The Experiences of Nurses of Infectious and Non- Infectious Wards of Caring COVID-19 Patients in a Big Hospital in Iran: A Qualitative Study

Abstract

Background: Nurses play a very important role in caring for patients with coronavirus disease-19 (COVID-19). They are on the frontline fighting COVID-19. The objective was to explore the experiences of nurses in the surgical and infectious wards about caring for patients with COVID-19 in a large and tertiary care hospital in Iran. **Materials and Methods:** This was a qualitative study. Semi-structured qualitative interviews were conducted with 18 nurses in the Imam Reza Hospital Complex from April to May 2020, Mashhad, Iran. Data analysis was performed using the method proposed by Lundman and Granheim. The Maxqda10 software was used. **Results:** The experiences were summarized into three categories: (1) experiencing new feelings and relationships with colleagues and patients, (2) viewpoints about managers' performance, and (3) concern about getting infected with COVID-19. Findings reflected similar experiences on personal protective equipment between nurses in the surgical and infectious wards. Experiencing new feelings and relationships with colleagues and patients and concern about getting infected and spreading the COVID-19 were mostly expressed by infectious nurses and surgical nurses, respectively. **Conclusions:** This research results provide evidence of the experiences of infectious and non-infectious disease nurses who are currently caring for COVID-19 patients. Due to some differences between the experiences of these two groups in COVID-19, it is suggested to pay more attention to the needs and required skills in the staff mix during a crisis.

Keywords: *COVID-19, Iran, nurses, qualitative research*

Mehdi Yousefi[1], Zahra Ebrahimi[2], Somayeh Fazaeli[3]

[1]Department of Health Economics and Management Science, School of Health, Mashhad University of Medical Sciences, Mashhad [2]PhD Candidate, Department of Management, Faculty of Management , Azad University of North Tehran, Tehran, [3]Department of Medical Records and Health Information Technology, School of Paramedical Sciences, Mashhad University of Medical Sciences, Mashhad, Iran

Introduction

The World Health Organization (WHO) declared the COVID-19 outbreak as a pandemic in early 2020. It was considered a serious risk for healthcare providers, particularly in nurses. In such situations, in health care centers, nurses are always at the forefront of fighting epidemics.[1]

Also, reports indicate that nurses experience the highest levels of anxiety among the medical staff and treatment.[2] The main sources of nurses' anxiety in the COVID-19 epidemic are lack of protection facilities, fear of coronavirus persistence in the workplace, lack of access to tests for screening, fear of transmission of the virus in the workplace, lack of adequate support, lack of specific drugs, lack of access to appropriate facilities for child care,[3] Increased number of suspected and confirmed cases of Covid19 patients and low awareness of symptoms and variable nature of the disease. However, in response to the high volume of patient visits during epidemics and the shortage of nurses[4] in countries such as Iran, hospitals decreased elective surgeries and transferred nurses from related wards to COVID-19 wards.[5] Various studies have noted some problems including insomnia and stress. On the contrary, some studies demonstrate positive experiences such as increasing collaborations.[6]

In this regard, due to the closure of some of the elective surgery wards at the Imam Reza Hospital Complex (IRHC) during the COVID-19 crisis and the shortage of infectious nurse staff, the surgical nurses were transferred to COVID-19 wards. There are only a few studies on Iranian nurses' experiences in dealing with epidemics; therefore, our study aimed to explore the experiences of nurses in the non-infectious (surgery) and infectious wards of patients with COVID-19.

*Address for correspondence:
Dr. Somayeh Fazaeli,
Department of Medical Records and Health Information Technology, School of paramedical Sciences, Vakilabad Avenue, Ferdowsi University Campus, Mashhad, Iran.
E-mail: fazaelis@mums.ac.ir*

Materials and Methods

This was a qualitative study. An exploratory and qualitative design was adopted to explore the experiences of nurses in inpatient wards setting when caring for patients with COVID-19 from April to May 2020. The study was conducted in IRHC (a governmental and tertiary care teaching hospital) in Iran. IRHC has about 1,838 beds in 37 clinical departments and provides care to around 81,000 inpatients annually. The IRHC was assigned to the COVID-19 as a referral center in Mashhad.

The participants were classified into two groups including surgical and infectious wards. This classification was based on the type of department that they worked in, before the COVID-19 pandemic. Purposive sampling was used to select nurses according to the following criteria: 1) employed as a nurse in IRHC, 2) working in COVID-19 inpatient ward for at least 30 days, and 3) voluntary participation in the study. Nurses who worked at administrative or managerial levels and did not directly care for patients were excluded from the study.

To collect data, in-depth, semi-structured interviews were carried out over the telephone from April to May 2020 by a clinical nurse with experience in qualitative research and semi-structured interviews. After coordinating with the hospital management office, telephone calls were made to the wards where the nurses worked. Initial consent and the proposed time of the interview were recorded and nurses were contacted at that time. In case of the absence of nurses in the hospital, their mobile number, which was in the possession of the hospital's phone center, was called.

At the beginning of the interview, after introducing the objectives and facilitators of the study, verbal consent was obtained from individuals to participate in the interview. The interviews were conducted by telephone. Using telephones to conduct in-depth interviews is a faster and easier way to approach research because it takes less time to schedule and conduct than a face-to-face interview. However, just like a face-to-face interviewing telephone interview, the interviewer can gain a deeper insight into specific answers by treating the questionnaire like a meaningful discussion and deducing the validity of each response. For these reasons and in the outbreak of COVID-19, it is an acceptable method for data collection. Each interview lasted 25 to 45 min. The endpoint for sample selection was reaching data saturation. At this point, additional information obtained from the three final interviews did not vary the categorizations. After obtaining permission from individuals, a voice recorder was used to record participants' voices during the interview. The interviewees were coded as P1 to P18. The main outline of the semi-structured interview questions was extracted from previous related literature. To ensure that the questions were appropriate, two qualified nurses were interviewed before the main interviews.

The main questions asked of the nurses were: What concerns did you have regarding working with a confirmed or suspected COVID-19 patient? What problems did you have in the ward or the hospital during the COVID-19 pandemic? Please describe your experiences of providing care to COVID-19 patients (positive and negative). Twenty-four hours after an interview, the researchers transcribed the interview. Transcripts were then sent to each participant for additional comments and clarifications to ensure content validity. Data were analyzed using qualitative content analysis. Maxqda10 was used for data encoding and analysis.

In the present study, the data analysis process based on the Graneheim and Lundman methods included the following steps: (1) implementing the interviews conducted and reviewing them several times to find a correct understanding of all implemented cases, (2) extracting semantic units and categorize them under the heading of compressed units, (3) summarize and categorize the compressed units and select the appropriate label for them, (4) arrange the sub-categories, and (5) select the appropriate title that has the ability to cover the obtained categories. The sample size was based on the saturation of information.[4] After analysis of 15 of the total of 18 interviews, data saturation was reached. To identify the rigor of the research, criteria including internal validity, external validity, reliability, and objectivity were considered. We confirmed the validity of the ethnographic data using five quality criteria including credibility, transferability, dependability, confirmability, and authenticity (6).

The credibility of the study was assured by peer debriefing from the researcher's supervisor. Through frequent debriefing sessions between the researcher and the supervisor, the study's progress was reported and discussed. A critical evaluation was made by the supervisor to draw attention to flaws in the inquiry. For dependability, an in-depth operational description of the method adopted in the study was demonstrated to account for a comprehensive understanding of the research methodology. The repetition of the study would thereby be enabled for future researchers.

For confirmability, member-checking was completed with all 10 participants for validation of interpreted findings.[7] A summary of the study result was reviewed by the participants to check the congruency between the researcher's interpretation and the participants' actual intention.

For transferability, a vivid description of the information about the inquiry was rendered to ensure sufficient contextual information about the study is granted. Transferring the findings and conclusions to similar situations could then be facilitated in other studies.[8]

Ethical considerations

The study was reviewed and approved by the Ethics Committee of MUMS (ethics code: IR.MUMS. REC.1399.041). Verbal consent was obtained from individuals to participate in the interview. Participants were guaranteed anonymity and confidentiality. The study's purpose and interview type were fully explained to the participants. Informed written consents were given to the participants to ensure their right to full disclosure.

Results

In this study, 18 nurses participated. Eight nurses worked in the infectious wards and 10 nurses working in the surgical ward before the COVID-19 pandemic. Table 1 outlines the general information of the participants. Content analysis of the data obtained through the qualitative study regarding the nurses' experiences in the surgical or infectious wards caring for COVID-19 patients led to the identification of 32 sub-subcategories. The emergent sub-subcategories reflected nurses experiences in three categories as follows: experience new feelings and relationships with colleagues and patients (with four subcategories); viewpoints on the managers' performances (with four subcategories), and concern about getting infected and spreading the COVID-19 with three subcategories) [Table 2].

Category 1: Experiencing new feelings and relationships with colleagues and patients.

Its subcategories included new experiences between nurses and patients, between nurses together, and between nurses and physicians. In this regard, nurses stated that they experienced new working relationships with new colleagues and patients, which at first had more challenges and then positive consequences for them. "*There was a very ill patient with a white lung on chest radiograph. He had lots of problems and was about 60-years-old. But after a few days of care, he recovered completely and was discharged. It was a very good experience for me*" (P13).

"*Nurses in non-infectious wards must be trained to know that oxygen saturation is very important for these patients. Many of these nurses do not pay attention to these things*" (P3).

"*All the nurses, not just the nurses in our ward, are getting closer and relationships are getting better. I did not know many people, but now I know more people*" (P5).

"*Patient's physician changes every 4 days. On the first day, a doctor comes and writes orders for the patient, and 4 days later, the other doctor has new orders for the patient. On the 12th day of the hospitalization, if the patient be lucky, he will be discharged. Otherwise, a third doctor will come to visit him. I think that is not good for the patient*" (P 16).

"*Non-infectious residents are not responsible for COVID-19 patients and so do not have sufficient responsibility. One day. I had a very ill patient and I called to the resident, but the resident was not available and when he entered the ward when the patient needed CPR, but did not participate in CPR and we performed CPR for 45 minutes without the resident's participation*" (P3).

Category 2: Viewpoints on the managers' performances. Its subcategories included support processes, human resource management, capital equipment, and personal protective equipment. In this regard, comments were expressed on some of the functions of the relevant managers, including a timely and adequate supply of equipment, human resource management, and the proper supervision of managers. "*My

Participant no.	Age (year)	Gender	Clinical work experiences	Previous ward	Educational level	Marriage
p1	27	Female	4	Infectious	Bachelor's degree	Unmarried
p2	36	Female	11	Infectious	Master's degree	Unmarried
p3	40	Female	12	Infectious	Bachelor's degree	Married
p4	31	Female	4	Infectious	Bachelor's degree	Married
p5	42	Female	15	Infectious	Bachelor's degree	Married
p6	29	Female	3	Infectious	Bachelor's degree	Unmarried
p7	30	Female	4	Infectious	Bachelor's degree	Married
p8	35	Female	6	Infectious	Bachelor's degree	Married
p9	29	Female	4	Non-infectious	Bachelor's degree	Unmarried
p10	44	Female	17	Non-infectious	Bachelor's degree	Married
p11	36	Female	12	Non-infectious	Master's degree	Married
p12	41	Female	13	Non-infectious	Bachelor's degree	Married
p13	28	Male	4	Non-infectious	Bachelor's degree	Married
p14	29	Male	5	Non-infectious	Bachelor's degree	Unmarried
p15	34	Male	3	Non-infectious	Bachelor's degree	Married
p16	33	Female	6	Non-infectious	Bachelor's degree	Unmarried
p17	39	Female	12	Non-infectious	Bachelor's degree	Married
p18	38	Female	15	Non-infectious	Bachelor's degree	Married

Table 2: Categories, subcategories, and sub-subcategories identified through interviews with nurses

Categories	Subcategories	Sub-subcategories
Category 1: Experiencing new feelings and relationships with colleagues and patients	1-1- Sub-category1: Between nurse and patient	1-1-1-More intimate relationship between nurses and patients.
		1-1-2-The nurse was happy that the patient got well and discharge
		1-1-3-Patient anxiety due to unaccompanied (family members) is not allowed in the hospital.
	1-2- Sub-category2: Between nurses together	1-2-1-Low skill of non-infectious ward nurses in the care of COVID-19 patients.
		1-2-2-Pleasant and interesting experience of merging nurses from different wards.
		1-2-3-Communication problems with non-infectious nurses at first.
		1-2-4-Non-infectious nurses resisted training.
	1-3- Sub-category3: Between nurse and physician	1-3-1-Challenges to patient care resulting from changing patient's physician and new orders.
		1-3-2-Low skills of non-infectious and internal medical assistants.
		1-3-3-Lack of adequate access to physicians and refuse of non-anesthesia assistants to doing some procedures, such as intubation.
	1-4- Sub-category4: Personal experiences	1-4-1-Having stress due to high mortality of COVID-19 patients.
		1-4-2-COVID-19 was not a crisis for us and it was similar to our previous experiences, but we received more attention.
		1-4-3-In the early days, nurses were less likely to get close to COVID-19 patients.
Category 2: viewpoints on the managers' performances	2-1- Sub-category 1: Support processes	2-1-1-The medicines that the COVID-19 patients needed were provided.
		2-1-2- Lack of separate clean and dirty route and shortage of closets in locker rooms
	2-2- Sub-category2: Human resource management	2-2-1-Motivational payments were good.
		2-2-2-The managers' visits to the COVID-19 ward made nurses feel good.
		2-2-3-Patients are unaccompanied and the number of nurse aides is insufficient.
		2-2-4-Reduction of nursing working hours and appropriate rest period between two shifts.
		2-2-5-Distrust to officials about their talk on the quality of face masks and other PPE.
		2-2-6- Inappropriate assessment of nurses' performance by supervisors.
	2-3- Sub-category3: Capital equipment	2-3-1-Shortage of monitoring and pulse oximeters.
		2-3-2- More exposure due to the use of depreciated equipment, such as sphygmomanometers.
	2-4- Sub-category4: Personal protective equipment	2-4-1-Impossibility to perform Polymerase Chain Reaction (PCR),… tests in hospital for nurses.
		2-4-2-Severe shortage of gloves.
		2-4-3-Problem with personal protective equipment (PPE), especially for nurses during the night shift.
		2-4-4-Face masks and shields are of low quality.
Category 3: concern about getting infected by COVID-19	3-1- Sub-category 1: Related with the community	3-1-1-Fear of spreading the disease to others while doing daily chores.
	3-2- Sub-category2: Related with the nurse's family	3-2-1-Psychological fear of getting infected even for the nurse's family.
		3-2-2-Self-isolation of nurses and problems in communicating with him/her family members.
	3-3- Sub-category3: Related with the nurse her/himself	3-3-1-The nurse always thinks of getting infected.
		3-3-1-COVID-19 has made nurses more hygienic at home.

work shifts are short and convenient. The number of our patients is lower than before COVID-19 and we can have breaks between their shifts" (P7).

"*There is a lack of trust between the authorities and us. For example, the authorities said that masks available in our ward were N95 type, but we did not believe it*" (P4).

"*Some supervisors, when visiting the ward, instead of paying attention to the more important issues and the efforts of the nurses, warn the nurses about relatively insignificant issues that discourage the nurses*" (P18).

"*It is very difficult to work with these clothes and PPE*" (P13).

Category 3: Concern about getting infected and spreading COVID-19. Its subcategories included concern about getting infected and infecting your family and community.

"*I try not to be in contact with others as much as possible, even my family, because I am afraid of being a carrier of the disease and infecting my family*" (P15).

Discussion

This study explored the experiences of surgical and infectious nurses who had worked in COVID-19 wards in a large hospital in Iran. The experiences were summarized into three categories consisting of experiencing new feelings and relationships with colleagues and patients, viewpoints on the managers' performances, and concern about getting infected with COVID-19.

According to recent reports, the nursing shortage is a severe and growing global problem.[9] Therefore, mixing workers with different professional backgrounds, skills, grades, qualifications, expertise, and experiences is one of the ways

to compensate for this shortage, particularly in epidemic conditions such as the COVID-19 outbreak.[2] However, using nurses who do not have the skills to provide services to infectious patients in times of crisis may pose new challenges for hospitals and staff.[5]

As shown in this study, sub-subcategories, such as distrust to officials about the quality of protective equipment, dissatisfaction with the lack of facilities such as adequate closets and having a separate clean and dirty hallway, excessive changes of the treating physicians and their orders, inappropriate assessment of the performance of nurses by supervisors, fear of spreading the disease, and paying more attention to health at home, were experienced by nurses who formerly worked in the surgical ward.

In contrast, infectious nurses had problems with interpersonal relationships with new nurses and physicians because of the low skills and responsibility of non-infectious nurses and physicians in the caring of COVID-19 patients, for example, non-anesthesia medical assistants. Sometimes—it is probably because of the fear of getting infected—refuse to perform some procedures, such as intubation. The resistance of surgical nurses to learning the principles of caring for infectious patients from infectious nurses at the beginning of the work also led to distrust in the performance of surgical nurses.

The first extracted category from this study was "the experiencing new feelings and relationships with colleagues and patients that is mentioned in the current study." Studies of nurses' behavior in the face of crises such as epidemics have shown that most nurses report both positive and negative experiences and feelings.[6] In this study, relationships with new staff were a challenging issue for nurses at the beginning of the outbreak, especially for infectious nurses. However, over time it got easy and in some cases, it has even been described as a good and new work experience for surgery nurses.

The second category was "viewpoints on the managers' performances." One of the important issues in manpower management in crises, in addition to allocating an appropriate mix of specialties to provide special services to patients, is to develop a suitable healthcare worker shift scheduling for the staff to ensure backup of sufficient uninfected health care workers.[10-12] In the present study, nurses expressed satisfaction with the new shift schedule.

The hospital's preparation to deal with the epidemic outbreak, as well as the timely provision of medicines and medical supplies, were the issues that hospitals faced due to the rapid progress of the disease prevalence.[13] This was one of the challenges of nurses in this study. The results of this study confirmed the findings of the studies that showed COVID-19 anxiety may be addressed through organizational interventions, including increasing social support, assuring adequate organizational support, providing psychological and mental support services, and providing resilience-promoting and stress management interventions, and the possibility to perform COVID-19 test without restrictions for nurses in case of a suspected infection.[14,15]

In the related studies, nurses stated that they had difficulty using PPE due to time consumption and cumbersomeness and lack of confidence in the effectiveness of PPE use.[16] This issue is also mentioned in the present study. Administrators should persuade frontline healthcare workers to use PPE properly by describing the proven effectiveness of PPE in preventing contamination.[17] The third category was "concerning about getting infected with COVID-19." An interesting finding in this study was that non-infectious ward nurses were more afraid of getting infected and putting family members at risk than infectious ward nurses, whereas infectious ward nurses, although they thought they were more likely to be infected, they were not afraid in this regard. These findings are largely consistent with the findings of Shahid's study.[18]

However, according to previous studies, nurses were the largest group affected by Severe Acute Respiratory Syndrome(SARS).[19] Therefore, using some strategies may be useful in reducing nurses' work stress and challenges and improving the quality of patient care. For example, psychological support and humanistic care should be provided to front-line nurses to maintain their well-being, and nationwide emergency rescue training and disaster education should be implemented.[20] The most important limitation of this study was that interviews were conducted by telephone to avoid contact with nurses. Therefore, non-verbal cues by the interviewee, such as eye movements and gestures, were not noticed or recorded.

Conclusion

The findings of this study have provided a rich description of the perceptions of nurses with different experiences who are currently caring for COVID-19 patients. Many of the differences in the perceived experiences of these nurses may have been due to previous experience of caring for patients in the infectious and surgical wards. The study highlights the importance of skill mix of the nurses (the ratio of nurses with experience in infectious disease ward to total nursing personnel (and using effective training methods to ensure that patients are provided good care during epidemics. It seems that reasonably arranged shift patterns optimize nursing workforce allocation, improve nursing quality, and promote nurses' physical and mental health during the COVID-19 pandemic.

Conflicts of interest

Nothing to declare.

References

1. 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.
2. Martin C, Montesinos I, Dauby N, Gilles C, Dahma H, Van Den Wijngaert S, *et al*. Dynamics of SARS-CoV-2 RT-PCR positivity and seroprevalence among high-risk healthcare workers and hospital staff. J Hosp Infect 2020;106:102-6.
3. Yin X, Zeng L. A study on the psychological needs of nurses caring for patients with coronavirus disease 2019 from the perspective of the existence, relatedness, and growth theory. Int J Nurs Sci 2020;7:157-60.
4. Ranney ML, Griffeth V, Jha AK. Critical supply shortages-The need for ventilators and personal protective equipment during the Covid-19 pandemic. N Engl J Med 2020;382:e41.
5. Cui S, Zhang L, Yan H, Shi Q, Jiang Y, Wang Q, *et al*. Experiences and psychological adjustments of nurses who voluntarily supported COVID-19 patients in Hubei Province, China. Psychol Res Behav Manag 2020;13:1135-45.
6. Sun N, Wei L, Shi S, Jiao D, Song R, Ma L, *et al*. A qualitative study on the psychological experience of caregivers of COVID-19 patients. Am J Infect Control 2020;48:592-8.
7. Castleberry A, Nolen A. Thematic analysis of qualitative research data: Is it as easy as it sounds? Curr Pharm Teach Learn 2018;10:807-15.
8. FitzPatrick B. Validity in qualitative health education research. Curr Pharm Teach Learn 2019;11:211-7.
9. Beitz JM. Addressing the perioperative nursing shortage through education: A perioperative imperative. AORN J. 2019;110:403-14. doi: 10.1002/aorn.12805.
10. Wei H, Roberts P, Strickler J, Corbett RW. Nurse leaders' strategies to foster nurse resilience. J Nurs Manag 2019;27:681-7.
11. Kluger DM, Aizenbud Y, Jaffe A, Parisi F, Aizenbud L, Minsky-Fenick E, *et al*. Impact of healthcare worker shift scheduling on workforce preservation during the COVID-19 pandemic. Infect Control Hosp Epidemiol 2020;41:1443-5. doi: 10.1017/ice.2020.337.
12. Yousefi M, Assari Arani A, Sahabi B, Kazemnejad A, Fazaeli S. Household health costs: Direct, indirect and intangible. Iran J Public Health 2014;43:202-9.
13. Liu S, Luo P, Tang M, Hu Q, Polidoro JP, Sun S, *et al*. Providing pharmacy services during the coronavirus pandemic. Int J Clin Pharm 2020;42:299-304.
14. Labrague LJ, De Los Santos JA. COVID-19 anxiety among front-line nurses: Predictive role of organisational support, personal resilience and social support. J Nurs Manag 2020;28:1653-61.
15. Yousefi M, Fazaeli S, Masoudi S, Arfae-Shahidi N, Ebrahimi Z, Shokoohizade M, *et al*. Comparative study of the physician specialty and laboratory services requested for patients with COVID-19: Evidence from a large hospital. JIMS 2021;39:33-9.
16. Kang JH, O'Donnell JM, Colaianne B, Bircher N, Ren D, Smith KJ. Use of personal protective equipment among health care personnel: Results of clinical observations and simulations. Am J Infect Control 2017;45:17-23.
17. Possamai M. A Time of Fear: How Canada Failed Our Health Care Workers and Mismanaged Covid-19. Canadian Federation of Nurses Unions; 2020.
18. Shahid H, Haider MZ, Taqi M, Gulzar A, Zamani Z, Fatima T, *et al*. COVID-19 and its psychological impacts on healthcare staff – A multi-centric comparative cross-sectional study. Cureus 2020;12:e11753.
19. Bandyopadhyay S, Baticulon RE, Kadhum M, Alser M, Ojuka DK, Badereddin Y, *et al*. Infection and mortality of healthcare workers worldwide from COVID-19: A systematic review. BMJ Glob Health 2020;5:e003097.
20. Liu Y-E, Zhai Z-C, Han Y-H, Liu Y-L, Liu F-P, Hu D-Y. Experiences of front-line nurses combating coronavirus disease-2019 in China: A qualitative analysis. Public Health Nurs 2020;37:757-63.