilities it was around one in three (10-12 months missed out of 30). The reasons given for missing supervision were either that the facility was under construction or that management attention was taken up for some major activity elsewhere. There were also some discrepancies between the overall score reached and the level of incentive paid, but these were limited.

The system worked less well for the civil dispensaries. All of the civil dispensaries scored less than 20 on the supervisory scores. The incentive paid to its staff never exceeded 20%. In addition, from the records it seems that the CDs were not visited regularly as part of the supervision and monitoring.

For the performance scores there was no independent verification of data taken from the facility registers.

Were the PBI sufficiently responsive to changes in performance?

A successful PBI scheme (one which motivates individuals and teams) would be expected to produce positive trends in performance scores and positive trends in incentives. A change in ranking of individual facilities might also be expected over time, as facilities respond differentially to incentives. In Battagram, the supervision score component actually fell by 1 point (or -3%), reflecting its high starting point, while the performance score increased by 9 points (or 36%). However, the overall incentive score rose only by 2 points (7%) over the life of the project (comparing the first six months with the last six months), and payments to individual staff did not increase on average over time. This suggests that the overall project has been effective but that the link with the performance measurement system and incentives was weak. Some of the possible reasons for this are discussed in the section on motivation below.

On average, no facilities were graded as poor, and two-thirds fell within the incentive of 30%-35% band (see Figure 2), suggesting that the scale was not sufficiently sensitive (or that all facilities are really achieving on the same high level). Moreover facilities maintained more or less their position in relation to the starting point, and moved in synchronised patterns (see Figure 3). Those with higher performance at the start appear to have made more progress over time than those lower down. This indicates that prior features (either features relating to the services or to
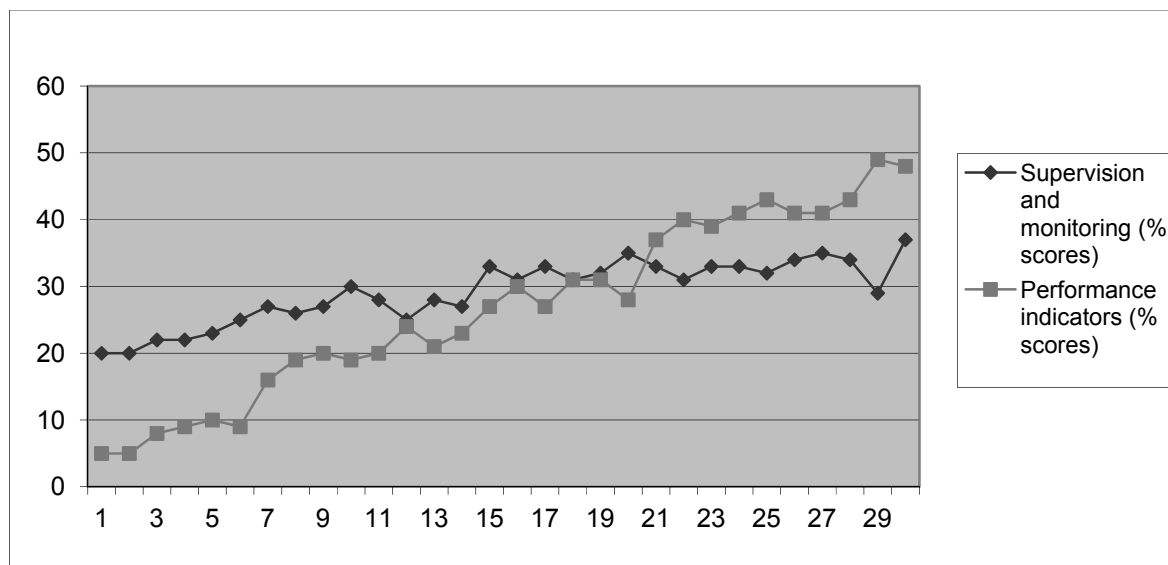
Figure 1 Average performance and supervision scores, selected facilities, average for 2008-10.
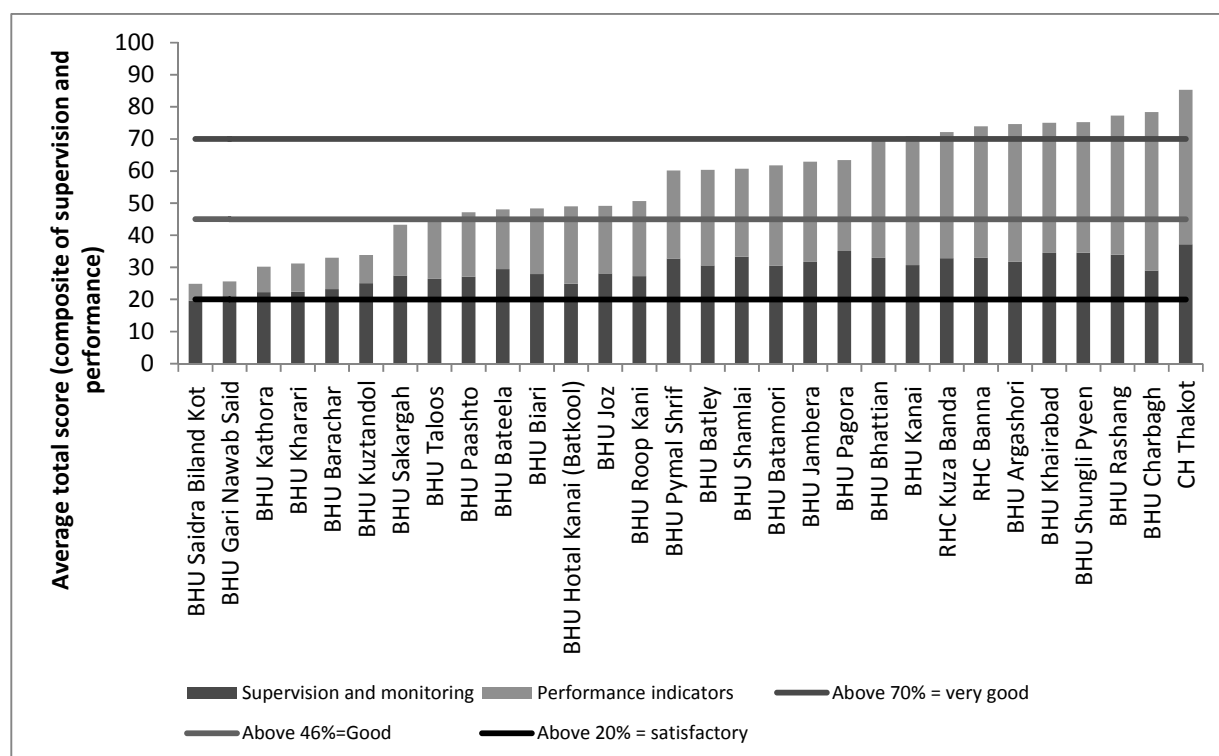

Figure 2 Average total score for each basic health unit and rural health center (September 2008 - April 2010).
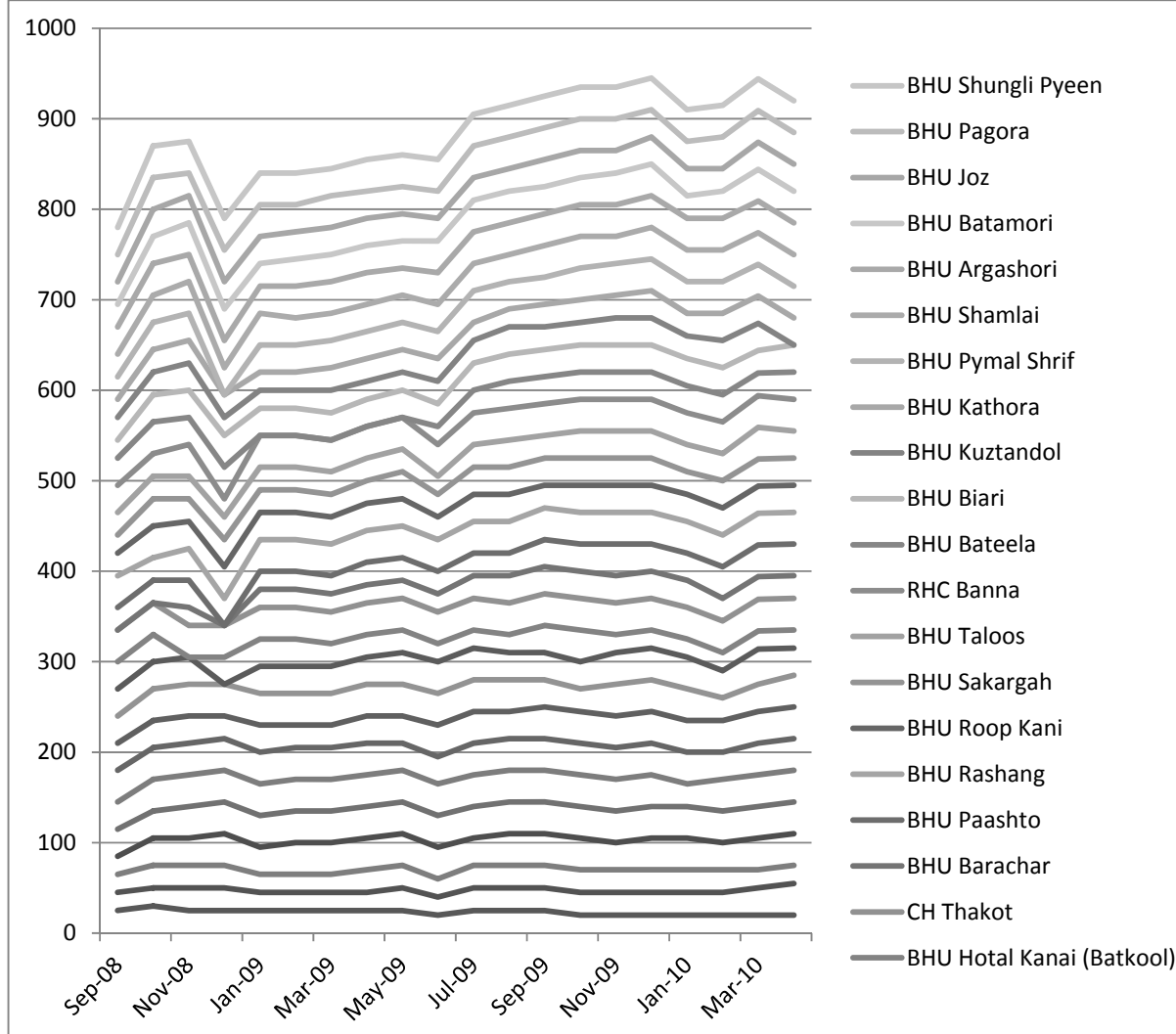
Figure 3 Facility incentive scores, by month (September 2008 - March 2010).

external factors such as the communities served) may have determined their performance.

Did the PBI motivate health workers?
The structure of the incentives raises some questions in relation to their effectiveness in motivating higher performance. Under the current system, staff in a facility scoring a combined score of 0 would still receive an incentive of 20%. (Being absent without prior knowledge of the facility in charge was the only way to fail to achieve 20%.) In order to receive the additional 15%, their overall score would need to rise to 70% and above (see Table 3). Would that effort be justified? Interviews with staff suggested some scepticism, especially when the opportunity costs (no private practice) were considered. The government-hired senior staff lamented the fact that they were

now not permitted to do private practice after work hours (which were 8 am to 2 pm). There was a general consensus amongst the facility staff that the incentives were not sufficient to cover the amount they had previously been making through private practice.

Many staff were not aware of the detail of how the incentives were calculated. They were seen as a reflection

Table 3 Scoring for payment of incentives and the percentage incentive paid

Score	Ranking	Incentive
> 70%	Very good	35
46 to 70	Good	30
20 to 45	Satisfactory	25
< 20	Poor	20

of overall facility performance, rather than individual performance.

"I have no idea about any incentives. I only know that my salary has increased because I work hard." (Lady Health Visitor)

The average incentive paid was 29% of basic pay, and there was not much variation over time. In relation to gross pay, however, the proportion was lower–16% on average–and lower at basic health unit level (13%). This was commented on by staff, who requested a higher level of incentive (they suggested 50-100% of basic pay).

Some staff–those in district administration and in the TB centres–were paid incentives at a 'fixed rate' of 35%, while those hired by SC US direct were offered higher salaries and were not included in the PBI, although their performance was included in the overall rating of the facility. There was a general lack of understanding and transparency between these groups about each other's incentives and salary scales. The salary scale of the SC US staff was substantially higher than the government-hired staff–roughly equivalent to the government staff after the addition of 35% incentives, but both groups seemed unaware of this.

In absolute terms, PBI ranged from $15 per month for the lowest paid worker to $172 for the highest (the district director and deputy director of health). The average paid in monthly incentives was $48 per person.

Were PBI acceptable to stakeholders?

Staff perception of PBI was positive–importantly, it was seen as being objective and as rewarding the performance of the whole facility. The fact that payments were made directly into staff bank accounts, and were proportionate to income, removed the element of individual discretion that can prove very corrosive in performance management schemes.

There were, however, some concerns in relation to equity–the main one related to the different treatment of staff hired by SC US, who were on a higher pay-scale and not included in the PBI scheme. The motivation behind this different treatment is not clear, but it does suggest that the PBI were being used primarily as a salary top-up for public servants.

Stakeholder feedback was positive about the project as a whole–communities particularly appreciated the low cost of services and the improvements to supply, including the availability of staff and medicines, and improvements in quality and appearance of the facilities. District and provincial managers were positive but were concerned about the longer term sustainability of the approach and how to eventually integrate it back into the system. Recommendations from the three main stakeholder groups included putting more emphasis on community-based activities, developing a closer relationship with the district and provincial authorities, particularly in relation to handing over the project, and providing more detailed feedback to staff on their performance, including discussion of how to improve it.
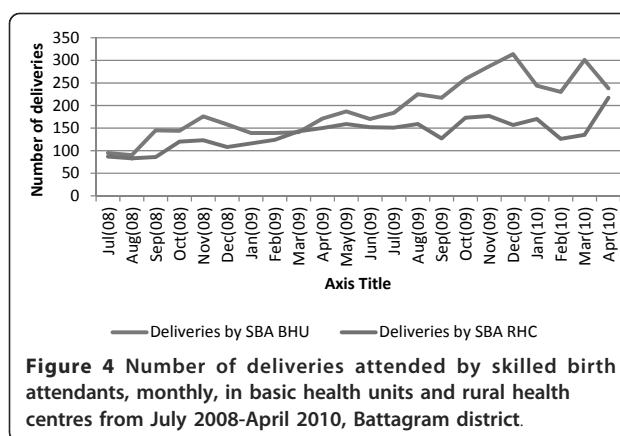
Did the PBI improve performance?

The review concluded that the project as a whole had contributed to an increase in the functionality of the health system and its outputs, as indicated by the interviews with staff and clients and also by the trends in specific services. Deliveries with skilled birth attendants, for example, increased by 150% between July 2008 and April 2010 (see Figure 4). Immunisation, while more variable month-by-month, still increased by 89% at basic health unit level, comparing the first six months of the project with the last six months. At rural health centres there was a reduction over the project lifetime–however, if this represents services shifting to the primary level, then that is an appropriate switch. Analysis of the tetanus typhoid uptake supports the view that users have been enabled to seek immunisation services at lower level facilities.

Comparison with district HMIS data from 2007 shows a substantial improvement in all indicators (see Table 4), with monthly outpatient visits, for example, increasing by more than 300% over the period.

Robust attribution to the project requires longer term trend analysis, which was not undertaken as part of the review. However, comparing the multiple indicator cluster survey of 2001 with that of 2008, it can be seen that deliveries with skilled birth attendants had risen significantly at district and provincial level by the time of the introduction of the project, from 14% to 40.5% in Battagram and from 28% to 41% in the province as a whole. There are no comparable data for the other indicators.

Whether the increases can be attributed to the PBI component is in any case contentious. The PBIs represented 24% of the total project expenditure, and were accompanied by considerable additional investments in

Figure 4 Number of deliveries attended by skilled birth attendants, monthly, in basic health units and rural health centres from July 2008-April 2010, Battagram district.

salaries, infrastructure, training, equipment and management support. The project as a whole ensured that there were adequate facility staff (including female medical officers), 24-hour emergency services, more equipment in the facilities (radiology and ultrasound), and a full range of immunisation, reproductive health and family planning services. Addressing the issue of costs to users, the ambulance service was provided free, as were medicines (which are now reliably stocked), delivery services (pre- and post-natal services), and the nutrition programme for under-fives and their mothers.

The case studies of individual facilities suggest that general investments in staffing and upgrading facilities were the main factors behind improved service delivery. Individual facilities show great fluctuations over time in performance scores, in particular, which are commonly linked with the availability (or absence) of key staff, such as doctors and nurses. The regular visits by the monitoring team could also have had a positive effect for some facility staff. The evaluations of the National Programme for Family Planning and Primary Health Care (2001 and 2008) found that regular visits by the supervisors where they carried out monitoring duties and the provision of supplies increased performance of lady health workers, as did continuing education.

Did PBI cause any perverse effects?

A common concern with PBI-type approaches is that a focus on one set of indicators (in this case, preventive services) will squeeze out others. Analysis of total OPD visits over the project period reveal that utilisation rates rose from 0.42 per person per year (based on the first four months of the project) to 0.51 per person for the last four months. This is a rise of 22%, which is substantial, although still well below the WHO norm of 2 OPD visits per person per year. At the RHC level, the increase was from 1.13 to 1.85 per person per year - an increase of 63%. This suggests that in this respect at least, there were no perverse effects. There were however tensions created amongst staff in relation to the two different payment systems (one group receiving incentives, the other not), which reduced the motivation associated with the scheme.

Sustainability of the approach

The project as a whole cost 184% of the district health expenditure, while the PBI element on its own was equivalent to 44% of the district health expenditure (see Table 5). Although the cost of the PBI element is low in USD per capita terms (USD 0.68 per person in the district per year), it is nevertheless high compared to the public spending of $1.65. The costs of the external monitoring which is required to support the PBI system have not been isolated but would also prove a barrier in scaling up or replicating this project. Stakeholders also expressed concerns about the sustainability of the project, given financial, managerial and organisational constraints in the public health sector.

Discussion

The findings on this project raise issues which are specific to its design, implementation and context, but also broader reflections on some of the challenges of using pay-for-performance approaches.

It is generally accepted that professionals are motivated by the satisfaction of doing their jobs well (intrinsic motivation). Indeed, it is doubtful whether some valued-but-difficult- to-observe dimensions of quality (such as empathy or listening in the medical encounter) would be provided at all if physicians were solely interested in income. Thus, professionals have both non-monetary (that is, personal ethics, professional norms, regulatory control, clinical uncertainty) and monetary (from the payment system) incentives, all of which affect effort. It is possible that financial incentives may dilute professionals' intrinsic motivation. On the other hand, where health workers' pay is low in absolute terms, incentives may be an important channel to improve motivation through increasing their income levels. The effects of incentives on health worker motivation have been found to be very context-dependent in previous studies [5].

Table 4 Trends in output indicators, 2007-10

	2007	2008	2009	2010	Percentage increase 2007-10
Average monthly outpatient visits	7029	20 568	33 550	28 274	302
Number registered for antenatal care	451	838	1223	1192	164
Number completed TT2 immunization	137	414	521	537	292
Deliveries assisted by skilled birth attendants	32	189	363	433	1252
Number of newborns weighed	1	124	301	414	41 250
Infants started immunization	1205	552	1014	1808	50
Children fully immunized	128	922	793	1692	1222
Family planning users	56	306	446	535	854

Table 5 Total expenditure on project and on PBI (USD), Battagram district

	Total expenditure 2008-2010	Expenditure for one year	Per capita per annum spend	Ratio of project to government expenditure
Overall project	2 095 297	838 119	2.88	1.84
PBI component	497 103	198 841	0.68	0.44
Public expenditure on health in district	1 205 671	482 268	1.65	
Total	3 233 333	1 293 333	4.45	

In the SC US project, the design does suggest that the PBI component was mainly functioning as a salary top-up, albeit with the need for staff to be physically present at facilities. In addition to basic salary came the basic incentives of 20%. The only margin for gain was the discretionary 15%, which was linked to general facility performance through a complex measurement system which most staff did not understand. The likelihood of individual motivation was therefore low, and most of the gains are likely to have come from general investments and the healthy balance of supply- and demand-side interventions which the project supported.

Paying for outputs (rather than for a composite index of quality measures and coverage targets) might have generated stronger incentives, though the risk of perverse effects might have been commensurately greater. These perverse effects might include neglecting unrewarded activities, distorting reporting systems to inflate coverage and staff moving to areas with higher performance or more favourable conditions for meeting targets.

One aim of paying for performance can be to encourage entrepreneurial behaviour amongst staff and managers. In this case, there was limited evidence of this, perhaps in part due to the low awareness by many staff members of exactly how the PBI scheme functioned. The existence of two tiers of staff–those hired directly by the NGO on higher salaries, and those on government staff with lower salaries but paid incentives–may also have weakened any motivational effects of the PBIs.

There is no consensus on how much PBI schemes should offer, in terms of additional resources, in order to motivate effectively. Clearly the level has to be set in context. However, in this case, the additional pay was below the opportunity costs in terms of private practice income foregone. In a tightly controlled project, it may be possible to ensure attendance and prevent staff from undertaking additional private practice, but in a less well managed environment, a low level of PBI might not fully achieve either goal. In other projects, where payment is made per output, the effectiveness of paying for performance has been linked to the payment per output, the effort required to deliver the output and the extent to which outputs are responsive to consumer versus provider decisions [6].

One challenge is the difficulty of designing a scheme which is complex enough to balance process and output measures, and to include a range of indicators to ensure that the system is not unduly focussed on a few interventions, and yet to be comprehensible to participants. The SC US project performed well in terms of design but less well in terms of simplicity. This will be a tension for all PBI processes. The weighting of the different indicators also involves a difficult judgement call, which in this case appeared to be made by the external agency alone, without much involvement of other stakeholders.

Another tension is that of rewarding team work versus the individual. In the case of this project, the measurement of performance focussed on team outputs, awarding the same incentives for all staff in a given facility, which was more acceptable, and yet pay went directly to individuals. This was appropriate for the setting and reduced tensions. The only individually assessed indicator was absenteeism–any member of staff absent without permission during the month was not eligible for incentives, which may have controlled the tendency to free-ride.

The review also supports wider evidence that there can be strongly demotivating effects where incentives are applied but not to all workers, so that there at least appear to be winners and losers. This reinforces the need for incentive strategies and combinations of incentives, rather than narrow incentives.

Another challenge is that individuals and facilities start at different levels of performance. This can be managed by setting individual targets, but these would have to be constantly adjusted in order to keep up with trends in performance, and ultimately high performers would be penalised for their more limited potential gains. In this case, targets were fixed for the group as a whole, which meant that certain facilities earned more from start to finish. Where this is linked to effort, this result would be seen as fair. However, it is more likely that the initial staffing position and other fixed factors determined facilities' performance.

It should also be noted that performance (in terms of coverage indicators) was assessed using facility data, which is amenable to manipulation, and was not independently verified or corroborated.

It is interesting that feedback from staff included the desire for more discussion of performance. A PBI approach might suggest that staff were already getting feedback in a very direct way, but in fact, the periodic checking of registers by an independent monitor, who then left without engaging with staff in discussion of how they had done, and why, and how it might be improved, was unsatisfactory from their point of view. This indicates the need to link 'objective' assessment systems with some more participatory forum, in which collective problem identification and solving can occur.

The whole nature of this particular PBI scheme was affected by the fact that it was implemented by an international non-governmental organisation with external funding, which was therefore able to provide independent and reliable third party systems for target-setting and assessment. The scale was also limited to one district, where the implementing organisation had strong on-the-ground presence. Where this function is internalised and scaled up, it will be much harder to maintain.

Another contextual issue is whether the post-disaster context of the area in Pakistan facilitated the acceptability of PBI. Some have argued that the evidence for effectiveness of PBI approaches is greater in post-conflict areas [7]] (which share features with post-disaster ones, in terms of a breakdown of infrastructure, at least, if not systems). In the case of Bhattagram, the main effect of emerging from disaster was that outputs were very low at the start of the project, so that the returns to general project investments could be commensurately large.

Clearly, it would have been desirable to quantify the cost-effectiveness of the PBI component in this project. However, that was not possible, for a number of reasons. First, the project outputs were many and varied—not easy to assimilate into one index. Secondly, any gains must be attributed jointly to government and project activities (and within the project, to PBI- and non-PBI elements). Thirdly, secular trends in growth (related to exogenous factors such as population and economic growth) must be allowed for in calculating gains. Finally, to judge the effectiveness of tying pay to performance requires that we distinguish between the motivational effects of higher pay per se, versus higher pay which is conditional on performance. With the data available, and in the absence of any control areas, these complex factors could not be adequately addressed.

Conclusions

The review concluded that the SC US project in Battagram had contributed to rebuilding district health services. It did so at a cost of less than $4.5 per capita (combining project and district health expenditure) and achieved substantial growth in outputs. Staff, managers and clients were appreciative of the gains in availability and quality of services.

At the same time, the role that the PBI component played was less clear–PBI formed a relatively small component of pay, and did not increase in line with outputs. There was little evidence from interviews and data that the conditional element of the PBIs influenced behaviour. They were appreciated as a top-up to pay, but remained low in relative terms, and only slightly and indirectly related to individual performance. Moreover, they were implemented independently of the wider health system and presented a clear challenge for longer term integration and sustainability.

The PBI component nevertheless provided useful learning opportunities. It demonstrated that a transparent and objective process for measuring performance of a facility as a whole can be implemented in Pakistan without causing staff resentment. It demonstrated that a PBI approach focussed on preventive care can boost those services without reducing curative visits. It pioneered a 'scorecard' system which recognised the importance of process and output indicators. More generally, it has added to our understanding of how and in what circumstance PBI can contribute towards health sector goals.

Author details
[1]Oxford Policy Management, Oxford, UK. [2]Queen Margaret University, Edinburgh, UK. [3]Islamabad Office, Oxford Policy Management, Pakistan. [4]Oxford Policy Management, Pakistan. [5]Health & Nutrition, Save the Children US, Pakistan. [6]Save the Children US, Pakistan.

Authors' contributions
SW led on study design, analysis and drafting of the article; TZ managed local data collection and contributed to analysis and drafting; SJ led the qualitative research component and commented on drafts; AK and AB contributed to study design, data gathering and commented on drafts. All authors read and approved the final manuscript.

Competing interests
The authors declare that they have no competing interests.

References
1. Oxman A, Fretheim A: **An overview of research on the effects of results-based financing.** *Oslo: Nasjonalt Kunnskapssenter for Helsetjenesten* 2008, Report No.: Report Nr 16-2008.
2. Eldridge C, Palmer N: **Performance-based payment: some reflections on the discourse, evidence and unanswered questions.** *Health Policy and Planning* 2009, **24(3)**:160-6.
3. Eichler R: **Can pay for performance increase utilisation by the poor and improve the quality of health services?** Washington, D.C.: Center for Global Development; 2006, Report No.: Discussion paper.
4. Christianson J, Leatherman S, Sutherland K: **Financial incentives, healthcare providers and quality improvements: a review of the evidence.** London: The Health Foundation; 2007.

5. WHO: **The World Health Report 2006: Working together for health.**
    Geneva: WHO; 2006.
6. Basinga P, Gertler P, Binagwaho A, Soucat A, Sturdy J, Vermeersch C: **Paying
    primary health centres for performance in Rwanda.** Washington, D.C.:
    World Bank; 2010, Report No.: Policy research working paper 5190.
7. Toonen J, Canavan A, Vergeer P, Elovainio R: **Learning lessons on
    implementing performance based financing, from a multi-country
    evaluation.** Amsterdam: KIT, in collaboration with CORDAID and WHO;
    2009.

**Submit your next manuscript to BioMed Central
and take full advantage of:**

• Convenient online submission

• Thorough peer review

• No space constraints or color figure charges

• Immediate publication on acceptance

• Inclusion in PubMed, CAS, Scopus and Google Scholar

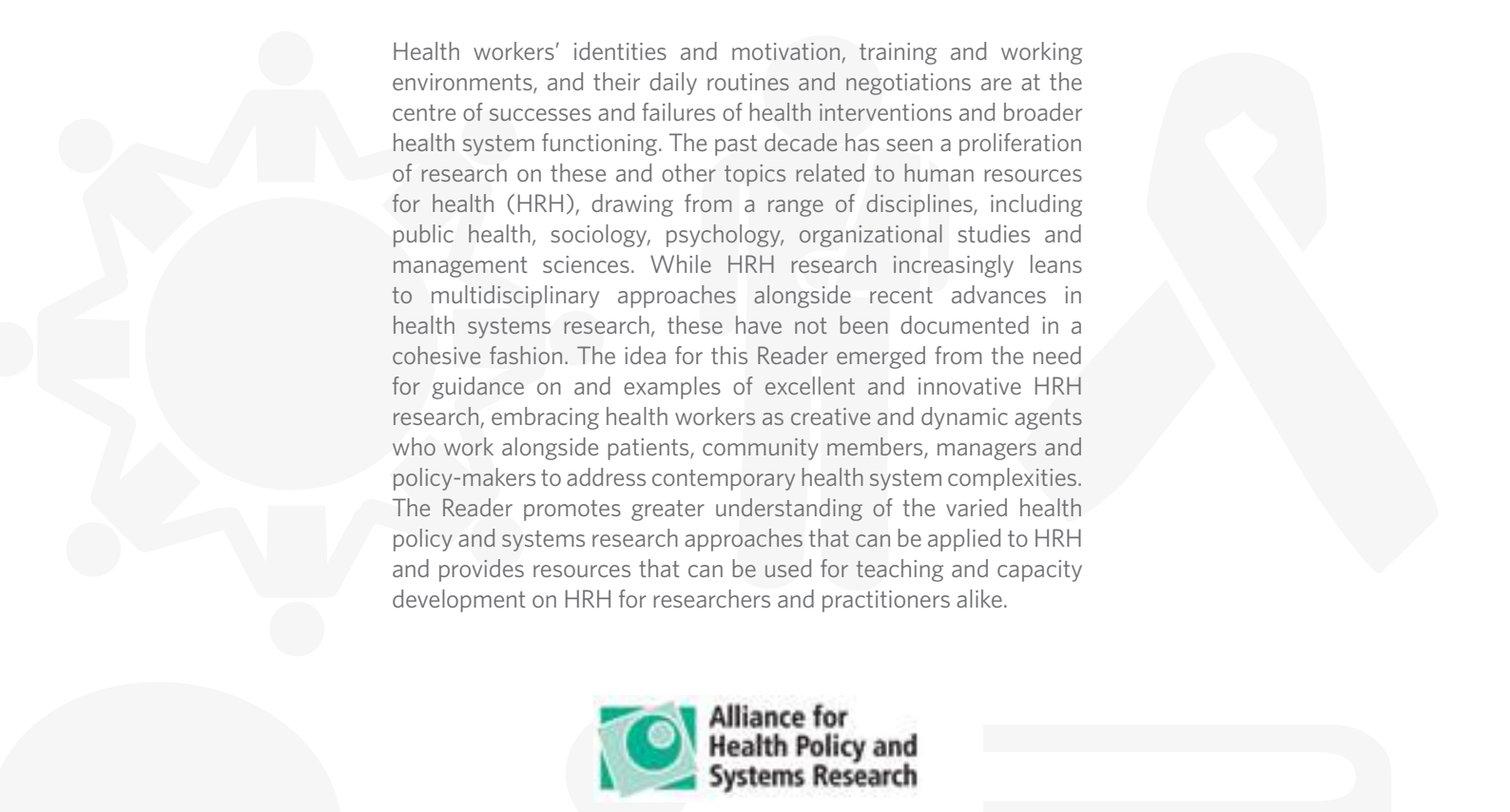• Research which is freely available for redistribution

Submit your manuscript at
www.biomedcentral.com/submit

BioMed Central

A HEALTH POLICY AND SYSTEMS RESEARCH READER ON
HUMAN RESOURCES FOR HEALTH

WHY WE NEED THE READER

Health workers' identities and motivation, training and working environments, and their daily routines and negotiations are at the centre of successes and failures of health interventions and broader health system functioning. The past decade has seen a proliferation of research on these and other topics related to human resources for health (HRH), drawing from a range of disciplines, including public health, sociology, psychology, organizational studies and management sciences. While HRH research increasingly leans to multidisciplinary approaches alongside recent advances in health systems research, these have not been documented in a cohesive fashion. The idea for this Reader emerged from the need for guidance on and examples of excellent and innovative HRH research, embracing health workers as creative and dynamic agents who work alongside patients, community members, managers and policy-makers to address contemporary health system complexities. The Reader promotes greater understanding of the varied health policy and systems research approaches that can be applied to HRH and provides resources that can be used for teaching and capacity development on HRH for researchers and practitioners alike.

Alliance for
Health Policy and
Systems Research