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A scoping review with recommendations for evidence-based practice

Loft, Mia Ingerslev; Berthelsen, Connie

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REVIEW

Nordic nurses' areas of research during and related to the COVID-19 pandemic. A scoping review with recommendations for evidence-based practice

Mia Ingerslev Loft RN, PhD, Research manager, Associate professor^{1,2,3}  |
 Connie Berthelsen RN, PhD, Research manager, Associate professor^{4,5} 

¹Department of Neurology,
Rigshospitalet, Copenhagen, Denmark

²Institute for People and Technology,
Roskilde University, Roskilde, Denmark

³Department of Public Health, Section
of Nursing, Aarhus University, Aarhus,
Denmark

⁴Medical department, Zealand
University Hospital, Køge, Denmark

⁵Institute of Regional Health Research
University of Southern Denmark,
Odense, Denmark

Correspondence

Mia Ingerslev Loft, Department
of Neurology, Rigshospitalet, Inge
Lehmans Vej 8 Copenhagen,
Denmark.

Email: belle.mia.ingerslev.loft@regionh.dk

Abstract

Background: The knowledge of the landscape of COVID-19 research performed by nurses in hospitals and health services is scarce. It is important to identify, map and share knowledge and thus provide a better understanding of the important research performed by nurses.

Aims: To provide a comprehensive overview of Nordic nurses' focus areas of research during and related to the COVID-19 pandemic and to extract knowledge on recommendations for future evidence-based practice.

Methods: The electronic databases of MEDLINE (via PubMed), CINAHL (via EBSCO) and Scopus (via Elsevier) were searched for studies describing all areas of nursing during and related to the COVID-19 pandemic conducted in the Nordic countries. Studies conducted by a nurse as the first or last author and published from March 2020 to March 2022 were included in the scoping review. The protocol for the review is registered at Open Science Framework (<https://osf.io/f8kuq>).

Results: Of 8412 studies found in the comprehensive search, 119 studies met the inclusion criteria. The studies were written by nurses from Denmark (42%), Sweden (31%), Norway (20%), Finland (6%) and Iceland (1%). The majority of studies (39%) covered patients' and relatives' experiences of visiting restrictions and social distancing and relatives' communications with healthcare professionals. Twenty-six per cent of included studies covered healthcare professionals' experiences of caring for patients infected with COVID-19, working during the pandemic and suffering from the consequences of both.

Linking Evidence to Action: The recommendations of evidence-based practice for future pandemics show that social distancing for disease prevention must be provided while considering the human consequences of social distancing. Special training is also recommended for healthcare professionals caring for COVID-19 patients accompanied by psychosocial support for their mental well-being. Additionally, virtual contact is an important supplement to personal treatment and face-to-face contact during social restrictions.

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KEYWORDS

COVID-19, evidence-based, Nordic nurse researchers, recommendations, research methods, scoping review, social distancing, virtual contact

INTRODUCTION

The COVID-19 pandemic has triggered an international public health emergency and has had a huge impact on almost every aspect of life [1, 2]. Globally, nurses have played an important role in running, directing and influencing healthcare systems to maintain and protect them from the breakdown [3]. Nurses have also been carrying out a broad range of essential research about COVID-19 to learn as much as possible from the pandemic [4–6]. A scoping review searching Google Scholar with the combined terms “nurse”, “nursing” and “COVID-19” in six months in the year 2020 identified 48 studies worldwide, focusing primarily on psychological factors and clinical practices as well as management and education [7]. Nursing research related to COVID-19 has also been focusing on COVID-19 impact on the nursing working environment [8], nurses' contribution to caring for COVID-19 patients and their relatives [9], or psychological and emotional burden for nurses when caring for these patients [10].

The knowledge of the landscape of COVID-19 research performed by nurses in hospitals and health services is scarce. It is therefore important to identify, map and share knowledge and thus provide a better understanding of the important research performed by nurses in Nordic countries. The Nordic countries of Denmark, Sweden, Norway, Finland and Iceland are often compared due to their Nordic similarities within cultural, religious, social and political environments, including similar healthcare structures [11] and welfare [12] as well in common institutional legacies and social policy models [13].

For nurses and nurse management to improve nursing care and gain knowledge on how to handle future pandemics in Nordic hospital and municipality care settings, evidence-based knowledge is defined as the best available, current, valid and relevant evidence [14] needed on the research conducted by nurses during and related to the COVID-19 pandemic. This is to ensure that those providing and managing care for future patients' with COVID-19 make informed decisions based on tacit and explicit recommendations. A scoping review design was therefore chosen to map and gain comprehensive knowledge that could inform future decision-making and practice recommendations.

Aim

The scoping review is aimed to provide a comprehensive overview of Nordic nurses' focus areas of research during

and related to the COVID-19 pandemic and of their recommendations for future evidence-based practice.

Specific review questions that guided the scoping review were:

- What were the characteristics of the research studies performed by nurses on COVID-19 in the Nordic countries?
- What were the focus areas of nurses' research on COVID-19 in the Nordic countries?
- What were the recommendations for evidence-based practice for future pandemics?

METHODS

A scoping review aims to collect and describe the literature within a selected area. A scoping review can contribute to describing and mapping the body of evidence within the selected area and hence seemed as an appropriate methodology and approach to answering our research question with a descriptive approach [15]. The scoping review was conducted in accordance with the JBI methodology for scoping reviews [16]. A protocol for the scoping review was registered in Open Science Framework (<https://osf.io/f8kuq>).

Search strategy

The electronic databases of MEDLINE/PubMed, CINAHL and Scopus were searched for eligible studies following the Preferred Reporting Items for Systematic Reviews and Meta-analyses extension for scoping reviews [17]. The search strategy was adapted for each included database based on a comprehensive search string (Table S1) covering the following inclusion criteria:

- Participants: Studies on all participants will be included to provide a full overview of Nordic nurses' research focus during and related to the COVID-19 pandemic.
- Concept of interest: Studies describing all focus areas on the COVID-19 pandemic will be included in the review.
- Context: Studies conducted by a nurse as first or last author from the Nordic countries of Denmark, Sweden, Norwegian, Finland and Iceland will be included.
- Study design: This scoping review will consider all scientific publications. This includes descriptive qualitative and/or quantitative design, experimental and

quasi-experimental study designs comprising randomised controlled trials, non-randomised controlled trials, before and after studies and interrupted time-series studies.

- Studies published in English, Danish, Swedish, Norwegian, Finnish and Icelandic, from March 2020 to March 2022.

All review studies, protocols, editorials, grey literature and studies not related to COVID-19 or with nurses not being the first and/or last author were excluded.

Selection process

The authors performed a comprehensive search in the three databases. Potentially relevant studies were identified, retrieved in full and imported into the Covidence systematic review software (Veritas Health Innovation). Since the search criteria in the electronic databases do not allow a search for the professions of the authors of the studies, the identified studies were screened for title, abstract and nursing profession of the first and last author. After the exclusion of duplicates and studies not meeting the inclusion criteria, the remaining full-text studies were assessed for eligibility. Reasons for the exclusion of sources of evidence in full text that did not meet the inclusion criteria were recorded with reasons. Any disagreements that arose at each stage of the selection process were discussed and resolved.

Quality appraisal

As scoping reviews are not focused on the quality of retrieved articles, a formal quality appraisal was not undertaken [16].

Data extraction

Data were extracted from the included full-text studies using a data extraction form covering specific details on three research questions: Author/year, Study participants, COVID-19 focus area, Context, setting(s) and country, Study design and data collection method(s), Key results and Recommendations for future evidence-based practice.

Pereira and colleagues' [18] rapid review of research themes during the COVID-19 pandemic was used as inspiration to gain structure and overview of the eligible studies' focus areas.

Five themes were used without modifications [18]:

- health policies and service,
- health technology,

- nursing management,
- nursing education and research and
- COVID-19 epidemiology.

The sixth theme of psychosocial aspects we deemed too broad for this review and hence to describe the focus areas we divided it in

- patients/citizens/relatives and
- healthcare professionals/nurses

Seven themes were conclusively used to organise the eligible studies.

RESULTS

A total of 8412 studies were identified in PubMed ($n = 139$), CINAHL ($n = 7277$), and SCOPUS ($n = 996$) and screened for title, abstract, and nursing profession of the first and last author, by the reviewers (Figure S1).

The screening process revealed 8235 studies not meeting the inclusion criteria after duplicates were removed and 143 studies were assessed for full-text eligibility by the first and last author. Twenty-four studies were excluded for not meeting the inclusion criteria according to concept (not COVID-19) ($n = 14$), context (not nurses as first or last author or Nordic) ($n = 3$) and study design ($n = 7$). Reasons for the exclusion of full-text studies are presented in Table S2 and related references in Table S3. Finally, 119 studies were included in the scoping review. (References of included studies are listed in Table S4).

Characteristics of Nordic nurses' COVID-19 research studies

Through our search in electronic databases, 119 eligible scientific studies conducted by Nordic nurses as first or last author between March 2020 and March 2022 on COVID-19-related areas were included. The studies were written by nurses from Denmark (42%), Sweden (31%), Norway (20%), Finland (6%) and Iceland (1%).

The target population of the included studies counted patients (27%) and relatives (6%) more specifically spouses (1%), family (2%), parents (2%) and a mix (2%). Forty-seven studies focused on healthcare professionals as their target population concerning nurses (11%), healthcare students (8%), mixed healthcare professionals (17%), researchers (1%) and managers (3%). Three studies did not hold participants as they studied policies, websites and social media. Thirty studies investigated the general population

targeting children (2%), adolescents (5%), adults (6%), elderly (3%) and a mix (10%).

The studies were conducted in the countries of Denmark (37%), Sweden (27%), Norway (20%), Finland (3%) and Iceland (1%) or in a mix of Nordic countries (12%). Six studies (5%) reported research that included collaboration with countries outside Nordic countries. The studies were conducted in different settings; however, the majority were from hospitals (43%), where nine were conducted in intensive care units (8%), seven in COVID-wards (6%) and three in a combination (3%). Other settings comprised communities (18%), universities (8%), nursing homes (3%), larger national settings (25%) and others (3%).

The design of the studies varied between the use of qualitative (34%) and quantitative (55%) methodologies or both approaches (11%). Hundred and eighteen studies (99%) used descriptive methods for data collection and one study (1%) reported an experimental randomised controlled trial. Of descriptive qualitative studies, single interviews were used in the majority of studies (80%); however, data were also collected through focus group interviews (10%), participant observations (8%) and reflections (2%). In the descriptive quantitative studies ($n = 65$), the majority of studies reported the use of a cross-sectional design (58%), but also data collected from cohorts (25%), national registers (8%), comparative studies (6%), interrupted time series (2%) and one randomised controlled trial (1%). Four studies reported data collection through texts, policies and websites.

Focus areas of nurses' COVID-19 research

Seven predefined themes of nursing research concerning COVID-19 [18] were used to map the COVID-19 focus areas.

The theme of "Patient/citizen/relatives" was covered by 47 studies (39%). The populations studied were patients (45%), relatives, spouses and family members of patients (11%) and both (2%) as well as pregnant women (11%), parents (6%), children (9%) and citizen groups in general (16%). Nine (19%) of the 47 studies investigated populations that were or had been infected with the COVID-19 virus. The majority of interest was in the worries and distress of patients with chronic illness during the pandemic (23%) and patients' and relatives' experiences of visiting restrictions and social distancing (23%). Other areas of interest covered experiences of having COVID-19 (15%), being pregnant during the pandemic (9%), finding information about COVID-19 online (11%), relatives' communications with healthcare professionals (6%) and adolescents' concerns during the pandemic (6%). A few studies described experiences of COVID-19 testing (2%),

vaccination (2%) and having a gambling disorder during the pandemic (2%).

Thirty-one studies (26%) were identified within the theme of "Healthcare professionals/nurses" including various mixes of healthcare professionals (48%), nurses (43%), home-care staff (3%), school nurses (3%) and nurse researchers (3%). The interest in these studies concerned the healthcare professionals, including nurses, experiences of caring for patients infected with COVID-19 (23%), working during the pandemic (23%) and suffering from the consequences of both (23%). Focus was moreover on learning from the pandemic (16%), adapting to organisational changes (10%), using video conferences (3%) and their perspectives on the hero narrative (2%).

Seventeen studies (14%) were identified covering the theme of "COVID-19 epidemiology". The studies covered national populations of pregnant women (6%), children (18%), patient populations (35%) and citizens in general (41%). The majority of studies covered alcohol and drug use, the prevalence of suicide and stress and anxiety among larger groups of national citizens during the pandemic. The studies also investigated further risks of exacerbation of illness during the COVID-19 pandemic.

The "Nursing education and research" theme was covered in 10 studies (8%). The majority of studies (40%) aimed at investigating nursing students' psychosocial well-being, stress and burn-out levels and signs of depression during the pandemic. The remaining studies described nursing students' experiences of providing in-home care, participating in virtual learning, peer and teacher support, and nursing students' hand hygiene adherence during the pandemic.

Seven studies (6%) concerned the theme of "Health technology". The studies investigated patients' acceptability of telehealth consultations and remote monitoring at home, vulnerable groups' use of digital health services, and applications to monitor COVID-19 disease-related physical signs and physical activity before, during and after the pandemic. The studies also tested the cost-effectiveness of a telehealth intervention and the quality of a web-based information site on preventive self-care.

Six studies (5%) were found conducted within the theme of "Nursing management". Of these, three studies investigated the experiences of hospital nurse managers during the COVID-19 pandemic in Denmark, two studies focused on organisational changes during the pandemic related to strategies for visiting restrictions and changes within the trauma centre, respectively, and one study described experiences of managing mental health and psychosocial activities during the first six months of the pandemic.

The theme of "Health policy and service" was found in one study investigating the non-medical public health and

surveillance policies and actions for tackling the community spread of the COVID-19 pandemic.

Recommendations for future evidence-based practice

The included studies provided broad recommendations for evidence-based practice for the next possible pandemic.

Although some studies advocated for social distancing for disease prevention and for reducing the amount of hospitalised COVID-19 patients, the majority of studies focused on the disadvantages and human consequences of social distancing. Numerous studies described how anxiety, depression, distress and fear developed during the COVID-19 lockdown by vulnerable populations. To avoid the mental health burden associated with social restrictions, the studies recommended that students maintain contact with the universities and their network for emotional and psychological support. Furthermore, adolescents with symptoms of depression were recommended to visit the school nurse for treatment. The studies also recommended that healthcare professionals provided specific support for vulnerable patients with increased concerns during the COVID-19 lockdown and provided empathic and caring contact between patients and their relatives. The included studies revealed a need to implement interactional protocols and to develop safe and humane solutions for interactions during lockdown or meeting outside for a walk.

Virtual contact appeared to be a unique solution for contact while complying with the social restrictions during the COVID-19 pandemic. Videoconferencing was recommended by some of the included studies as a unique opportunity for healthcare professionals to meet virtually and thereby preserve patient care and promote continuity. Videoconferencing was, however, recommended to be implemented in clinical practice as an important supplement to personal treatment and face-to-face contact due to patient barriers according to technology literacy and personal balance.

Numerous studies provided recommendations for future management practice. To use the nurse managers' experiences from prior COVID-19 waves, the included studies recommended that nurses and healthcare professionals should be represented among leaders in organising and planning contingency plans for future pandemics to prevent unpredictable and acute events. However, the studies also recommended the preparation of nurse managers to help them cope with planning and handling crises during the pandemic and to have special attention on support for nursing staff to decrease their feeling of being over-burdened.

A multitude of recommendations were provided for healthcare professionals working in ICU units and/or COVID-19 units. Along with having extensive simulation training, comfortable protective equipment, and being continuously updated on the COVID-19 disease and treatment, it was also recommended that the healthcare professionals were provided with training and support on how to provide the best care for COVID-19 patients. Information about how to stay healthy and psychosocial support for mental well-being was recommended as important for healthcare professionals working frontline, such as long-term follow-up from the burden caused by their work during the pandemic and anxiety treatment interventions. The studies also recommended how information and teaching should provide knowledge for healthcare professionals on how to cope with organisational changes during the pandemic, e.g. working in other units than usual and taking care of a new patient group. It was deemed important to prepare specific guidelines for intervention, education and training of the healthcare professionals.

Studies recommended that governments provide solid, timely and high-quality web-based information about COVID-19 symptoms, restrictions, how and when to seek medical care and recommendations for preventive measures. The information was recommended to be formulated by healthcare professionals and patient and healthcare organisations and to be disseminated according to health literacy principles being easy to access, understand and use.

DISCUSSION

In this scoping review, we revealed a rather large number ($n=119$) of research studies performed by Nordic nurses within two years during and related to the COVID-19 pandemic. The majority were written by Danish nurses and were conducted in Denmark. Notably, 12% of the studies were conducted in a mix of Nordic countries, and 5% included collaboration with countries outside Nordic countries. This demonstrates that the culture of collaboration and research across borders plays a significant role in nursing research, also when a world crisis pandemic is the frame.

We investigated the focus areas of nurses' research on COVID-19 in Nordic countries. The majority of the 119 included studies focused on areas concerning patients, citizens and relatives. Much of this concerned the worries and distress of patients with chronic illnesses and patients' and relatives' experiences of visiting restrictions and social distancing. From our viewpoint, this reflected that this nursing research was conducted in the

pandemic's early phase in which the extent, outcome, care and treatment of COVID-19 were still highly unknown. Patients with chronic illness were quickly identified as being more vulnerable to a complicated COVID-19 course, e.g. patients with diabetes, as the risk of death associated with COVID-19 infection was significantly increased [19]. Hence, the worries and distress of patients with chronic illnesses during the pandemic had a strong presence in nursing care and society in general. Additionally, a temporary visitor ban was implemented in several countries in both hospitals and home care, causing massive changes in clinical practice and impacting both patients, relatives and healthcare professionals, therefore presumably calling for increased attention (own ref).

The second highest focus was on "Healthcare professionals/nurses". The main interest in these studies concerned, the experiences of caring for patients infected with COVID-19, of working during the pandemic and of suffering from the consequences of both. From our point of view, this marks the insecurity as healthcare professionals/nurses experienced with the new and unknown diseases. Healthcare professionals/nurses, as opposed to the rest of the population who were advised to isolate, had to be on the frontline. Later studies have shown how physically and mentally burdensome these experiences were [20]. The recommendations that showed the importance of being prepared through education and guidelines appeared precisely to address this uncertainty among healthcare professionals.

Notably, the lowest focus area was on "health policy and service", in which only one study was identified. Most Nordic countries have no nurse chief on either a regional or a national level, and there is no strong tradition for nurses to be involved at a political or strategic level. Therefore, we wonder if this fact influences the lack of nursing research in this significant area.

The recommendations for future evidence-based practice go in different directions due to the heterogeneous studies. However, the majority of studies recommended a future focus on the disadvantages and human consequences of social distancing due to the increase of anxiety, depression and distress in vulnerable populations during the COVID-19 pandemic isolation period. Solitude is well known to have psychological consequences for most people and in a mixed-methods study on solitary confinement in the Washington State Department of Corrections in 2017 Reiter and colleagues [21] describe how depression, anxiety, as well as high rates of serious mental illness, self-harming behaviour, loss of identity and sensory hypersensitivity were found in prisoners incarcerated in solitary confinement. The studies included in our review therefore recommended that healthcare professionals provided specific support for vulnerable patients with

decreased mental health. An observational design study with a cross-sectional approach [22] of 113 elderly people in home care showed significant improvements in the loneliness perceived by the elderly when tended by caring nurses.

The included reviews also recommended healthcare professionals working frontline, to stay healthy – both physically and mentally during the pandemic. The reviews reported how the healthcare professionals felt burdened caused by their work during the pandemic, which has been seen in studies outside the Nordic countries [23, 24].

The recommendations also favoured implementing digital solutions (e.g. video conferences) to decrease the feeling of solitude during social isolation. When examining today's practices and publications, videoconferencing seems to have gained ground in healthcare for both crisis and non-crisis healthcare issues [25]. Nordic countries are some of the world's most digitalised countries [26], so they enjoyed an immediate technological lead, which could have been an advantage when finding solutions during the COVID-19 pandemic. When implementing digital solutions, research shows that dichotomous risks exist. Although digital solutions are often made to increase patient involvement and reduce healthcare inequality, they also contain the opposite risk [27, 28]. Hence, implementing digital solutions in healthcare calls for more focus and research on digital health literacy.

Only one of the 119 included studies used an experimental study design. The remaining studies all used descriptive methods for data collection. Because the COVID-19 pandemic could be characterised as an unknown field of research, research mainly had a descriptive approach, as new and unknown areas immediately call for descriptive designs. Although experimental designs are assumed by the medical research areas to contribute with stronger evidence-based recommendations for practice [29], descriptive studies have been recognised as providing evident knowledge to practice through a more subjective approach to study participants [30, 31]. For all designs, rigour and stringency must be present, to assess the study results as valid. For this scoping review, the included studies were not assessed for quality, as it is not part of the design [16], why the authors have been unable to assess the rigour.

Looking at the included studies, several of the criteria for Ensuring Value in Research set by the EVIR forum [32] were accommodated, such as conducting and finishing in a timely (rapid) manner. What characterises the research initiated during and related to the COVID-19 pandemic was the exceptionally fast procedures in attaining various ethical and data safekeeping permissions, as several

countries decided to offer fast procedures to support the much-needed COVID-19 knowledge and evidence development.

Linking evidence to action

- This scoping review presents results and recommendations from Nordic nurse researchers on how to cope during future pandemics.
- Social distancing for disease prevention must be provided while considering the human consequences of social distancing such as anxiety and depression.
- Virtual contact is an important supplement to personal treatment and face-to-face contact during social restrictions.
- Special training must be provided for healthcare professionals caring for COVID-19 patients accompanied by psychosocial support for their mental well-being.
- More experimental designs are needed in nursing research to support the development of evidence-based practice for future pandemics.

CONCLUSION

The overview of the 119 included studies in the scoping reviews revealed a strong focus on describing the consequences of social isolation for vulnerable populations and on the distress of healthcare professionals caring for patients with COVID-19. The focus areas were broad, mainly concentrating on patients', citizens' and relatives' perspectives but also healthcare professionals'. The limited focus on health policy and services deserves attention, as nurses are in a unique position to qualify for health policy. The studies recommended how we should be aware of the consequences of social distancing and how these consequences could be accommodated with some face-to-face interaction and the use of digital solutions. Future management practice, competence development and strengthening nurses' psychosocial challenges were recommended as specific focal points to consider in future clinical practice.

The solely descriptive study designs, however, pose a challenge to recommendations for future evidence-based practice, as we cannot be certain that they are effective; hence, future research should strengthen this approach.

AUTHOR CONTRIBUTIONS

Both authors were responsible for the study design and performance of the study. Both authors collected the data, performed the data analysis and drafted the manuscript. Both authors critically reviewed and approved the final version of this manuscript.

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CONFLICT OF INTEREST STATEMENT

The authors declare that there is no conflict of interest.

DATA AVAILABILITY STATEMENT

Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

ETHICS STATEMENT

Not applicable.

ORCID

Mia Ingerslev Loft  <https://orcid.org/0000-0002-0009-3302>

Connie Berthelsen  <https://orcid.org/0000-0003-3158-3301>

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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