

Original Article



Occupational Challenges of Intensive Care Nurses During the COVID-19 Pandemic: A Qualitative Study

Mahdi Yousefi^{1,2}, Zahra Ebrahimi³, Mahmoud Bakhshi^{4,5*}, Somayeh Fazaeli⁶¹Social Determinant of Health Research Center, Mashhad University of Medical Sciences, Mashhad, Iran²Department of Health Economics and Management, School of Health, Mashhad University of Medical Sciences, Mashhad, Iran³Department of Management, North Tehran Branch, Islamic Azad University, Tehran, Iran⁴Department of Medical-Surgical Nursing, School of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran⁵Nursing and Midwifery Care Research Center, Mashhad University of Medical Sciences, Mashhad, Iran⁶Department of Medical Records and Health Information Technology, School of Paramedical Sciences, Mashhad University of Medical Sciences, Mashhad, Iran**Article Info****Article History:**

Received: January 20, 2022

Accepted: April 21, 2022

e-Published: March 12, 2023

Keywords:

Qualitative study, Nurses, Intensive care, COVID-19

***Corresponding Author:**

Mahmoud Bakhshi,

Email: Bakhshim@mums.ac.ir

Abstract**Introduction:** The coronavirus disease 2019 (COVID-19) has been spreading rapidly as a pandemic and posed numerous challenges to healthcare workers (HCWs), especially nurses. This study aimed to investigate the occupational challenges experienced by intensive care unit (ICU) nurses in caring for patients with COVID-19.**Methods:** This qualitative study was conducted using a conventional content analysis method in September and October 2020. The study environment was the ICU wards dedicated to the patients of COVID-19 in a large hospital in east of Iran. The participants were selected by purposeful sampling method, and data were collected using semi-structured interviews with 17 nurses working in the COVID-19 ICUs. Data analysis was done with MAXQDA 2020.**Results:** The data analysis led to the extraction of 6 main categories and 17 sub-categories. The main challenges included "payment system", "human resource management", "consumable resource supply", "psychological and ethical distress", "personal or family problems", and "staff motivation and welfare issues".**Conclusion:** Considering the key and important role of nurses in the healthcare system, particularly during the COVID-19 pandemic, it is necessary to increase their motivation by applying a fair and non-discriminatory payment system and paying special attention to psychological issues. Also, managerial support and provision of required facilities and manpower have a significant impact on reducing their occupational challenges in caring for patients with COVID-19.**Introduction**

The COVID-19 disease was first reported in China, but it had spread widely throughout the world.¹ The high percentage of deaths caused by COVID-19 had faced many countries with a huge health challenge.² Despite preventive measures, as well as personal and public precautions, a large number of people are still infected with COVID-19 all around the world.³ Hospital admissions and hospitalizations of patients have increased following the COVID-19 pandemic.⁴ The prognosis of patients with coronavirus infection are very variable. The rate of intensive care unit (ICU) admission among patients with coronavirus infection varies from 3% to 100%.⁵ Therefore, ICU admission play an important role in the care and treatment of patients with COVID-19.⁶

Nurses are the frontline healthcare workers (HCWs) in

ICU and have a significant professional responsibility in caring of critical patients.⁷ The emergence of COVID-19 has put unprecedented pressure on the healthcare system and HCWs. It has potentially affected nurses' performance and mental health and even influenced their lives.⁸ Nurses spend about 86% of their time in direct contact with ICU patients and are faced with a variety of challenges that impose severe physical and mental strains on them during the provision of care for patients with COVID-19.^{9,10} Reports indicate that nurses experience the highest levels of anxiety among the HCWs.¹¹ The main source of nurses' anxiety during the COVID-19 epidemic is found the fear of their own infection and also transmitting the disease to others.⁹ Other identified causes include the lack of protection facilities, lack of access to diagnostic tests for screening, fear of transmitting the virus to others at work,

feeling of insufficient support, and being deployed in an unfamiliar ward or unit.¹² Maben and Bridges pointed out that the use of personal protective equipment during long shifts leads to severe fatigue of nurses and is an important communication barrier for proper communication between nurses and patients.¹³ These factors lead to nurses' depression, low mood, absenteeism, apathy, and poor performance, which will eventually result in patient dissatisfaction.¹⁴

Therefore, due to the rapid spread of COVID-19 disease, the largest hospital in eastern Iran, was designated as the main referral hospital for these patients. There were 1200 nurses working in this hospital, 82% of which have been involved in caring for patients with COVID-19. Considering the increasing need for ICU beds to admit and care for patients with COVID-19 or other possible emerging disease, it seems necessary to identify the challenges and concerns of nurses working in these units. Therefore, this qualitative study aimed to explore the occupational challenges experienced by ICU nurses in caring for patients with COVID-19.

Materials and Methods

This qualitative study was conducted based on a conventional content analysis approach. The research environments were two inpatient departments with a capacity of 300 beds, which were under the supervision of a large hospital in east of Iran. In addition to internal and infectious ICUs, the surgical and open-heart surgery ICUs were also dedicated to care of COVID-19 patients. These centers were equipped and used for hospitalization of COVID-19 patients after complete evacuation.

The participants included the nurses who worked in ICUs dedicated to COVID-19 patients. Seventeen nurses were selected using purposive sampling and were interviewed. The inclusion criteria were willingness to participate in the study, having at least 3 months of experience working in the ICUs of COVID-19 patients, and having the ability to convey rich experiences regarding to care of COVID-19 patients.

Data were collected using in-depth semi-structured interviews during September and October 2020. Due to the dangerous nature of the coronavirus and to maintain the researchers' and nurses' health status, telephone interviews were done. The researcher after explaining the study objectives, determined the appropriate time to conduct the interview with the participants' agreement. All interviews were recorded electronically using a digital voice recorder. In first, a general open-ended question was asked from the interviewees: "Please tell me about your experiences of the occupational challenges related to caring for COVID-19 patients in ICU?". The interviews continued according to the responses provided by the participants, and then deeper questions were asked about such issues as workplace conditions, resource supply conditions, payment system, and communication issues.

The average duration of the interviews was 20 min and ranged from 15 to 35 minutes. The interviews and data collection continued until saturation was reached, when no more new data was obtained from the interviews.

The data analysis was done concurrently with data collection using MAXQDA 2020, based on inductive qualitative content analysis as mentioned by Graneheim & Lundman.¹⁵ Initially, the interviews were transcribed and then reviewed several times meticulously until a general understanding was obtained from the interviews. In the first stage, the descriptive codes were identified and agreed upon them by the researchers through discussion. In the second step, the classification and labeling of the data was done by identifying the appropriate sentences and comments. In the third stage, the deductive analysis was carried out by reading and thoughtful re-reading of the text to integrate the statements. Finally, the precise perspectives of interviewees and the importance of evidence were achieved by organizing the integrated statements for addressing the purpose of the study.

Four criteria of credibility, confirmability, dependability, and transferability by Lincoln and Guba were used to ensure data trustworthiness.¹⁶ To this end, the following strategies were used: (a) purposeful sampling of participants; (b) Interview with nurses with different levels of management and work shifts; (c) Considering enough time to conduct interviews; (d) Continuous review and comparison of data and concepts in terms of similarities and differences; (e) member checking; and (f) Providing detailed data analysis and deep and rich description of research concepts. The final analysis was reviewed by team members as well as by other researcher who was familiar with the research methodology.

Results

In this study, 17 participants were interviewed, of which 76.5% were female. The age range of nurses was 30-42 years with an average age of 37 years. Also, their mean work experience was 12 years.

The analysis of data led to the identification of six categories as occupational challenges of ICU nurses in caring for COVID-19 patients. The main categories included payment system challenges; personal and familial challenges; human resource management challenges; consumable resource supply deficiency; staff motivation and welfare issues; and psychological and ethical distress (Table 1).

Payment System Challenges

This topic refers to how to pay the salaries and benefits of the nurses who take care of the COVID-19 patients in the ICU. One of the main complaints of nurses was financial issues that were mentioned in the form of dissatisfaction about evaluation and performance-based payment, dissatisfaction with discrimination in the payment, delays in the payments, non-priority of payments to nurses

Table 1. Main and subcategories extracted from the data

Main category	Sub-categories
Payment system challenges	Payment irrespective of performance
	Dissatisfaction with the payments
	Dissatisfaction with the payment mechanism
	Fear of getting infected with COVID-19
Personal and familial challenges	Problems caused by family members being infected with COVID-19
	Tension in family relationships
	high volume workload
Human resource management challenges	Compulsory employment in Corona sectors
	Inadequate efficiency of novice nurses
	Inadequate preparedness for crisis management
Consumable resource supply deficiency	Problem in drug supply
	Medical supplies shortage
	Inadequate quality of consumables
Staff motivation and welfare issues	Lack of support from managers and officials
	Inadequate amenities
psychological and ethical distress	job stress and emotional distress related to COVID-19
	Ethical conflicts related to work environment problem

working in COVID-19 wards, and the need for more financial support.

The statements of the interviewees in this regard were as follows:

Nurse: "Our biggest need as nurses is related to financial issues. They don't pay the special corona payment on time. It paid with a delay, and our per-cases aren't paid since last year". (Participant No. 2).

Nurse: "I see at least difference between the salaries of HCWs working in coronavirus wards in comparison with those working in other parts of the hospital". (Participant No. 1).

Personal and Familial Challenges

This category included the fear of contracting the infection (for self and family members), disruption in friendly communication with family and colleagues. The statements of some participants regarding this concept are given below:

Nurse: "The early days of the crisis, it had a great effect. We were so scared that we wouldn't have contact with our children. It was very difficult for us. I personally hadn't hugged my children for almost 2 months. I could hardly see my mother and we were really troubled during this time" (Participant No. 1).

Nurse: "This disease really caused a crisis for me and my family; my child got sick on one side and I was depressed on the other side. Family members also made me upset because they used to say that you made the child ill" (Participant No. 15).

Human Resource Management Challenges

Some sub-categories were high workload of nursing staff,

imposing unexpected extra shifts, forcing some nurses to work in the COVID-19 ICU, and lacking sufficient preparedness to deal with the crisis. The reasons for the high workload included the high ratio of patients to nurses, employment of inexperienced and novice staff, tightness of shift work schedules, absence and sick leave of a colleague, and training the new staff. Some of the nurses' statements in this category were as follows:

Nurse: "The training of personnel who came from other wards was very hard. Many of them even didn't know how to work with a common pumps in the ward They didn't know the ventilator alarms because they hadn't worked with a ventilator in the past". (Participant No. 17).

Nurse: "The work schedule that was arranged for us was dense. It has been 4 or 5 months that none of ICU nurses had a request plan. If I asked for 4 or 5 days off, it wouldn't be agreed and it was said that we are currently in a critical situation. If we didn't come to work for even one day, we would be considered absent." (Participant No. 9).

Consumable Resource Supply Deficiency

The basic concepts in this category included shortage of drugs especially expensive drugs, improper management of medication supply in the wards and hospital, lack of personal protective equipment (e.g., N95 mask, hand rub solution, gloves), lack of equipment (e.g., non-invasive ventilation mask), poor quality of personal protective equipment, and use of reusable clothing.

Nurse stated about the lack of consumption: "...There were scarcities in supplies and equipment. If we wanted masks, there weren't enough. We wanted to change our gloves from patient to patient, sometimes it really was impossible because they didn't give us more than 4 to 5 pairs of gloves" (Participant No. 14).

Sometimes the shortage of medicine and consumables were related to the lack of coordination between the relevant authorities. In this regard, one other nurse said: "To take a new medicine like Remdesivir, it was needed that one physician coordinate with another physician or pharmacy manager ... and then we called the pharmacy but they said it hadn't been coordinated, and it must be informed in written form". (Participant No. 5).

Staff Motivation and Welfare Issues

Among the main concepts mentioned in this category were inadequate support and not attention to HCWs requests by ward and hospital officials, inappropriate reactions to professional protests, allocation of incentive items with low practicality, lack of welfare facilities. The use of personal protective equipment had a negative effect on the performance of nursing staff. Participants commented on the mentioned challenge as follows:

Nurse: "With the exception of the head nurse, we did not see anyone as a patron. We felt as if we had fallen into a pit. I wish we could say, for example, the director of the hospital or the director of a part of the hospital

is next to me; we really didn't have that support" (Participant No. 8).

Nurse: "To start work, for example, the nurses were protesting to the conditions of the changing room and bedroom. They were protesting for improper condition of sleeping places. Because the number of nurses added to us was much, our changing room wasn't large enough" (Participant No. 6).

Psychological and Ethical Distress

The basic concepts extracted in this category included the concern of additional costs to the patient's companion and family, pressure and stress on the nurse regarding the provision of medicine and equipment out of the hospital by the patient's companion, mental and emotional disorders due to the patient's death or colleague's infection, increased stress due to high mortality, concern with the transmission of the disease to companion and others, insufficient insurance support to pay for expensive medications, and mental and physical fatigue caused by high-volume workload..

The high mortality percentage of patients and the infection and death of colleagues had a negative mental effect. In this regard, Nurse commented, "...The hardest job was managing our emotions against the fact that we saw the deaths of 7 or 8 of our colleagues. We cared for many of our colleagues. This emotional management was really hard for us" (Participant No. 7).

Nurse: "Some drugs weren't available for a while, such as Ribavirin, and we had to tell the patient's companion that it was very difficult to get. Many of the companions had to buy it from outside the hospital, but they didn't have the money and thought that it would be solved by transferring it to us..." (Participant No. 6).

Discussion

The findings of this study showed the occupational challenges of nurses working in COVID-19 ICUs. The major challenges included payment system, human resource management, consumable resource supply, psychological and ethical distress, personal or family problems, and staff motivation and welfare issues.

Nurses have a great responsibility in ICU. Due to the expansion of their health care role, workload has increased in pandemic conditions and more attention to them is necessary.⁷ One of the important occupational challenges that was identified in the present study was the problems related to the payment system for ICU nurses working with COVID-19 patients. Consistent with the results of this study, it was also revealed that non-timely payments, discrimination in incentive payments, dissatisfaction with the amount and mechanism of payments were among the issues raised in other studies.^{17,18} The COVID-19 pandemic has caused a significant decrease on hospital incomes due to the cancellation of elective surgeries, provision of personal

protective equipment, provision of welfare facilities for HCWs, and the necessity of paying attention to various aspects of public health and public education. This disruption in the process of production and consumption of financial resources in medical centers poses problems for the health system. Financial issues may negatively affect the performance of HCWs. Due to the fact that COVID-19 reference hospitals face financial constraints, this lack of funding can have a significant impact on staff's payments and lead to their dissatisfaction.¹⁹ Although the moral aspect of caring causes HCWs to continue serving patients and clients despite financial pressures, the effect of staff's financial satisfaction on the quality of care should not be overlooked.

The peculiarity of care marked by a great number of patients in isolation led to an exponential increase in the nurses' workload. They had to deal with providing care in a unique way, however, without previous specific experience. For instance, since the number of professionals in the room had to be reduced, the nurses had to stay inside longer and carry out a greater number of interventions that, in other situations, were carried out by other professionals.⁷ In such a situation, motivational rewards are materially one of the solutions used in the hospital to encourage and motivate nurses. Nevertheless, from the nurses' point of view, these rewards have not been distributed fairly in some cases.

The findings of this study showed that nurses experienced high levels of stress and anxiety when caring for COVID-19 patients due to the unknown nature of this disease and its high mortality rate. The other concerns of nurses included the fear of transmitting the disease to the colleagues and family members due to contracting COVID-19 disease. Huang et al conducted a study, in which they interviewed nurses working in the COVID-19 emergency room. Accordingly, one of the biggest fears of the nurses was found to be the risk of being infected by themselves and their families.²⁰

Since nurses' physical and mental health is directly related to the quality of their performance regarding patient care, it is necessary to try to reduce the stress of these members of society, especially those working in the ICU. Consequently, it seems essential to provide adequate training in psychological skills to deal with anxiety and other emotional problems, required financial and human resources, regular counseling services, and attention to nurses' problems related to the COVID-19 crisis to increase nurses' level of professional commitment and help them overcome interpersonal conflicts.²¹

Certainly, a crisis such as the current one (caused by COVID-19) will face the healthcare systems with a challenge in supplying consumable resources. In order to comply with the principles of personal protection while caring for the patient, it is necessary for the nurse to ensure the quality and provision of personal protection facilities and equipment.²² According to the results of the

present study, one of the challenges was related to the supply of consumable resources. The shortage of supplies and its effect on the performance of nurses have also been mentioned in previous studies.^{23,24} Participants reported lack of personal protective equipment (e.g., N95 mask, gloves, and coverall). Appropriate use and supply chain management play a key role in optimizing and availability of personal protective equipment. Preparation of clear protocols and evidence-based guidelines on the use of personal protective equipment, ensuring adequate supply and checking their quality are important requirements in crises and pandemics.²⁵

Nurses pointed that the personal protective equipment has inadequate quality and they felt tired after using it for a long time while taking care of the patients. This finding was consistent with the results of studies conducted during the outbreak of the Middle East respiratory syndrome (MERS) and Ebola.^{26,27}

Finally, the last category of data analysis pointed to staff motivation and welfare issues. In this study, nursing staff considered the visit and the presence of the officials in the ICU as a factor of their encouragement. Also, they expressed dissatisfaction with the lack of a suitable resting place, and other amenities. Lack of proper resting place and adequate amenities and support have previously been reported by nurses during the prevalence of H1N1 influenza and MERS.²⁸ Based on the results of a study conducted in China, the lack of support for HCWs was identified as a source of stress for nurses during the outbreak of COVID-19 disease.²⁹ According to the findings of some studies, listening to employees' problems is found to be a sign of supporting emotionally, valuing them, and increasing motivation and productive activity. It has been reported that in addition to financial and incentive payments, managers' empathetic and sincere communication with nurses, showing trust, developing open climate, providing positive feedback, and rational supporting of nurses in their conflicts with others are effective in motivating and encouraging nurses to act voluntarily, especially in critical situations.^{30,31}

Due to the heavy burden of COVID-19 disease on the nursing community, the nurses welcomed the interviews and provided the necessary cooperation. This led to a deep understanding of their work experiences, and therefore, achieving reliable and comprehensive data. Due to the nature of qualitative studies, the sample size of this study was limited. Due to the prevalence of coronavirus at the time of the study, it was not possible to conduct face-to-face interviews. In order to respect the principles of infection control and preserve the researcher and participant's health, the interviews were conducted over the phone. Although in qualitative studies, the researcher bias may influence the findings. However, in the present study, analysis was confirmed by another researcher who was not involved in the initial data analysis.

Research Highlights

What is the current knowledge?

- COVID-19 is one of the diseases that causes a lot of stress to intensive care nurses.
- Efforts are being made to understand the different aspects of the impact of this disease on caregivers.

What is new here?

- The payment system for ICU nurses should be fair and should not be affected by the decrease in hospital income during the COVID-19 pandemic and similar crises.
- Improper management and lack of resources have a negative effect on the mental and physical conditions and performance of ICU nurses.
- It is necessary to pay attention to the motivational and welfare issues of ICU nurses during the COVID-19 pandemic and similar crises.

Conclusion

Based on the results of the present study, exposure to the COVID-19 pandemic and similar crises posed several occupational challenges for ICU nurses, which are mainly related to the payment system, resource management, motivation, and their psycho-emotional issues. Therefore, some solutions were suggested to address these challenges and problems are apply the fair and just payment systems; increase motivation through incentive payments; periodic screening; proper management of human resources and consumption; provide required facilities and resources; pay attention to the psychological needs, and managers' and officials' support.

Acknowledgments

The researchers would like to appreciate the Vice Chancellor for Research of Mashhad University of Medical Sciences for the financial and moral support of this research with the registered number of 990014. Moreover, they express their gratitude to all participants in this study.

Authors' Contribution

Conceptualization: Mahmoud Bakhshi, Zahra Ebrahimi.

Data curation: Mahdi Yousefi, Zahra Ebrahimi.

Formal analysis: Mahmoud Bakhshi, Mahdi Yousefi, Zahra Ebrahimi.

Methodology: Mahmoud Bakhshi.

Project administration: Mahdi Yousefi.

Supervision: Mahdi Yousefi, Mahmoud Bakhshi.

Writing—original draft: Zahra Ebrahimi, Mahmoud Bakhshi, Mahdi Yousefi.

Writing—review & editing: Mahmoud Bakhshi, Mahdi Yousefi, Zahra Ebrahimi, Somayeh Fazaeli.

Competing Interests

The authors have no conflicts of interest to declare.

Data Availability

The datasets are available from the corresponding author on reasonable request.

Ethical Approval

This study was approved by the Ethics Committee of Mashhad University of Medical Sciences, Mashhad, Iran. (Ethical code: IRMUMSREC.1399.021). Informed consent was obtained from all subjects, and they were informed of the right to leave the study at any time. Moreover, all participants were assured of anonymity and confidentiality in this study.

Funding

Financial resources were provided by Mashhad University of Medical Sciences.

References

- Zhu H, Wei L, Niu P. The novel coronavirus outbreak in Wuhan, China. *Glob Health Res Policy*. 2020; 5: 6. doi: [10.1186/s41256-020-00135-6](https://doi.org/10.1186/s41256-020-00135-6)
- Torales J, O'Higgins M, Castaldelli-Maia JM, Ventriglio A. The outbreak of COVID-19 coronavirus and its impact on global mental health. *Int J Soc Psychiatry*. 2020; 66(4): 317-20. doi: [10.1177/0020764020915212](https://doi.org/10.1177/0020764020915212)
- Aghajani M, Taghadosi M, Mirbagher Ajorpaz N. Intuitive decision-making by Iranian nurses of patients with COVID-19: a qualitative study. *J Caring Sci*. 2022; 11(3): 154-62. doi: [10.34172/jcs.2022.04](https://doi.org/10.34172/jcs.2022.04)
- Birkmeyer JD, Barnato A, Birkmeyer N, Bessler R, Skinner J. The impact of the COVID-19 pandemic on hospital admissions in the United States. *Health Aff (Millwood)*. 2020; 39(11): 2010-7. doi: [10.1377/hlthaff.2020.00980](https://doi.org/10.1377/hlthaff.2020.00980)
- Abate SM, Ahmed Ali S, Mantfardo B, Basu B. Rate of intensive care unit admission and outcomes among patients with coronavirus: a systematic review and meta-analysis. *PLoS One*. 2020; 15(7): e0235653. doi: [10.1371/journal.pone.0235653](https://doi.org/10.1371/journal.pone.0235653)
- Sadeghi A, Eslami P, Dooghaie Moghadam A, Pirsalehi A, Shojaei S, Vahidi M, et al. COVID-19 and ICU admission associated predictive factors in Iranian patients. *Caspian J Intern Med*. 2020; 11(Suppl 1): 512-9. doi: [10.22088/cjim.11.0.512](https://doi.org/10.22088/cjim.11.0.512)
- Fernández-Castillo RJ, González-Caro MD, Fernández-García E, Porcel-Gálvez AM, Garnacho-Montero J. Intensive care nurses' experiences during the COVID-19 pandemic: a qualitative study. *Nurs Crit Care*. 2021; 26(5): 397-406. doi: [10.1111/nicc.12589](https://doi.org/10.1111/nicc.12589)
- Labrague LJ, De Los Santos JAA. COVID-19 anxiety among front-line nurses: predictive role of organisational support, personal resilience and social support. *J Nurs Manag*. 2020; 28(7): 1653-61. doi: [10.1111/jonm.13121](https://doi.org/10.1111/jonm.13121)
- Butler R, Monsalve M, Thomas GW, Herman T, Segre AM, Polgreen PM, et al. Estimating time physicians and other health care workers spend with patients in an intensive care unit using a sensor network. *Am J Med*. 2018; 131(8): 972.e9-972.e15. doi: [10.1016/j.amjmed.2018.03.015](https://doi.org/10.1016/j.amjmed.2018.03.015)
- Mo Y, Deng L, Zhang L, Lang Q, Liao C, Wang N, et al. Work stress among Chinese nurses to support Wuhan in fighting against COVID-19 epidemic. *J Nurs Manag*. 2020; 28(5): 1002-9. doi: [10.1111/jonm.13014](https://doi.org/10.1111/jonm.13014)
- Luo M, Guo L, Yu M, Jiang W, Wang H. The psychological and mental impact of coronavirus disease 2019 (COVID-19) on medical staff and general public - a systematic review and meta-analysis. *Psychiatry Res*. 2020; 291: 113190. doi: [10.1016/j.psychres.2020.113190](https://doi.org/10.1016/j.psychres.2020.113190)
- Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N, et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Netw Open*. 2020; 3(3): e203976. doi: [10.1001/jamanetworkopen.2020.3976](https://doi.org/10.1001/jamanetworkopen.2020.3976)
- Maben J, Bridges J. COVID-19: supporting nurses' psychological and mental health. *J Clin Nurs*. 2020; 29(15-16): 2742-50. doi: [10.1111/jocn.15307](https://doi.org/10.1111/jocn.15307)
- Lv Y, Yao H, Xi Y, Zhang Z, Zhang Y, Chen J, et al. Social Support Protects Chinese Medical Staff from Suffering Psychological Symptoms in COVID-19 Defense. 2020. Available from: <https://ssrn.com/abstract=3559617>.
- Graneheim UH, Lundman B. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Educ Today*. 2004; 24(2): 105-12. doi: [10.1016/j.nedt.2003.10.001](https://doi.org/10.1016/j.nedt.2003.10.001)
- Connelly LM. Trustworthiness in qualitative research. *Medsurg Nurs*. 2016; 25(6): 435-6.
- Spiotta AM, Crosa R. Letter to the editor: two perspectives on the COVID-19 pandemic nobody is talking about-and it's costing lives. *World Neurosurg*. 2020; 139: 723. doi: [10.1016/j.wneu.2020.05.004](https://doi.org/10.1016/j.wneu.2020.05.004)
- Yousefi M, Ebrahimi Z, Fazaeli S. The experiences of nurses of infectious and non-infectious wards of caring COVID-19 patients in a big hospital in Iran: a qualitative study. *Iran J Nurs Midwifery Res*. 2022; 27(1): 35-40. doi: [10.4103/ijnmr.IJNMR_459_20](https://doi.org/10.4103/ijnmr.IJNMR_459_20)
- Roshanzadeh M, Jamalinik M, Hasheminik M, Tajabadi A. Stigma of COVID-19: the basic challenge in health economics. *Iran Occupational Health*. 2020; 17(1): 137-41. [Persian].
- Huang L, Lin G, Tang L, Yu L, Zhou Z. Special attention to nurses' protection during the COVID-19 epidemic. *Crit Care*. 2020; 24(1): 120. doi: [10.1186/s13054-020-2841-7](https://doi.org/10.1186/s13054-020-2841-7)
- Duran S, Celik I, Ertugrul B, Ok S, Albayrak S. Factors affecting nurses' professional commitment during the COVID-19 pandemic: a cross-sectional study. *J Nurs Manag*. 2021; 29(7): 1906-15. doi: [10.1111/jonm.13327](https://doi.org/10.1111/jonm.13327)
- Saffari M, Vahedian-Azimi A, Mahmoudi H. Nurses' experiences on self-protection when caring for COVID-19 patients. *J Mil Med*. 2020; 22(6): 570-9. doi: [10.30491/jmm.22.6.570](https://doi.org/10.30491/jmm.22.6.570)
- Heydari A, Vafaei Najar A, Bakhshi M. Resource management among intensive care nurses: an ethnographic study. *Mater Sociomed*. 2015; 27(6): 390-4. doi: [10.5455/msm.2015.27.390-394](https://doi.org/10.5455/msm.2015.27.390-394)
- Malelelo-Ndou H, Ramathuba DU, Netshisaulu KG. Challenges experienced by health care professionals working in resource-poor intensive care settings in the Limpopo province of South Africa. *Curatationis*. 2019; 42(1): e1-e8. doi: [10.4102/curatationis.v42i1.1921](https://doi.org/10.4102/curatationis.v42i1.1921)
- Nayna Schwerdtle P, Connell CJ, Lee S, Plummer V, Russo PL, Endacott R, et al. Nurse expertise: a critical resource in the COVID-19 pandemic response. *Ann Glob Health*. 2020; 86(1): 49. doi: [10.5334/aogh.2898](https://doi.org/10.5334/aogh.2898)
- Kang HS, Son YD, Chae SM, Corte C. Working experiences of nurses during the Middle East respiratory syndrome outbreak. *Int J Nurs Pract*. 2018; 24(5): e12664. doi: [10.1111/ijn.12664](https://doi.org/10.1111/ijn.12664)
- Smith MW, Smith PW, Kratochvil CJ, Schwedhelm S. The psychosocial challenges of caring for patients with Ebola virus disease. *Health Secur*. 2017; 15(1): 104-9. doi: [10.1089/hs.2016.0068](https://doi.org/10.1089/hs.2016.0068)
- Kim Y. Nurses' experiences of care for patients with Middle East respiratory syndrome-coronavirus in South Korea. *Am J Infect Control*. 2018; 46(7): 781-7. doi: [10.1016/j.ajic.2018.01.012](https://doi.org/10.1016/j.ajic.2018.01.012)
- Hong S, Ai M, Xu X, Wang W, Chen J, Zhang Q, et al. Immediate psychological impact on nurses working at 42 government-designated hospitals during COVID-19 outbreak in China: a cross-sectional study. *Nurs Outlook*. 2021; 69(1): 6-12. doi: [10.1016/j.outlook.2020.07.007](https://doi.org/10.1016/j.outlook.2020.07.007)
- Patrick A, Laschinger HK. The effect of structural empowerment and perceived organizational support on middle level nurse managers' role satisfaction. *J Nurs Manag*. 2006; 14(1): 13-22. doi: [10.1111/j.1365-2934.2005.00600.x](https://doi.org/10.1111/j.1365-2934.2005.00600.x)
- Mohammadi F, Farjam M, Gholampour Y, Sohrabpour M, Oshvandi K, Bijani M. Caregivers' perception of the caring challenges in coronavirus crisis (COVID-19): a qualitative study. *BMC Nurs*. 2021; 20(1): 102. doi: [10.1186/s12912-021-00607-1](https://doi.org/10.1186/s12912-021-00607-1)