Challenges of Nurses in the Caring Process of Patients with COVID-19 in Iran: A Qualitative Study

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Abstract

Background: The illness caused by the novel coronavirus is an emerging disease, and for this reason, the international community is encountered with its an unknown nature, such as clinical features, treatments and its long-term complications. Experience suggests that humans are affected by the psychological and social effects of epidemics and pandemics of infectious diseases. Caring for patients with this disease is a new experience that has to be explored. The present study was carried out, using a qualitative method to detect the challenges to which nurses are faced with in the process of caring for patients with COVID-19 in Iran.

Methods: This is a qualitative study, using in-depth semi-structured interviews with 19 key informants selected *via* targeted sampling. Data were analyzed by thematic analysis to identify the challenges to which the nurses have encountered in the process of caring for patients with COVID-19 in Iran.

Results: Challenges of the nurses in the caring process for patients with COVID-19 are listed in five categories of stress and psychological issues, equipment-related challenges, increased events of errors, medication and treatment problems, and hospital management. at the same time, 35 subcategories were also identified.

Conclusion: Since nurses are at the forefront in fighting the COVID-19, there must be plans to increase their preparedness. Deficiencies in health systems, including equipment, medicine, and personal protective gear should also be addressed so that nurses can better respond to these incidents. Psychological and mental support is a key component of the nurses' appropriate response; thus, along with nurses' responses, individual, group, and family psychological support should be facilitated to increase performance and effectiveness in response to COVID-19.

Background

In December 2019, some unexplained cases of pneumonia were reported in Wuhan, Hubei Province, China. Epidemiological findings showed severe human-to-human transmission. Then, the World Health Organization (WHO) named it Corona Virus Disease 2019 (COVID-19) (1). The virus is highly contagious during incubation compared to viruses, such as SARS and Ebola, as it has asymptomatic infections transmitted through breathing droplets, contact, and airborne particles (2). Due to its rapid spread, severe infection, mortality, and unknown drug treatment, it poses a great threat to human life and health. As of April 3, 2020, the number of patients worldwide exceeded 2 million and about 120,000 people lost their lives (3). In addition to affecting people's physiques, the disease has an enormous effect on the mental health of the general public with individuals demonstrating varying degrees of social psychological problems, such as fear and anxiety(4). However, before that the emergence of SARS in China had also caused serious concern, fear, and severe psychological and social disorders(5, 6).

Hospitals and health center staff are directly affected by the incidents and crises(7, 8). In biological crises, this response is much more important than that of other crises, since the likelihood of pathogens

transmission to the staff in health care centers is higher than other members of society(9, 10). The disease caused by the new COVID-19 virus is a major challenge for the staff at the forefront of the challenge, especially nurses, due to its novelty, lack of definitive treatment, lack of drug prophylaxis and vaccination. Nurses are usually the first and only health experts to feel the need for health care in this field. Armed Forces hospitals are among the main respondents to the COVID-19 crisis in the country. Nurses in these centers are active in a range of care and management roles(11). An explanation of the challenges of this group of health workers in response to this emerging disease has played a significant role in discovering the themes of patient care and the concept of care for patients with COVID-19; thus, it is essential to remove the challenges of increasing health care demand. Using the experiences of this group as the key members of the treatment team in the care of patients with COVID- 19 can prevent similar problems and eliminate confusion in potential future events.

COVID-19 is a new disease, and for this, the international community is faced with the unknown nature of its dimensions, such as clinical sign and symptoms, treatments, and long-term side-effects. Experience shows the psychological and social effects on humans because of epidemics and pandemics of infectious diseases. Taking care of patients with this disease is a new experience, which has to be explored. Nurses' perception of the status of care for patients with the disease is complex and probably depends on the circumstances associated with the conditions in their cultural and social contexts. Although no article has been published in this field in the world, it can be stated that even if there is such research in other countries, the issue cannot be generalizable to Iranian nurses. Therefore, this qualitative research was done to explain the experiences of frontline nurses after the discovery of challenges to care for these patients.

Method

This study was performed using a qualitative method from February 20 to April 18, 2020, which was the peak period of the COVID-19 epidemic in Iran. The information was collected through interviews with key experts and informants. Data were analyzed using thematic analysis to express the challenges of nurses in the caring process for patients with COVID-19 in Iran.

Participants

In-depth and semi-structured interviews were conducted with experts and nurses, and qualitative data analysis was performed using a thematic analysis procedure. The inclusion criteria were at least having a bachelor degree, work experience in caring for patients with COVID-19, or managerial work and related research as well as a willingness to take part in the research. If any of the experts were not willing to participate in the study before or during the interview, they could withdraw from the study at any time.

The sampling method was purposive. People who had lots of information were identified. Interviews were conducted with front line nurses, i.e., those who were working in the special respiratory, emergency, and private wards of COVID-19 in the designated hospitals for these patients. Then, the interview was conducted by explaining the objectives and significance of the research to the people, and by obtaining

their consent. the researcher referred to them at appropriate time. People's names were not included in the demographic forms, and the numbers #1, #2, etc. were used to name the individuals.

Data Collection

In-depth and semi-structured individual interviews were conducted with key informants. The question of the interview was open-ended and the semi-structured interview was such that experts and key experts were asked to speak about the challenges of nurses in the process of caring for patients with COVID-19. The semi-structured interview started by asking some questions such as: "1. What challenges did you have in providing services to patients with COVID-19?" Follow-up questions such as: "How?", "Why?", "Can you explain more about ...?" were also asked during the interview. The questions changed during the research course due to the analysis of the initial interviews.

Moreover, several other aspects of the interviewee's comments that were raised during the conversation were investigated when speaking about the topic under discussion, with another follow-up/probing question asked. Nineteen interviews were conducted with 19 experts. Finally, the interviews ended with data saturation. Each interview lasted about 30 to 75 minutes. The interviews were conducted by the researcher. To avoid possible errors in recording the specialists' voices, the interviews were recorded by 2 voice recorders and were immediately released after the performance.

Data Analysis

Along with data collection, the analysis was also performed. All interviews were written word by word immediately after recording. Researchers also took notes during the interview. Thematic analysis was used to analyze the data.

The thematic analysis includes 6 steps: 1. Familiarity with the data (and extracting concepts from the items), 2. Creation of primary codes (or assigning a code to each of the concepts and their main and sub-categories), 3. Category search, 4. Main and subcategory review: At this stage, the code, categories, and subcategories were reviewed about the data set, 5. Definition and naming of categories and subcategories, and 6. Preparation of a report(12). If necessary, interviews were provided to individuals to get the errors corrected or contents added. At the end of the interview, the texts were manually analyzed and the codes and categories were grouped with the categories and subcategories extracted. After analyzing the text of the interviews, 492 codes were finally extracted, which were categorized into 5 categories and 35 subcategories by deleting repetitive codes and re-analyzing them.

Rigor

To ensure the accuracy and precision of qualitative data, Guba and Lincoln criteria(13) , which includes trustworthiness, transformability, dependability, and confirmability were used. The interviews were analyzed several times. The text of the interviews was provided to the participants to correct the possible errors. Different coding procedures were used. The interviews were analyzed with the help of a qualitative study specialist.

Ethical Considerations

The present study was approved by the Ethics Committee in biomedical research with code IR.AJAUMS.REC.1399.056. After obtaining the necessary permissions from the Deputy for Research at the School of Nursing and a letter of confirmation from the AJA University of Medical Sciences, the researchers presented them to the research samples and introduced themselves to the participants, explained the objectives of the research and reassured them that all the recorded issues would be kept confidential. Then, the participants who were willing to participate in the study were selected. They were also assured that they could withdraw from the interview process at any stage. Other ethical considerations included: 1. Obtaining written consent from the experts, 2. Reassuring the participants that they will be provided with the results of the study if they wished 3. Observing the ethical considerations in terms of confidentiality of the data 4. Acknowledging and appreciating all the people who cooperated in the research, and 5. Obtaining approval from the ethics committee.

Results

Of the 19 participants, 7 were men. The participants average age was 31.47 years and work experience was 11.42 years. The demographic and occupational characteristics of the participants are shown in Table 1.

Table 1. Demographic and Occupational Characteristics of the Participants

Characteristics		No.	(%)
Gender	Male	7	36.84
	Female	12	63.15
Marriage	Single	8	42.10
	Married	11	57.89
Education	B.A.	17	89.47
	M.A.	2	10.52
Occupation	Nurse at wards	16	84.21
	Ward supervisor	3	15.78

The challenges to which the nurses were faced in the process of caring for patients with COVID-19 in Iran are divided into five main categories: stress and psychological issues, equipment-related challenges, increased error events, treatment, and medication problems, and hospital management. The subcategories are also listed in Table 2.

Table 2. Categories and Subcategories of Interviews with Participants to Introduce the Challenges of Nurses in the Process of Caring for Patients with COVID-19 in Iran

Category	Subcategories
Stress and psychological issues	Individual's psychological stresses in the process of patient care
	Lack of proper psychological support for nurses
	Fear of facing patients and the nature of the disease itself
	Worries over family transmission
	Feeling helplessness in the caring process for patients
	Family's opposition to continuing to work and to care for patients
	Worries over one's health
Equipment-related challenges	Difficulty using personal protective gear
	Lack of N95 mask
	Lack of gloves
	Low quality of personal protective gear
	Lack of disinfectant solutions
	Shortage of Gown
	Lack of face shield
Increased error events	Lack of Ventilators
Increased error events	Increased error in self-care
	Rise in job errors in doing procedures with the glove
Treatment and medication problems	Lack of a single treatment protocol
	Lack of a single medication instruction
	Caring of patients being time-consuming
	Shortage of medicine
	Uncertainty and lack of confidence in the COVID-19 diagnostic tests of inpatients
Hospital management	Long shifts
	Lack of resting accommodation for nurses
	Lack of training for nurses and patients regarding COVID-19
	Failure to monitor over health issues by the companions and families of patients in the hospital
	Obligation to work and care for patients

Inadequate nutrition of hospital staff
Lack of service and health forces in hospital wards
Risk of infection among nurse colleagues
Poor hospital hygiene
Using the low-skilled and inexperienced workforce
The threat of non-disclosure of information to patients with COVID-19
Employing nursing staff with underlying diseases

A summary of what the experts said is as follows:

A 35-year-old female nurse said: *"There was a pervasive sense of fear everywhere that the novel coronavirus kills people. We had heard that those who have underlying diseases would easily die of the disease, but we had reports of casualties having no underlying diseases including the elderly, athletes, young, and a group of nurses who had died of it before people were hospitalized here. Well. I am referring to Narjes, the Gilani nurse who died. I was shocked and scared. There was a sense of fear in the beginning".*

A 30-year-old female nurse stated: *"My parents were very concerned about me, telling me not to expose myself to the disease. I told them I was wearing protective gear. Upon seeing me in the gear, my father sat down and cried a lot. It was not such that they would ever deter me from working there. On the other hand, my sister was saying, "this is what she has opted for". There will be good and bad days. My husband also said, "I could not escape the responsibility, since I have chosen it and it's not optional to leave it".*

A 28-year-old female nurse stated: *"Equipment began to arrive during my second shift and a pair of clothes was given for each working shift. I think it is better to give us two pairs, one before and the other after the resting time. It's really hard to work with such gears, though it is a type of assurance for the personnel. However, the guys here have no faith in the masks, which was distributed. They keep complaining that they are not N95 masks. There was a concern about these masks whether to use them or not".*

A 38-year-old- female nurse said: *"For the personnel, what was more important was individual protective equipment. If the hospital facilities allowed, several pairs of clothes and equipment would be readied for the individual protective gear. From a spiritual point of view, it was also important to support the nurses. In the center we were in, there were some benefits specific to the personnel. I think the same individual protective equipment should be considered for the patients as they are involved with the diseases though the equipment was little".*

A 39-year-old male nurse said: *"It took us a long time to get the medicines that we wanted to give the patients. Apart from the medicines, they needed other things. The services we delivered were time-consuming. In the wards, the patients were connected to the ventilator for example, it was very difficult to control the patient's fever. We brought the patient's fever down; an hour later, then it rose to 40. Now, I do not know whether the virus has weakened or not, but now the patients are much better as the disease is less severe."*

Discussion

This study is the first qualitative study on the challenges of nurses in the process of caring for patients with COVID-19 in Iran. No such qualitative study was found in this regard in Iran or around the world. This study provides experts and readers with a comprehensive perception of the nurses' challenges in the process of caring for patients with COVID-19. Given the fact that the key experts in this study were from a wide range of occupations, the challenges in these events were examined from different perspectives. According to the key experts, there are many challenges in the process of caring for patients with COVID-19; however, special planning and coordination is required. To response properly to the virus, all hospital staff, especially nurses, must work together in a coordinated manner.

Personal protective equipment should be provided to patients before the nurses arrive. The quality of the protective equipment for the person plays a vital role in the comfort of nurses and the facilitation of the care process. By providing appropriate training for nurses, patients, and their companions, one can assure complete protection. Nurses with stress and anxiety about COVID-19 should get psychological counseling. The presence of a psychologist in different wards of a hospital can reduce the nurses stress and worries. Hospital management can improve the treatment process of patients by providing various equipment to nurses, trusting them, and creating an atmosphere of friendship and closeness amongst the staff.

In their study, Huang et al. investigated the emotional responses and coping strategies of nurses and nursing students during the prevalence of COVID-19. The results showed that women suffered more anxiety and fear than men. Participants in cities had more anxiety and fear than those in rural areas. Nurses working with patients that are affected by COVID-19 were suffering from anxiety and rage. Compared to nursing students, nurses formed more appropriate emotional responses to the problem(4). Female nurses are more prone to depression and stress due to their mental, psychological, and physiological conditions(14). Therefore, the presence of psychologists in hospitals can be helpful.

In their study entitled "Nursing Team: Nursing Managers' Experience in Acute Care Conditions", Ferguson et al. showed that nursing experience amongst nursing managers team was described in three main categories: Compatibility with the nursing team, nursing team achievements, and nursing team interventions. The results suggested that this team-centered approach was considered by managers, enabling the nursing staff to provide a variety of experiences and skills with greater safety under direct

supervision (15). Promoting the activities of the main team in the hospital is the key to speeding up the performance of the tasks and treatment of patients. Hospital management can improve this process by creating a team-center atmosphere.

A study by Terry Reb and his colleague on the preparation for bio-terrorism in Missouri nurses found that 82.3 percent of respondents believed that bioterrorism attacks would occur in the United States, but 21.3 percent specified that this would possibly occur less than once. Ninety-seven percent of nurses believed that bioterrorism attacks would culminate in dire consequences. Sixty percent said they had not been trained for bio-terrorism and had not participated in the exercises. Twenty percent of nurses said they were unaware of the content of the Bio-terrorism response program. Nurses need to be aware and encouraged to participate in educational opportunities and exercises in bio-terrorism and disasters(16). In addition to taking part in various educational programs on COVID-19, which can make nurses more prepared to deal with the disease and patients.

A study by Considine aimed at preparing and understanding of emergency nurses for radiation, biological, and chemical events showed that one-third of participants reported restrictions on the use of personal protective gear, and only few participants had experienced these events; however, 70.3% of the participants were already trained on the mentioned issues. There were significant differences in perception and adequacy of training. The results of this study showed that emergency nurses were eager to meet the CBR challenge. They also had a positive view of understanding these events. As nurses become more aware, their tendency to work in these situations increases(17). Therefore, it is critical to raise their awareness and knowledge, so that they can respond more appropriately during these events.

Another study by Young et al. entitled "Readiness for Nuclear, Chemical, and Biological Terrorism: Major Concerns and Nurses Preparation in the Future" showed that the major concern of the students was about themselves and their families. They were primarily concerned about the proper protection against all types of terrorist incidents and stated that they would not be willing to take care of the victims, if they were not provided with adequate support. In general, students did not have a deep understanding of the diseases nature caused by terrorism(18). Since nursing students are at the forefront of responding to biological disasters, training programs should be considered to exercises to improve their readiness.

The results of the study by Lam Kam Ki et al., 2013 showed that concerns about health, executive and managerial problems, and attitudes toward professionalism were among the most important nursing problems, working with patients who have influenza. The flu also threatens the health of the nurse and the health of their family. Improving planning, increasing nurses' knowledge and information, and allocating personal protective equipment can be helpful(19). The findings of the mentioned study are consistent with those of the present study, and some of the subcategories described were similar to ours. A study by McMullan et al. found that 90% of nurses considered it their job to treat and care for patients with flu. Nurses are concerned about the increase in work shifts and the possibility of developing an infection in themselves and their families. Meanwhile, nurses' stress had significantly increased(20).

Coronavirus-caused illness is an emerging disease; hence, the international community is unaware its dimensions, such as clinical features, treatments, and long-term complications. Past experiences suggest psychological and social effects on humans because of the epidemics and pandemics of infectious diseases. Taking care of patients with this disease is a new experience that has to be explored. Nurses need to be mentally and emotionally prepared to meet the challenges of increasing healthcare demands. The experiences gained by nurses as vital members of the treatment team in critical situations can be a promising way to solve and prevent many problems. Nurses' understanding of the care condition of people with COVID-19 is complex and may depend on circumstances and contexts associated with their cultural and social background. The findings of this study have several implications: a) assigning specific training to prepare nurses to attend patients; b) preparing and setting up comprehensive guidelines and instructions for the treatment of patients, and; c) equipping hospitals in response to biological emergencies.

Conclusion

Given that nurses are at the forefront of responding to COVID-19, there must be plans to increase their readiness. Shortages in health systems, including equipment, medicine, and personal protective equipment should also be addressed so that nurses can have better understanding of these incidents. Psychological and mental support is a key component in the nurses' appropriate response; hence, along with nurses' responses, individual, group, and family psychological support should also be provided for further efficiency and effectiveness in response to COVID-19.

Abbreviations

CBRNE: Chemical, Biological, Radioactive, Nuclear, Explosive

PPE: Personal Protective Equipment

Declarations

Acknowledgment

Hereby, the authorities and personnel of AJA University of Medical Sciences are greatly appreciated for paving the way for conducting this study.

Ethics approval and consent to participate: This study was approved by Ethics committee of Iran's Ministry of Health, Treatment, and Medical Education (IR.AJAUMS.REC.1399.056). After obtaining the necessary permissions from the Deputy for Research at the School of Nursing and a letter of confirmation from the AJA University of Medical Sciences, the researchers presented them to the research samples and introduced themselves to the participants, explained the objectives of the research and reassured them that all the recorded issues would be kept confidential. Then, the participants who were willing to participate in the study were selected. They were also assured that they could withdraw from

the interview process at any stage. Other ethical considerations included: 1. Obtaining written consent from the experts, 2. Reassuring the participants that they will be provided with the results of the study if they wished 3. Observing the ethical considerations in terms of confidentiality of the data 4. Acknowledging and appreciating all the people who cooperated in the research, and 5. Obtaining approval from the ethics committee.

Consent for publication: All authors are fully satisfied with the publication of the article.

Availability of data and material: All data is available.

Competing interests: The authors have no conflict of interest to declare.

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Authors' contributions: SS and MAM were responsible for the study conception and design. SS, MM, and MAM supervised the whole the study. SS, MM, and MAM preparing the first draft of the manuscript. SS, MM, and MAM did the analysis of the results and supervised the study. All authors have read and approved the final manuscript.

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