Factors Influencing Anxiety of Healthcare Workers during the Outbreak of 2019 Novel Coronavirus Disease (COVID-19): A Cross-Sectional Study

Mohammad-Rafi Bazrafshan[1], PhD; Hamed Delam[2], MSc; Maasumeh Elahi[1], MSc; Sahar Akbarpoor[1], MSc; Zohreh Faramarzian[1], MSc

[1]Department of Nursing, School of Nursing, Larestan University of Medical Sciences, Larestan, Iran;
[2]Student Research Committee, Larestan University of Medical Sciences, Larestan, Iran

Correspondence:
Maasumeh Elahi, MSc;
Department of Nursing, School of Nursing, Larestan University of Medical Sciences, Larestan, Iran
Tel: +98 71 52245009
Fax: +98 71 52255484
Email: maasume.elahiii@gmail.com

Abstract

Background: The mental health of healthcare workers has been a concern during the outbreak of 2019 novel Coronavirus Disease (Covid-19). Therefore, the present study was designed to evaluate the anxiety of the healthcare workers during Covid-19 epidemic and to discover the factors affecting it.

Methods: The present study was a cross-sectional descriptive-analytical study. In this study, the anxiety of 124 nurses, operating room staff, midwives and anesthetists working in different wards of Imam Reza Hospital in Lar in 2020 was assessed using the Corona Anxiety Scale Questionnaire.

Results: The results showed that most of the samples were female, married, with a bachelor's degree and an average age of 33 years. 53 (42.8%) participants had mild anxiety and 34 (27.4%) had severe anxiety. Comparison of anxiety levels based on demographic variables of participants in the study showed that there was no significant relationship between anxiety levels with gender, marital status, education level, and field of study ($P > 0.05$).

Conclusion: According to the results of the study and the worsening of the COVID-19 epidemic, there is a need to strengthen the awareness and address the issues related to mental health of healthcare workers.

Introduction

Coronavirus 2019 (Covid-19), also known as Acute Respiratory Syndrome, is a cluster of acute respiratory illness with unknown cause that first occurred in December 2019 in Wuhan, China.[1] Covid-19 continued to spread internationally and was declared an epidemic by the World Health Organization on January 30, 2020.[2,3] The main routes of transmission of Covid-19 are respiratory secretions and close contact, so physicians and nurses are at high risk for the disease.[4] On January 20, 2020, China confirmed the human-to-human transmission of Covid-19, and some healthcare workers in Wuhan were infected with the virus.[5] The World Health Organization reported that those symptoms of Covid-19 infection appeared after a 2 to 12 day incubation period.[6] The most common symptoms of Covid-19 disease are fever, cough, shortness of breath, and fatigue; other symptoms include headache, bleeding, diarrhea, indigestion, lymphopenia, and clinical features indicating pneumonia through chest imaging.[7] In addition to causing physical harm, Covid-19 can have a serious impact on people's mental health.[5] Numerous studies have shown that mental health problems can occur in healthcare workers during the Severe Acute Respiratory Syndrome (SARS) epidemic.[8,9] In addition, Post-Traumatic Stress Disorder (PTSD)

and depressive disorders have been the most common long-term psychological status in health care providers during the SARS outbreak.[10] In the prevalence of Covid-19 disease, with a rapid increase in the number of patients, physicians and nurses are faced with high workload and high-risk infections, which may lead to mental health problems such as anxiety or depression.[11] The results of Wei Li et al.'s study during the prevalence of Covid-19 in Gansu (China) showed a prevalence of 11.4% anxiety and 45.6% depression among physicians. In the population of nurses participating in this study, the average of anxiety and depression was reported 27.9% and 45.6%.[12] Prediction and early identification of the factors affecting anxiety, in critical situations, allows early implementation of interventions to reduce and neutralize the effects of anxiety.[13] Stress and anxiety are environmental risk factors for the onset of mental illness, and long-term stress makes people more prone to depression or other mental illnesses.[14] Healthcare workers are at the forefront of tackling the outbreak of Covid-19; therefore, these people are at different risks, including pathogen exposure, long working hours, psychological distress, fatigue, burnout, stigma, and physical and psychological violence.[15] As with any traumatic event, acute stressors among psychiatric symptoms can be associated with increased anxiety and depression.[16] Therefore, due to the fact that health care providers experience high stress and anxiety, this can affect their physical and mental health and the quality of patient care.[17] Zhaorui Liu and colleagues examined the mental health status of 4,679 people in provinces of mainland China during the Covid-19 epidemic. 15.9% psychological distress, 16% anxiety symptoms, and 4.6% depressive symptoms were reported in the study population. The results also showed that nurses, living alone, working in high-risk wards, with experience in treating patients with Covid-19 or other infectious diseases, had a higher risk for at least one of the mental health problems.[18] Lijun Kang and colleagues in a study stated that healthcare workers in Wuhan had faced enormous pressures, including high risk of infection and inadequate protection from infection, overwork, frustration, discrimination, isolation, negative emotions, and lack of contact with their families, and fatigue. This severe condition can cause mental health problems such as stress, anxiety, depressive symptoms, insomnia, denial, anger, and fear. These mental health problems affect the perception and decision-making ability of healthcare workers, which may hinder the fight against Covid-19.[19] The National Health Commission (NHC) issued a statement on February 15, 2020, emphasizing the importance of providing psychological interventions and support to healthcare workers.[19] Therefore, determining the prevalence of anxiety and its factors and protecting the mental health of healthcare providers are important to control this epidemic and their long-term health. Imam Reza (AS) Lar Educational and Medical Center is one of the healthcare and treatment centers for patients with Covid-19. Therefore, the present study was designed to assess the anxiety of healthcare workers of Imam Reza (AS) Lar during the epidemic of Covid-19.

Methods

This is a cross-sectional descriptive-analytical study. The study was approved by the Ethics Committee of Larestan University of Medical Sciences (IR.LARUMS. REC.1399.002). The research community in this study included all nurses, operating room staff and midwives and anesthetists working in different wards of Imam Reza Hospital in Lar in 2020. The final sample size based on Cochran's formula (Number of target community: 191 people) in this study was estimated 124 people. Subjects were included in the study using available sampling method; we designed online questionnaires. The inclusion criteria were the willingness of the samples to participate in the research and the staff working in Imam Reza Educational and Medical Center, and the exclusion criteria also included incomplete completion of the questionnaires and unwillingness to participate in the research. In this study, two questionnaires of demographic information and the Corona Disease Anxiety Scale (CDAS) were used. The CDAS has been prepared and validated to measure anxiety caused by Coronavirus in Iran. The final version of this tool has 18 items. The instrument is scored in a 4-point Likert scale (never=0, sometimes=1, most times=2 and always=3). Therefore, the highest and lowest scores that the respondents get in this questionnaire are between 0 and 54. Higher scores in this questionnaire indicate a higher level of anxiety in individuals. The validity and reliability of the questionnaire were also confirmed by Alipour et al.[20] A virtual questionnaire link was created on the Google Form site, the questionnaire link was provided to the sample community through social networks, and the samples completed the questionnaire if desired. Finally, the data obtained from demographic questionnaires and Corona Anxiety Scale Questionnaire were analyzed using SPSS software version 25. Chi-square test and one-way analysis of variance (ANOVA) were used to analyze the data. Significance level was also considered 5%.

Results

Out of 124 participants in this study, 106 (85.5%) were women. 55.6% were nurses and 99.2% had a bachelor's degree. In terms of marital status, 95 (76.6%) were married and the rest were single. The mean age of all participants in the study was 33.38±8.09 years (Table 1).

By classifying the anxiety scores of individuals according to the existing standards, it was found that 53 people (42.8%) had mild anxiety levels, 37 people (29.8%) moderate anxiety level, and 34 people (27.4%) had severe anxiety levels (Table 2).

Table 1: Demographic characteristics of the participants in the study

Variables	Descriptive statistical value
Age (year), Mean±SD*	33.39±8.09
Gender, n (%)	
Male	18 (14.5)
Female	106 (85.5)
Marital status, n (%)	
Single	29 (23.4)
Married	95 (76.6)
Field, n (%)	
Nursing	69 (55.6)
Surgical technology	15 (12.1)
Midwifery	28 (22.6)
Anesthesia	12 (9.7)
Degree, n (%)	
Bachelor's degree	123 (99.2)
Associate degree	1 (0.8)

* Standard Deviation

Table 2: Frequency (percentage) of anxiety level of participants in the study

Anxiety level	Number	Percent
Mild	53	42.8
Moderate	37	29.8
Severe	34	27.4

Comparison of anxiety levels based on demographic variables of participants in the study showed that there was no significant relationship between anxiety levels with gender, marital status, education level, and field of study (P>0.05) (Table 3). Also, no significant difference was observed between the age and level of anxiety (P=0.280).

Discussion

In the present study, the level of anxiety and its related factors in the healthcare workers of Imam Reza (AS) Educational and Medical Center in Larestan were examined. Most of the samples were women, married, with a bachelor's degree and with a mean age of 33 years. According to the statistical studies performed in this study, no significant relationship was observed between the demographic characteristics of age and the level of Corona anxiety. In this regard, other studies were reviewed and the results of the study of Stefanie and colleagues that was conducted on the German population were in the same line with those of the present study.[21] There was no significant relationship between the level of anxiety caused by Covid-19 and the subjects' age in the study, but according to the study carried out by Stefanie, participants were classified in three age groups of 16-29 years, 30-59 years and above 60 years. The results of the study showed that although the level of anxiety in people was not significantly related to their age, the level of anxiety in the age group of 30-59 years was significantly higher than the other age groups.[21]

In another study, Wenpeng Cai et al. surveyed 1,521 medical personnel in China, and the results showed that personnel who had no previous experience with public health emergencies were more anxious than those who had previous experience. Previous experiences of confrontation with public health emergencies significantly reduced psychological problems in medical personnel.[22] The Covid-19 epidemic is the largest public health emergency in the last ten years and many medical personnel are somehow fighting the epidemic. However, more experienced personnel had experienced previous public health emergencies such as SARS and Hemagglutinin Type 1 and Neuraminidase Type 1 (H1N1), but younger personnel had less work experience in this situation; therefore, younger personnel experienced more job stress.[22] Therefore, given that in the present study, the mean age of people was 33 years old, which is close to the age group with higher anxiety according to Stefanie and Wenpeng's study, it can be said that the staff of Imam Reza Medical Center was also exposed to high levels due to their mean age. Also, due to the high probability of transmitting the disease, medical personnel spend hours after work alone. In this situation, friends, family, and other acquaintances

Table 3: The correlation between anxiety levels and demographic characteristics of participants in the study

Variables	Anxiety level			P value
	Mild	**Moderate**	**Severe**	
Gender, n (%)				0.230
Female	43 (40.6)	31 (29.2)	32 (30.2)	
Male	10 (55.6)	6 (33.3)	2 (11.1)	
Marital status, n (%)				0.803
Single	12 (41.4)	10 (34.5)	7 (24.1)	
Married	41 (43.2)	27 (28.4)	27 (28.4)	
Field, n (%)				0.241
Nursing	30 (43.5)	16 (23.2)	23 (33.3)	
Surgical technology	5 (33.3)	7 (46.7)	3 (20.0)	
Midwifery	11 (39.3)	12 (42.9)	5 (17.9)	
Anesthesia	7 (58.3)	2 (16.7)	3 (25.0)	
Degree, n (%)				0.509
Bachelor's degree	52 (42.3)	37 (30.1)	34 (27.6)	
Associate degree	1 (100.0)	0 (0.0)	0 (0.0)	

could provide necessary psychological support to people and help them to maintain their mental health.[22] Another variable that in the present study was related to the level of anxiety was the gender of individuals, but no significant relationship was observed in this regard. However, the proportion of women with severe anxiety was reported to be about three times that of men, which was consistent with the results of many studies, including the Moghanibashi's study, in which anxiety levels were significantly higher in women.[23] The Jianbo Lai's study in multiple regions of China also showed that women experienced higher levels of anxiety than men.[24] Even a study by Cuiyan Wang et al. showed that the level of anxiety caused by the corona epidemic was significantly higher in women of general public in China.[25] In the present study, as in the study conducted by Jungmann et al.,[21] the level of education of individuals did not show a significant relationship with their level of anxiety. While in the study of Du J et al., with increasing the level of education of individuals, their level of anxiety increased significantly.[26] Therefore, the lack of significance of this relationship in the present study may be because 99% of the personnel participating in the present study had a bachelor degree and the majority of people were in the same position in terms of education due to their job status.

Marital status was another variable that was related to the level of anxiety in individuals. Due to the lack of significance of this relationship, the results of this study were consistent with those of Liu and colleagues.[27] Also, Bayanfar and Wang reported lack of significant relationship between marital status and corona anxiety levels.[28, 29] Medical personnel must be mentally and physically healthy in order to be effective at the forefront of the fight against Corona disease. However, in these circumstances, most medical personnel around the world are faced with an increase in the number of patients and mortality and lack of medical resources, which causes them to face the pressure of feeling frustrated.[30] A study in China also found that a large proportion of health care providers experience depression, anxiety, and insomnia for reasons such as fear of contracting the disease or passing it on to friends, acquaintances, and family;[24] therefore, healthcare workers will be at risk for physical and mental illness, and anxiety may overwhelm them to the point where they are unable to perform their duties effectively.[30] A study by Chen Yun Liu et al. found that employees who cared directly for patients with Covid-19 had higher levels of anxiety than those who had indirect contact with these patients,[27] as in other studies. The staff, health assistants and nurses also showed higher anxiety than office workers and physicians.[13, 31] Therefore, it can be said that people who have a positive history of contact with patients with Covid-19 are prone to

higher levels of anxiety, which can have a variety of causes. The first is because the risk of contraction of the disease in such people is higher due to contact with sick people, and the second is that these people are concerned about the health of their friends, family and colleagues.[23] In this regard, Xue-Dan Nie and his colleagues examined anxiety and depression and their relationships in patients with Covid-19 in Wuhan No. 1 Hospital. The results of the study showed that people whose family members were infected by Covid-19 or they died after infection with this disease had a higher level of anxiety. It also seems that the severity of Coronavirus disease, high mortality rate, lack of necessary strategies, and lack of specific drugs to treat this disease have increased mental illness among the people.[32] Therefore, given that medical personnel are at higher risk of complications of this epidemic crisis such as anxiety than other groups of people in the community, and maintaining their health is necessary to protect the health of other members of the community, and considering that the number of trained psychologists is not enough to provide services to people in the community in critical situations.[23] It is suggested that this group of people should be given priority in all management strategies to improve the mental condition of people in the community. It should also be noted that identifying at-risk personnel and using therapeutic interventions such as stress management skills training and strengthening protective personality factors can be helpful in preventing or reducing anxiety caused by Covid-19;[28] also, due to the fact that in epidemic conditions due to the existence of strict quarantine rules, there is no possibility of face-to-face psychotherapy, so online methods are suggested.[29] The small number of samples and the mental state of the participants while answering the questionnaire can limit the generalizability of the study results.

Conclusion

The results of the present study showed that work during the outbreak of COVID-19 has led to an increase in anxiety scores, which is an important finding and suggests that early measures should be planned to prevent mental health problems in health care workers. Therefore, it is suggested that interventions should be designed to reduce the anxiety of healthcare workers during this crisis.

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