Dubai Medical Journal

Review Article

Dubai Med J
DOI: 10.1159/000509361

Received: April 25, 2020
Accepted: June 12, 2020
Published online: August 26, 2020

# Nurses on the Frontline against the COVID-19 Pandemic: An Integrative Review

Abdullelah Al Thobaity[a] Farhan Alshammari[b]

[a]Nursing Department, Applied Medical Sciences College, Ta'if University, Ta'if, Saudi Arabia;
[b]Medical-Surgical Department, College of Nursing, University of Ha'il, Ha'il, Saudi Arabia

**Keywords**
Coronavirus · COVID-19 · Disaster preparedness · Nursing · Surge capacity

**Abstract**
COVID-19 has affected the life and health of more than 1 million people across the world. This overwhelms many countries' healthcare systems, and, of course, affects healthcare providers such as nurses fighting on the frontlines to safeguard the lives of everyone affected. Exploring the issues that nurses face during their battle will help support them and develop protocols and plans to improve their preparedness. Thus, this integrative review will explore the issues facing nurses during their response to the COVID-19 crisis. The major issues facing nurses in this situation are the critical shortage of nurses, beds, and medical supplies, including personal protective equipment and, as reviews indicate, psychological changes and fears of infection among nursing staff. The implications of these findings might help to provide support and identify the needs of nurses in all affected countries to ensure that they can work and respond to this crisis with more confidence. Moreover, this will help enhance preparedness for pandemics and consider issues when drawing up crisis plans. The recommendation is to support the nurses, since they are a critical line of defense. Indeed, more research must be conducted in the field of pandemics regarding nursing.



## Introduction

COVID-19 is considered the cause of a dangerous illness that affects people's lives and, in many cases, threatens the lives of infected people. In addition, this virus presents an immediate danger to the functioning of communities across the world. Such impacts include the loss of jobs and its effects on families, changes in the mode of education because attendance and interaction have shifted to online and distance learning, and many other changes in people's lives [1, 2]. Despite these facts, in many countries, disease mitigation, preparedness, and responses were implemented; however, these measures for coping with the events of COVID-19 were insufficient. The affected countries called for help when COVID-19 massively harmed healthcare systems and hospitals and, in

karger@karger.com
www.karger.com/dmj



Abdullelah Al Thobaity
Nursing Department, Applied Medical Sciences Collage
Ta'if University
P.O. Box 888, Hawiyah, Ta'if (Saudi Arabia)
a.thobaity@tu.edu.com

many countries, consumed their medical resources. It was found that the detection of COVID-19 cases was not identical across countries, as in some countries the number of infected cases was large and rapidly increased, and sudden critical care was necessary in countries such as Italy [3]. However, in some countries, the number of cases either remained steady or fluctuated, which is expected in biological disasters [2].

The majority of infected or symptomatic people seek medical treatment in medical facilities, particularly hospitals, as a high number of cases, especially those in critical condition, will have an impact on hospitals [4]. The concept of hospital resilience in disaster situations is defined as the ability to recover from the damage caused by huge disturbances quickly [2]. The resilience of hospitals to pandemic cases depends on the preparedness of the institutions, and not all hospitals have the same resilience. A lower resilience will affect the sustainability of the health services. This also affects healthcare providers such as doctors, nurses, and allied health professionals [5, 6]. Despite the impact on healthcare providers, excellent management of a pandemic depends on the level of preparedness of healthcare providers, including nurses. This means that if it was impossible to be ready before a crisis or disaster, responsible people will do all but the impossible to save lives.

Be it in daily routine or disasters, nurses are on the frontline and are responsible for providing holistic care for all types of patients. Considering the fact that nurses constitute the majority of healthcare providers, they have a critical function in healthcare systems [2, 5]. Their roles in treating patients with COVID-19 involve triaging patients and detecting suspected cases with infections; providing essential treatment in an emergency and dealing with suspected patients with precautions; helping in decontamination and coordination with other healthcare providers; supplying holistic nursing practices in managing multiple infections simultaneously; playing critical roles in expanding care services; and dealing with relatives [7]. In crises, they have more tasks to satisfy patients and their families; therefore, nurses must be well equipped with essential knowledge and skills in managing crises involving clinical treatment, decontamination, isolation, communication, triaging, psychological support, and palliative care if necessary [8–11]. However, when they respond to a crisis such as COVID-19, they face problems that hinder them from caring for the infected patients.

Exploring the issues that nurses face when caring for patients with COVID-19 will help increase nurse and hospital resilience in response to the crisis, as well as enhance preparedness and recovery from the crisis. Additionally, understanding these issues will help support nurses by informing leaders and decision-makers about these issues and providing recommendations and implications. Therefore, this integrative review aims to explore the issues facing nurses during their response to the COVID-19 crisis.

## Methods

This integrative review highlights the issues that affect nurses on the frontlines who fight and respond to COVID-19. This integrative review focused on papers published in 2020 after the advent of COVID-19 and involves all studies published in English across the world. The review used the keywords "nursing," "pandemic," "COVID-19," "coronavirus," and "nursing" in the following databases: CINAHL, ScienceDirect, ProQuest, Scopus, and Google Scholar. These databases were accessed via the Saudi Digital Library (SDL); however, during the COVID19 pandemic, some publishers began allowing access to papers even before the completion of review or publication processes as part of a global initiative to help combat the virus, such as ScienceDirect, which used Elsevier's free health and medical research on the novel coronavirus (SARS-CoV-2) and COVID-19. This was retrieved from the following website: https://www.elsevier.com/connect/coronavirus-information-center?dgcid=_SD_banner.

The criteria for selecting the papers for review involve all studies published in English in peer-reviewed journals from December 2019 to April 2020, and focused on the issues and challenges facing nurses during their response to the COVID-19 crisis across the world. The first result from searching the literature found 95 articles. After removing duplicates, 56 articles were screened and 30 articles were removed, as they were not based on research. The remaining 26 articles were screened for their eligibility with a focus on the purpose of the review, which ended with the exclusion of 18 articles that were outside the scope of the review. Eight studies were selected as they met the selection criteria; in particular, they explored the issues that face nurses during their response to COVID-19. The process of study selection for the review is presented in Figure 1, and the data extracted from the 8 articles are presented in Table 1.

## Results

Details from the 8 articles selected for the study were summarized in the form of a table containing the following information: the citation of the study, authors and date, place of the study, and the findings of the study.

Based on the findings of the review, most issues that face nurses when dealing with patients with COVID-19 can be summarized into two main types. The first involves staffing shortages, depression related to anxiety and fear of infection, a lack of communication with pa-

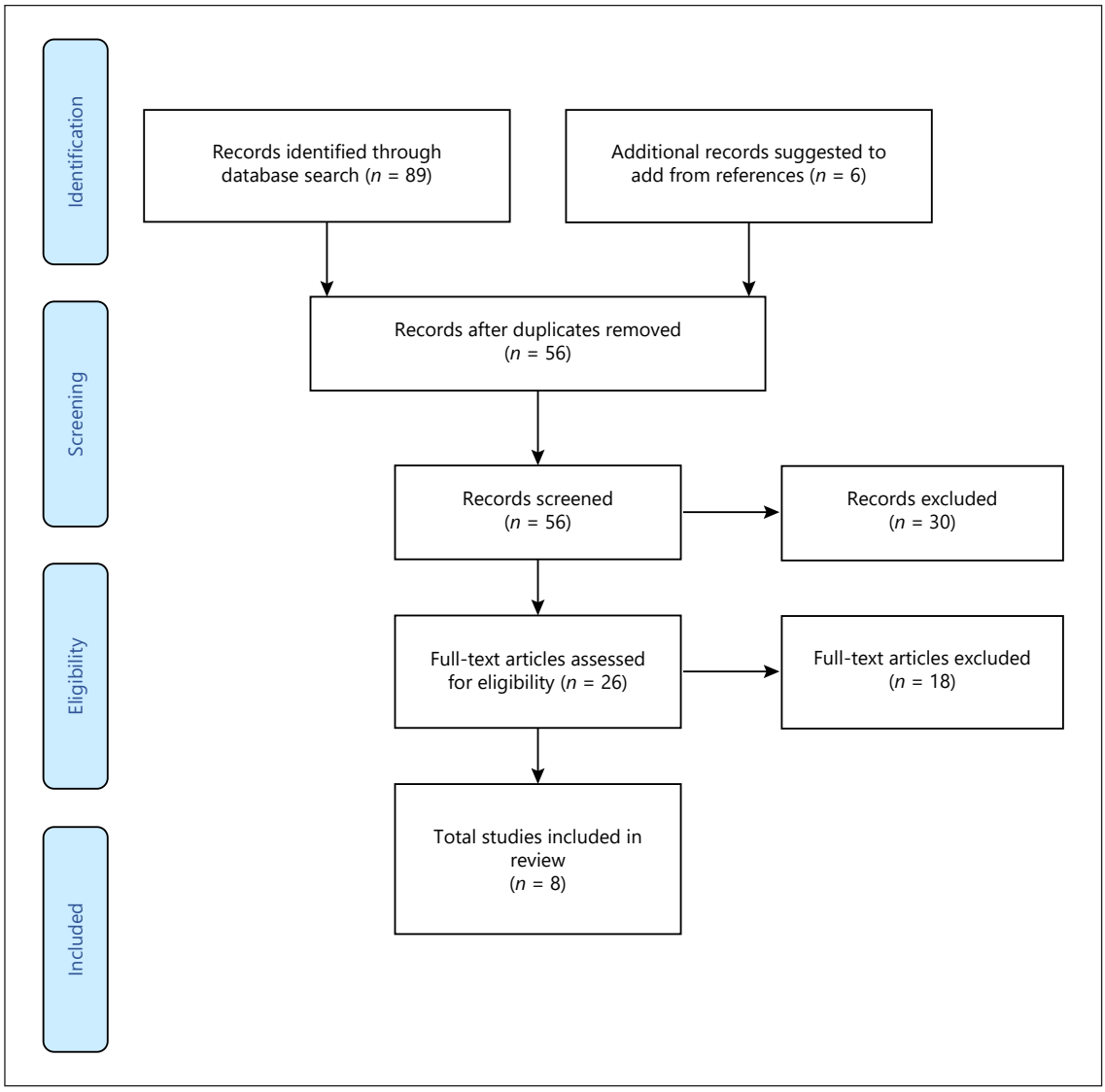


**Fig. 1.** PRISMA search strategy and article selection process.

tients, and exhaustion due to working long hours without proper nourishment [12–16]. The second type involves a lack of medical supplies and resources, such as personal protective equipment (PPE) [7, 17, 18].

## Discussion and Update

This review indicates that there is a shortage in the number of nurses when dealing with the mass of patients affected by the coronavirus. Moreover, the severity of this problem is not just a shortage of trained nurses providing full care for patients in isolation or intensive care units with COVID-19. Indeed, this problem is quite obvious regarding other issues of emergencies and disasters. In addition, the problem becomes clear in normal daily routine. The suggested solution for improving staffing for COVID-19 might involve a call for all experts – retired or staff nurses who have essential knowledge, skills, and attitudes – to help provide holistic care for patients infected with COVID-19 [13, 19]. This will ensure that hospitals can increase their capacity and receive more patients when nurses are available. It may be recommended that calls for volunteers, such as nursing interns and students who are willing and have experience working in a clinical setting, would be beneficial. However, nurses must have clear plans to man-

**Table 1.** Extracted issues facing nurses during their response to COVID-19

| Ref. No. | Authors, date | Place | Findings |
|---|---|---|---|
| 7 | Xie et al., 2020 | China | – Lack of critical care resources<br>– Challenge of early recognition<br>– Crisis in management |
| 12 | Chen et al., 2020 | China | – Nurses became nervous and anxious<br>– Exposure to nosocomial infection |
| 13 | Legido-Quigley et al., 2020 | Spain | – Staff shortages<br>– Shortage of face masks<br>– Inadequate intensive care capacity<br>– Restrictions on movement of people |
| 14 | Li et al., 2020 | China | – Vicarious traumatization<br>– Psychological changes |
| 15 | Millar, 2020 | Australia | – Feeling isolated<br>– Vulnerable to becoming infected<br>– Under marked psychological stress |
| 16 | Zeng and Zhen, 2020 | China | – Severe shortage of personal protective equipment<br>– Physical exhaustion<br>– Feelings of fear |
| 17 | Newby et al., 2020 | USA | – Shortage of personal protective equipment<br>– Issues of staffing ratios<br>– Relocating equipment between patients' rooms |
| 18 | Gharebaghi and Heidary, 2020 | Iran | – Shortage of ICU beds<br>– Death among nursing staff<br>– Increase in the number of patients<br>– Lack of masks |

age and supervise volunteers when identifying their roles and the tasks that must be accomplished [5, 20].

Moreover, it might be useful to bring on board nursing experts with the ability to deal with emergencies and disastrous situations, outline the possible risks from this pandemic, and create a short- or long-term plan to modify these risks. The current problem that faces healthcare systems in many countries is the shortage of nursing staff in all specialties, generally and specifically in emergency and critical care nursing [21]. Therefore, it might be useful to train new staff and nurses who are less experienced in dealing with patients placed on mechanical ventilators if the number of patients exceeds the capacity of the disaster plan [22]. Other training is essential for nurses who have less experience in dealing with isolated COVID-19 cases and how to use PPE [23].

The other issues that face nurses on the frontlines who respond to COVID-19 are medical risks such as injuries, infection, and depression, which might be related to nurses' anxiety about their health due to infection and stress concerning the workload associated with patients with COVID-19. The other reason that might put nurses on the frontline at risk of depression is their worries about their families and children [24]. Updating nurses with current information about COVID-19 and ensuring the availability of PPE might help reduce their fear and worries [25]. Some important suggestions highlighted in the literature that might support nurses' disaster crisis training involve identifying the causes of stress and anxiety, including other external factors such as the behaviors of people which might induce stress in nurses or other healthcare providers, identifying the short- and long-term impact of stress on nurses' lives and health, and ensuring that nurses can obtain access to psychologists and first aid [20].

Other important resources that are lacking and might place healthcare providers in a critical situation are a lack of PPE and beds in critical care [18, 26]. Thus, for better strategies to improve bed capacity and space for COVID-19 patients and to receive as much intensive care with ventilators as possible, the medical literature recommends

making good decisions during triage, deciding which patients can be moved from critical care units to make space for critical care patients and, if possible, thinking critically and creating a field hospital for the pandemic and ensure ethical issues [20, 26, 27]. However, the Swiss Academy of Medical Sciences [28] provides important steps for triaging patients for critical care that depend on the availability of beds and the need for admission to critical care units based on some specific criteria. The above measures will facilitate a suitable environment for nurses and other healthcare providers to work and provide care. In addition, to support nurses in working optimally and competently, they should be supplied with essential equipment such as PPE, including face masks, gloves, and a powered air-purifying respirator when needed [29]. To ensure there is no scarcity in medical resources, responsible leaders must identify needs and provide these resources, considering the number of healthcare providers and expected patients who might need medical and nursing care.

A lack of PPE and medical supplies increases the infection rate among nurses, and this was reported widely in the literature, as many nurses had infections. For instance, many nurses and physicians had infections in Italy, and this resulted in death [30]. In France, it has been reported that one doctor committed suicide after he had been diagnosed with coronavirus, and this definitely applied to all healthcare workers including nurses [31]. That is to say, a lack of PPE can lead to infection, and infection might affect the mental health of healthcare providers and their lives. The other impacts of a lack of PPE and medical supplies are fear of infection, which leads to psychological changes and can end in burnout [32]. Additionally, it has been noted that the findings from different countries such as China, Spain, the USA, and Iran cover the same issues. Internationally, China and Australia have experienced fear and nervousness, and this was reported among nurses in these areas [12, 15]. As there are no studies from Saudi Arabia or Gulf Countries aimed at the exploration of these issues facing nurses, it is recommended that studies be conducted in these countries to explore their experiences.

*Limitation*

This study was an integrative review with rigorous inclusion and exclusion criteria in terms of the quality of evidence included in the paper researched, as there were not many studies on this topic in the literature due to the publications on this topic only starting in January 2020. Therefore, more papers might be published with higher quality and more extensive reviews, such as scoping, intensive, and systematic reviews, which might be useful as the current papers in the literature do not meet the criteria for systematic reviews.

*Recommendations*

As this study focused on exploring the issues facing nurses in their response to COVID-19, and based on this discussion of our findings, it is recommended that a disaster plan for pandemics be kept in place that aims to guide nurses before, during, and after any health-related crises. It is also recommended that a plan for nursing forces be made for investing in nurses, as they make up the largest healthcare group and are very important healthcare workers who have very clear and significant roles. Furthermore, we must ensure that nurses respond effectively to the pandemic and that all medical supplies be available, such as PPE, to help keep the lives of nurses and patients safe. Finally, more research is required on the exploration of the experiences of nurses, and more research on pandemic crises involving preparedness, responsiveness, and recovery in general; more studies must focus on nurses' levels of knowledge, preparedness, and risk perception, which affects their adherence to precautionary behaviors, as these are critical issues in the context of epidemics with no treatment.

## Conclusions

Nurses are on the frontline, and they have a significant role in fighting COVID-19. Nurses are facing critical shortages of nursing staff, beds, and medical supplies. Thus, addressing these needs and providing supplies is essential. More research is needed to explore the experiences of nurses who are on the frontlines for better development, preparedness, and response measures for future pandemics.

## Conflict of Interest Statement

The authors have no conflicts of interest to declare.


## Funding Sources

No funding was received.


## Author Contributions

Review concepts, searching the databases, and analyzing and writing the article: A.A.T.; critical revision of the article and final approval of the article: F.A.

## References


1 Marital S, Barzani E. The global economic impact of COVID-19: a summary of research. Haifa, Israel: Samuel Neaman Institute for National Policy Research; 2020.
2 Powers R, Daily E. International disaster nursing. Cambridge: Cambridge University Press; 2010.
3 Grasselli G, Pesenti A, Cecconi M. Critical care utilization for the COVID-19 outbreak in Lombardy, Italy: early experience and forecast during an emergency response. JAMA. 2020 Mar;323(16):1545.
4 Adalja AA, Toner E, Inglesby TV. Priorities for the US health community responding to COVID-19. JAMA. 2020 Mar;323(14):1343.
5 Althobaity A, Alamri S, Plummer V, Williams B. Exploring the necessary disaster plan components in Saudi Arabian hospitals. Int J Disaster Risk Reduct. 2019;41:101316.
6 Dami F, Yersin B, Hirzel AH, Hugli O. Hospital disaster preparedness in Switzerland. Swiss Med Wkly. 2014 Oct;144:w14032.
7 Xie J, Tong Z, Guan X, Du B, Qiu H, Slutsky AS. Critical care crisis and some recommendations during the COVID-19 epidemic in China. Intensive Care Med. 2020 May;46(5):837–40.
8 Borasio GD, Gamondi C, Obrist M, Jox R; for the Covid-Task Force of palliative ch. COVID-19: decision making and palliative care. Swiss Med Wkly. 2020 Mar;150(1314):w20233.
9 Corless IB, Nardi D, Milstead JA, Larson E, Nokes KM, Orsega S, et al. Expanding nursing's role in responding to global pandemics 5/14/2018. Nurs Outlook. 2018 Jul–Aug; 66(4):412–5.
10 Al Thobaity A, Williams B, Plummer V. A new scale for disaster nursing core competencies: development and psychometric testing. Australas Emerg Nurs J. 2016 Feb;19(1):11–9.
11 Al Thobaity A, Plummer V, Innes K, Copnell B. Perceptions of knowledge of disaster management among military and civilian nurses in Saudi Arabia. Australas Emerg Nurs J. 2015 Aug;18(3):156–64.
12 Chen X, Tian J, Li G, Li G. Initiation of a new infection control system for the COVID-19 outbreak. Lancet Infect Dis. 2020 Apr;20(4): 397–8.
13 Legido-Quigley H, Mateos-García JT, Campos VR, Gea-Sánchez M, Muntaner C, McKee M. The resilience of the Spanish health system against the COVID-19 pandemic. Lancet Public Health. 2020 May;5(5):e251–2.
14 Li Z, Ge J, Yang M, Feng J, Qiao M, Jiang R, et al. Vicarious traumatization in the general public, members, and non-members of medical teams aiding in COVID-19 control. Brain Behav Immun. 2020 Aug;88:916–9.
15 Millar RC. Nursing a patient with COVID-19 infection. J Evidence-Based Nurs Prac. 2020; 1(1);4–8.
16 Zeng Y, Zhen Y. RETRACTED: Chinese medical staff request international medical assistance in fighting against COVID-19. Lancet Glob Health. 2020.
17 Newby JC, Mabry MC, Carlisle BA, Olson DM, Lane BE. Reflections on nursing ingenuity during the COVID-19 pandemic. J Neurosci Nurs. 2020 [Online ahead of print].
18 Gharebaghi R, Heidary F. COVID-19 and Iran: swimming with hands tied! Swiss Med Wkly. 2020 Apr;150(1516):w20242.
19 Valdez CD, Nichols TW. Motivating healthcare workers to work during a crisis: a literature review. J Manage Policy Pract. 2013; 14(4):43–51.
20 Schultz CH, Koenig KL, Whiteside M, Murray R; National Standardized All-Hazard Disaster Core Competencies Task Force. Development of national standardized all-hazard disaster core competencies for acute care physicians, nurses, and EMS professionals. Ann Emerg Med. 2012 Mar;59(3):196–208.e1.
21 Arabi YM, Murthy S, Webb S. COVID-19: a novel coronavirus and a novel challenge for critical care. Intensive Care Med. 2020 May; 46(5):833–6.
22 Sprung CL, Zimmerman JL, Christian MD, Joynt GM, Hick JL, Taylor B, et al.; European Society of Intensive Care Medicine Task Force for Intensive Care Unit Triage during an Influenza Epidemic or Mass Disaster. Recommendations for intensive care unit and hospital preparations for an influenza epidemic or mass disaster: summary report of the European Society of Intensive Care Medicine's Task Force for intensive care unit triage during an influenza epidemic or mass disaster. Intensive Care Med. 2010 Mar;36(3): 428–43.
23 ICN. High proportion of healthcare workers with COVID-19 in Italy is a stark warning to the world: protecting nurses and their colleagues must be the number one priority. 2020. Available from: https://www.icn.ch/news/high-proportion-healthcare-workers-covid-19-italy-stark-warning-world-protecting-nurses-and
24 Martin SD. Nurses' ability and willingness to work during pandemic flu. J Nurs Manag. 2011 Jan;19(1):98–108.
25 Tzeng HM, Yin CY. Nurses' fears and professional obligations concerning possible human-to-human avian flu. Nurs Ethics. 2006 Sep;13(5):455–70.
26 Suter P. Good rules for ICU admission allow a fair allocation of resources, even in a pandemic. Swiss Med Wkly. 2020 Mar; 150:w20230.
27 Swiss Society of Intensive Care Medicine. Recommendations for the admission of patients with COVID-19 to intensive care and intermediate care units (ICUs and IMCUs). Swiss Med Wkly. 2020 Mar;150:w20227.
28 Swiss Academy of Medical Sciences. COVID-19 pandemic: triage for intensive-care treatment under resource scarcity. Swiss Med Wkly. 2020 Mar;150:w20229.
29 Al Thobaity A, Plummer V, Williams B. What are the most common domains of the core competencies of disaster nursing? A scoping review. Int Emerg Nurs. 2017 Mar;31:64–71.
30 Shanafelt T, Ripp J, Trockel M. Understanding and addressing sources of anxiety among health care professionals during the COVID-19 pandemic. JAMA. 2020 Apr;323(21): 2133.
31 New Straits Times. French doctor commits suicide after Covid-19 diagnosis [Internet]. 2020 Apr 6. Available from: https://www.nst.com.my/world/world/2020/04/581620/french-doctor-commits-suicide-after-covid-19-diagnosis.
32 Fernandez R, Lord H, Halcomb E, Moxham L, Middleton R, Alananzeh I, et al. Implications for COVID-19: a systematic review of nurses' experiences of working in acute care hospital settings during a respiratory pandemic. Int J Nurs Stud. 2020 [Epub ahead of print].