Original Article

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Iranian Nurses' Behavioral Changes during the COVID-19 Pandemic: A Qualitative Study

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Abstract
Background: The large-scale spread of COVID-19 affected communities with many deaths worldwide causing significant concerns. Due to being on the front line of fighting against this disease, a great number of healthcare providers lost their lives. Accordingly, this study aimed to explore the changes in nurses' behavior and practice while taking care of COVID-19 patients.
Methods: The present study was conducted using a qualitative conventional content analysis approach in 2020-2021. The participants were 14 nurses taking care of COVID-19 patients in the infectious diseases wards of a teaching hospital affiliated with Kerman University of Medical Sciences. The data were collected through interviews with the nurses, and data collection continued until data saturation. The collected data were analyzed based on the steps proposed by Graneheim and Lundman. After recording and transcribing the interviews, the participants' statements were categorized into semantic units. Data analysis was performed using MAXQDA-10 software.
Results: The majority of nurses reported significant behavioral changes that were categorized into five main themes including intensification of protective measures and increase in concentration, emergence of mental and psychological symptoms, increase in the sense of responsibility towards the family, recourse to prayer and religious rituals, and increased empathy with patients.
Conclusion: According to the research findings providing material and spiritual incentives as well as support to personnel to increase their motivation and work productivity should be taken into consideration by officials during epidemics. Moreover, actions such as providing free psychological counseling are suggested to calm the personnel.
Keywords: Changes in behavior, Changes in practice, COVID-19 pandemic

Introduction

COVID-19 was caused by a new species of virus from the coronavirus family (1,2). The epidemic started in Wuhan, China, in late December 2019, and many patients developed pneumonia (3). This virus attacks the respiratory system, and its indications vary from mild clinical symptoms to fatal complications (4,5). On March 11, 2020, the World Health Organization (WHO) reported that the virus has affected 169 countries (1). Unfortunately, the virus spread to Iran like other countries, and the attempts to control the spread of the virus continue all over the world. Due to the novelty of this virus and limited information about its pathogenicity, there are a few control and treatment methods available. However, the most effective way to deal with the disease is to prevent the spread of the virus (6). The lack of

definitive treatment or prevention for this disease has caused extremely high levels of stress and anxiety in communities (7). Fear and anxiety of developing the disease can lead to psychological problems and stress in individuals (8-10). The COVID-19 pandemic affected almost all essential economic, political, social, and military facilities and services of all countries. Thus, it is of great significance to evaluate its psychological effects, behavioral changes, and influences on the mental and public health of the members of the community (11). COVID-19 not only causes public health concerns, but also causes several psychological diseases such as anxiety, fear, depression, avoidant behaviors, irritability, and sleep disorders (12,13). According to studies, during epidemics, the behavior of nurses changes due to the absence of local guidelines and standards as well as the

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increased workload (14,15). Adequate understanding of risks in critical situations can help increase nurses' readiness to adapt to such situations (16). Moreover, the existence of general instructions without considering administrative barriers in the occurrence of epidemics causes limitations and unexpected events in providing care to patients (17). Besides, the prevalence of unknown diseases, fear of spreading the disease to family members, feeling guilty, and an increase in the burden of the disease can reduce the productivity of nurses (18).

A review of the literature showed that more than three-quarters of the participants requested leave or resignation to avoid going to work. They also made changes in their behaviors, including severing social ties to ensure their safety and that of others (1,19). Another study conducted on immediate psychological responses and their related factors in the early stages of COVID-19 among people in China showed that respondents' psychological effects, including depression, anxiety, and stress were moderate to severe. Psychological interventions were recommended to improve the mental health of vulnerable people (20). Moreover, a study in Singapore on the effect of severe acute respiratory syndrome (SARS) on the work and personal life of health workers indicated that a large percentage of employees reported higher work pressure and stress compared to normal situations (21).

Due to the large-scale spread of the coronavirus and the concerns that have arisen as a result of its fatality in society, both in terms of physical health and mental health and considering that nurses are on the front line of the fight against this disease, special attention should be paid to this group of healthcare providers. Furthermore, there is a paucity of research concerning the topic under investigation in Iran. To this end, the present study sought to examine the behavioral changes of nurses using a qualitative method. The findings will shed light on effective steps that can be taken to improve personnel practice by identifying changed behaviors and providing appropriate solutions.

Methods

The present study adopted a qualitative conventional content analysis approach. The study was conducted in the COVID-19 wards (n = 4) of one of the teaching hospitals affiliated with Kerman University of Medical Sciences. Before the initiation of the study, the protocol used in this study was approved by the Research Ethics Committee of Kerman University of Medical Sciences. To gather data, purposive sampling was used and eligible nurses who were taking care of COVID-19 patients entered the study. It is worth mentioning that the participants entered the study with the permission of the clinical supervisor. Before data collection, the researcher first approached the participants and explained the objectives of the study to them, and based on their willingness to attend the study,

an interview was scheduled. Semi-structured interviews were conducted in an objective-oriented manner. Some of the open-ended questions asked in the interviews were as follows:

1. What changes did you make in taking care of yourself?
2. How have your care behavior changes been?
3. What were your psychological changes?
4. What changes were made in protecting yourself and your patients?

Each interview lasted 30 minutes to one hour. Data collection continued until data saturation. In the present study, data were saturated after 14 interviews. The approach proposed by Graneheim and Lundman was used to analyze the data (22). The steps involved in data analysis included:

• Determining the content and unit of analysis
• Determining the semantic units or coding units
• Summarizing and abstracting
• Categorizing the codes into subcategories
• Forming main categories from subcategories

Data were analyzed simultaneously with data collection using MAXQDA software (version 10). For this purpose, the participants' statements were recorded and transcribed verbatim. Then, the texts were divided into semantic units, codes, and finally into the main themes. The criteria proposed by Guba and Lincoln (23) including credibility, confirmability, dependability, and transferability were used to validate the results.

To obtain credibility, an effort was made to select participants with the maximum variety of experiences. The researcher clarified the ambiguous items or in cases where the statements of the participants were not properly understood, a phone call was made to each participant. In addition, parts of the interviews with codes and categories were reviewed by subject matter experts and their recommendations were applied during the data analysis.

To ensure confirmability, all participants were interviewed based on pre-determined questions. To obtain dependability, it was attempted to ensure that the research results were not the result of the researcher's hypotheses and assumptions. Moreover, the whole process was described to the research colleagues, and the appropriateness of the research method was confirmed. To assess the transferability, the researcher provided the results to several experts who were not participants and asked them for their opinions on the rationality of the results.

Results

In this study, 14 nurses aged 23 to 45 years were interviewed. Eleven of the interviewees were female and 3 were male. In terms of education, 13 individuals had a bachelor's degree and 1 had a master's degree. Besides,

the job experience of the participants varied from 1 to 21 years.

The findings indicated that the majority of nurses reported significant behavioral changes that were categorized into 5 main themes. The main identified themes were intensification of protective measures and increase in concentration, emergence of mental and psychological symptoms, increase in the sense of responsibility towards the family, recourse to prayer and religious rituals, and increased empathy with patients (Tables 1, Box 1).

1. Intensification of protective measures and increase in concentration

The nurses adopted certain protective measures including taking supplementary pills to improve their health and strengthen their immune system, wearing masks and gowns, washing hands regularly, and keeping social distance.

Increased focus on work was another behavioral change reported by the participants. Participants stated that due to the unknown nature of the disease, they increased their work accuracy and were more sensitive to doing their tasks properly. One of the nurses stated:

"The accuracy of work has increased. The sensitivity to this work has increased. We have become more sensitive" (Participant 3).

2. Emergence of mental and psychological symptoms

Many participants admitted that they felt fear, panic, depression, hopelessness, fatigue, anxiety, as well as stress, and they experienced insomnia. Therefore, to adapt to the situation, they performed psychological evaluation, improved their mental health, and visited psychologists for psychological counseling.

"I feel very scared, I feel very bad, I feel imminent death, insomnia, depression, frustration, and fatigue, and I cry all the time" (Participant 1).

"... I feel fear, anxiety, and depression. COVID-19 ICU staff are mentally and physically depressed and anxious" (Participant 2).

"... I cheer myself up to resist this disease and I hope that this situation finishes very soon and the day comes when there is no COVID-19 and we can live normally. Having a strong morale is very important" (Participant 11).

3. Increase in the sense of responsibility towards the family

The participants stated that to prevent the spread of the disease to their family members, they followed standard protocols and precautions at home and tried to hide the anxiety and fear caused by the disease in the presence of the family so that other family members would not be affected. They also admitted that they felt more compassionate towards their family members. The nurses stated:

"I was anxious about my family (parents). For the first few months, I was very observant and took standard precautions" (Participant 13).

"... I am very observant because of my wife and child. For example, I am very cautious when changing clothes at home. I always observe and I have a separate place for changing the clothes to prevent the COVID-19 spread" (Participant 9).

4. Recourse to prayer and religious rituals

The participants mentioned praying, appealing to Imams, reciting the prayer and sending Salawat, and reciting Ayatul-Kursi (certain verses of the Qur'an). The nurses stated:

"I used to pray and appeal to God and the Imams to adapt myself to the conditions. Only trusting in God and prayer have comforted me in these conditions" (Participant 3).

"…We have been dealing with this virus for 7 intense months. No rest, no fun, only trust in God and prayer" (Participant 3).

5- Increased empathy with patients

The nurses stated that they showed more empathy to patients and tried to better understand the patients' feelings, communicate with them, give them a sense of comfort, and take good care of them. A part of the feeling was related to the fact that patients did not have a companion in these wards and were not allowed to see anyone. The nurses stated:

"Our working conditions are such that we feel sympathy for people, but in these conditions, we understand more about how people feel" (Participant 11).

"... Given that patients are not accompanied in these wards, we try our best to do their work" (Participant 4).

Discussion

The present study examined Iranian nurses' behavioral changes during the COVID-19 pandemic. Most of the nurses reported significant behavioral changes such as intensification of protective measures and increase in concentration, emergence of mental and psychological

Table 1. The characteristics of the participants of this study

Age range	23 – 46 years
Gender	3 men 11 women
Marital Status	6 single 8 married
Job	All were nurses
Work experience	1 – 21 years
Education	1 Master's degree 13 Bachelor's degree
Wards	All were working at infectious disease wards

Box 1. The main themes obtained through content analysis
Main Themes
1- Intensification of protective measures and increase in concentration
2- Emergence of mental and psychological symptoms
3- Increase in the sense of responsibility towards the family
4- Recourse to prayer and religious rituals
5- Increased empathy with patients

symptoms, increase in the sense of responsibility towards the family, recourse to prayer and religious rituals, and increased empathy with patients.

One of the behavioral changes mentioned by all nurses was the intensification of personal protective measures, which reflected their high understanding of the risk. A study investigating adherence to the use of personal protective equipment (PPE) among COVID-19 and non-COVID-19 patient care staff in Cologne, Germany, showed that adherence to hand hygiene and wearing PPE was 85% in the COVID-19 wards, but it was 76% in the non-COVID-19 wards (24). In another study about investigating healthcare providers' experiences during the COVID-19 outbreak, which was conducted on healthcare professionals in Iran, the findings indicated that 87% of the participants reported difficulty, fatigue, and lack of awareness of using PPE (25).

In this study, the majority of participants had psychological symptoms. In this regard, there is a need for psychological interventions as well as staff support to reduce the psychological effects of this pandemic. A study conducted in Iran during the COVID-19 outbreak on people over the age of 20 years showed that almost half of the participants were suffering from depressive symptoms and two-thirds of them had poor sleep quality (26). Moreover, a study analyzing the psychological effect of COVID-19 on medical staff at three hospitals in South Korea showed that the personnel in the studied hospitals reported high levels of anxiety and depression during the epidemic (27)

The nurses in the current study reported that they felt the responsibility to protect their families (parents and children) and were concerned about transmitting the disease to their families when they went home. This finding is consistent with the results of a study conducted by Maunder et al (28). The study conducted on the psychological and occupational effects of the SARS outbreak on healthcare professionals in a teaching hospital in Toronto showed that employees felt fear and were concerned about the transmission and contamination of their family members (28).

The majority of nurses in the present study pointed to an increase in praying. Evidence shows that strengthening religious beliefs and faith can reduce the negative effects of COVID-19 and this can lead to the elimination of stress and anxiety and less mental preoccupation, and thus, a sense of calm in people (29). The majority of nurses in this study pointed out that the pandemic did not disrupt the provision of services to patients and they considered providing the services as their main duty and stated that they were trained to accompany and empathize with the patients. However, an online survey of 1036 healthcare workers regarding their experience during the COVID-19 outbreak in Saudi Arabia highlighted that 78.7% of the participants mentioned increased stress and workload, and high COVID-19 mortality and its effect on their interpersonal relationships as reasons for leaving their colleagues during the COVID-19 pandemic (30). In an online study concerning the experiences and challenges of nurses working in a rural hospital in a developing region during the COVID-19 epidemic, nurses felt a sense of altruism and companionship with the patients, besides the stress caused by the disease. They also expressed that they wanted to serve their compatriots and consider them as part of their family members (31,32). In the present study, the majority of participants mentioned lack of workforce and increasing workload as well as not taking a day off due to managerial and organizational factors as challenges during this period. A study on nurses working in intensive care units (ICUs) in hospitals in Korea regarding the factors affecting job burnout in nurses during the Middle East respiratory syndrome (MERS) showed that nurses working in ICUs reported higher levels of burnout than nurses in other wards. This was due to occupational stress, poor hospital resources for treatment, and poor assistance and support from family members and friends (33). Therefore, it is recommended that authorities consider the issue of manpower and heavy shifts during the COVID-19 outbreak and plan systematically to overcome these issues. In this regard, allocating specific duties and responsibilities to the personnel can be helpful. If necessary actions are not taken into account, the result can be job burnout for nurses.

The present study has its limitations. First, due to the possibility of transmission of COVID-19, it was not possible to conduct face-to-face interviews, but the research team made an effort to select the participants with maximum variety. Second, as the study was limited to one teaching hospital, conducting multicenter surveys regarding the topic under investigation is recommended.

Conclusion
The most important behavioral changes in nurses during the COVID-19 outbreak were the intensification of personal protective measures, the emergence of psychological symptoms, an increased sense of responsibility towards the family, recourse to prayer

and religious rites, and increased empathy with patients. Providing spiritual motivations and comprehensive psychological support for personnel to increase their motivation and work productivity should be considered by the authorities in epidemics. Moreover, the officials should consider the problem of lack of manpower and heavy shifts that occur as a result of disasters and overcome this problem by having a preparedness plan against biological hazards. In this regard, meeting the needs and comfort of nurses are essential factors that should be taken into account during the COVID-19 pandemic.

Authors' Contribution
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Visualization: Arezoo Sarani.
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Competing Interests
The authors did not declare any conflict of interest.

Ethical Approval
The present study with grant number 99000280 was approved by the Research Ethics Committee of Kerman University of Medical Sciences (Ethics code: IR.KMU.REC.1399.302). All procedures were performed following the relevant guidelines and regulations

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