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Website: www.jehp.net
DOI: 10.4103/jehp.jehp_1399_20

The effect of COVID-19 epidemic on the mental health of nurses' family members

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Abstract:

BACKGROUND: The COVID-19 epidemic is a global health crisis that, in addition to physical health, has affected the mental health of all individuals, especially health-care workers, including nurses and family members. In this regard, the present study aimed to investigate the effect of COVID-19 epidemic on mental health of nurses' family members.

MATERIALS AND METHODS: The present descriptive-analytic and cross-sectional study was conducted in 2020 year on family members of nurses working in Hajar Hospital for admission and hospitalization of patients with COVID-19, after obtaining the necessary permits and coordination. To prevent the spread of COVID-19 through respiratory or contact droplets, a blog was designed to collect data using software. Participation in this study was voluntary. Data collection tools included consent, demographic questionnaire, and mental health questionnaire (Patient Health Questionnaire-9). Data were analyzed by SPSS version 22.

RESULTS: Findings of this study showed that out of 208 family members of nurses participating in this study, 96 were male and 112 were female and their mean age was 35.78 years, and 55.3% of the participants had university education. Their mean mental health score was 12.91 ± 3.75 , so that 22.6% of people had mild depression, 71.4% of people had moderate depression, and 1.8% of people had severe depression. Independent *t*-test showed that there is a statistically significant relationship between mental health and gender and marital status ($P < 0.001$). Furthermore, one-way analysis of variance test showed that there is a significant relationship between mental health and age ($P < 0.001$); this test also showed that there is no relationship between education and mental health ($P = 0.75$).

CONCLUSION: The results indicate that the mental health of nurses' family members is affected by the challenges of COVID-19 epidemic time, so that many of them suffer from some degree of depression. Therefore, supporting this population requires urgent action.

Keywords:

COVID-19 disease, family members, mental health, nurses

Introduction

COVID-19 is a novel disease that started in Wuhan, China, in 2019 and spread rapidly in this country and around the world.^[1] It has now become a pandemic problem.^[2,3] The rapid and easy epidemic and severe symptoms of the disease prompted the World Health Organization (WHO) to declare public health emergency of

international concern in January 2020.^[1,4] The emerging nature of this disease has caused confusion among specialized and nonspecialized health professionals. The widespread prevalence of the disease and the poor infection control strategies seem to lead to hospitalization of a large number of people, consequently, many staff and departments are involved in managing the condition, and this is a completely different kind of crisis.^[5] Nurses as frontline

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How to cite this article: Banitalebi S, Mohammadi K, Marjanian Z, Rabiei L, Masoudi R. The effect of COVID-19 epidemic on the mental health of nurses' family members. *J Edu Health Promot* 2021;10:368.

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Received: 15-10-2020
Accepted: 23-01-2021
Published: 29-10-2021

health-care workers as well as the largest part of the health-care professionals, play a key role in caring for maintaining and promoting the health status of patients. To recognize the vital health-care services, the WHO has designated 2020 the international year of the nurse and the midwife. This year, nurses are facing major challenges due to the COVID-19 epidemic worldwide.^[6]

COVID-19 poses challenges for the entire human race in all aspects of life, including mental health.^[1] The mental health impact of this disease goes far beyond its physical health impact. Awareness of warning signs such as emotional imbalance and stress is necessary for the well-being and health of people's lives.^[7] It is very important to care for mental health care at different levels of promotion, prevention, and clinical care under turbulent and critical situations.^[1]

The most important experiences repeatedly reported by nurses during COVID-19 included fatigue and stress due to their risk of infection^[8] and the spread of the disease to their families.^[2,9] The psychological stress due to positive COVID-19 test among many nurses and transmission of the virus to their family members and friends, was even greater,^[10] eventually leading to mental health problems.^[11] Besides, the adverse effects of job stress on nurses disrupt people's relationships, especially spouses, and consequently, their suffering and discomfort is passed on to children. The job stress and heavy workload affect both the personal and professional life of nurses and their family life.^[12] Ying *et al.* show in a study that the COVID-19 crisis, in addition to causing mental health problems for health-care caregivers, including nurses, has caused similar psychological problems for their families. As a result, according to international health commission guidelines on implementation of emergency psychological interventions for COVID-19 patients, families of health-care workers were considered as the third priority group.^[13]

Mental health is defined as an effective adaptation to oneself and environment and selection of the best option from the available solutions when facing problems, inner well-being and assurance of efficiency, adequacy, self-confidence, competitiveness, loving others, flourishing potential talents, and intellectual ability.^[14] Stress is a reality in everyday life that can cause illnesses under certain situations by disrupting their emotional balance, disrupting a person's functioning in the personal, social, psychological, physical, and family spheres, and causing psychological changes such as anxiety, depression, increased irritability, inability to control oneself, and social and family relationships.^[15]

Psychological changes and mental health problems during COVID-19 epidemic cause disruption in social

and family relationships of nurses that can also affect the mental health of their family members considering increasing high job and personal stress on the one hand, and fear of transmitting the infection to family members on the other hand. There have been a number of studies examining the psychological impact of COVID-19 outbreak on health-care providers, including nurses. However, there is limited epidemiological information about the psychological impact of the epidemic on nurses' families and their needs are considered less frequently. Therefore, the researchers of the present study decided to evaluate the impact of COVID-19 on the mental health of nurses' family members so that we provide solutions and interventions for this vulnerable population, which is usually neglected.

Materials and Methods

Study design and setting

This was a descriptive-analytical cross-sectional study carried out on the family members of nurses working in Hajar Hospital, Shahrekord, a dedicated admission and hospitalization center for COVID-19 patients in 2020, after obtaining the necessary permission and making coordination.

Study participants and sampling

The participants were selected using census sampling and entered into the study voluntarily. The questionnaires were completed by 218 people over 2 months. Ten participants were excluded from the study due to psychological problems. Finally, 208 people entered the study. Inclusion criteria included family members of nurses working at Hajar Hospital dedicated to admission of COVID-19 patients, and having access to the Internet and social networks. Exclusion criteria also included having a history of neurological disorders, mental illness, other serious systemic disorders, and having substance abuse.

Data collection tool and technique

To prevent the spread of COVID-19 through respiratory droplets or contact, data collection was performed by designing a weblog containing questionnaires using a software. The weblog address and necessary explanations about the study and its objectives were posted on the hospital website, and this information was provided to their family members through nurses. Data collection instruments included consent, demographic characteristic questionnaire (sex, age, level of education, and marital status), and Patient Health Questionnaire-9. This questionnaire was designed by Kroenke *et al.* and consists of 9 questions scored based on a four-point Likert scale ranging from never to almost every day (0 = never, a few days: 1, more than half a day: 2, and almost every day: 3). The possible score

range is 0–27, with scores ≥ 15 and ≥ 20 representing major and severe depression, respectively.^[16] Dadfar et al. reported that the standard reliability coefficient of this questionnaire ranged between 73.3% and 77.5%.^[17] In the present study, the reliability of this questionnaire was measured by Cronbach’s alpha method ($\alpha = 0.84$). Coded data were collected and entered into SPSS software version 22((SPSS Inc, Chicago, Illinois)). First, the normality of the data distribution was confirmed using Kolmogorov–Smirnov test ($P > 0.05$). Data analysis was carried out using frequency and percentage indices for qualitative variables and standard deviation \pm mean indices for quantitative variables, one-way analysis of variance, and independent *t*-test.

Ethical consideration

Ethical considerations of the present study included obtaining the necessary permissions from the Ethics Committee and the Vice-Chancellor for of Research and Technology (Ethics Code: R.SKUMS.REC 1399.99), description of study objectives to all participants, voluntary participation, providing the results of this study to participants at their request, publishing the study data taking into account the confidentiality principle, and the utmost accuracy and observance of literary rights, along with respect for the principle of trust when using scientific books and resources.

Results

The results of the present study showed that out of 208 nurses’ family members of participating in this study, 96 were male and 112 were female. The participants’ age ranged from 14 to 80 years with an average age of 35.78 years. With regard to the level of education, 55.3% of the participants had a university education [Table 1].

Frequency distribution and mean and standard deviation of mental health variable of nurses’ family members show that the mean \pm standard deviation was 12.3 ± 91.75 , indicating that 22.6%, 71.4%, and 1.8% of them had mild, moderate, and severe depression, respectively [Table 2].

One-way ANOVA showed various levels of mental health in different age groups ($P < 0.001$). This test also showed no relationship between educational level and mental health ($P = 0.75$) [Table 3].

Independent *t*-test showed a statistically significant relationship between mental health and sex ($P < 0.001$). This test also showed a statistically significant relationship between mental health and marital status ($P < 0.001$) [Table 4].

Discussion

This cross-sectional Internet-based study provided evidence of a high prevalence of depression symptoms

Table 1: Demographic characteristics of family members of nurses

Variable	Group, n (%)
Gender	
Male	96 (44.2)
Female	112 (51.6)
Education	
Under diploma	27 (12.4)
Diploma	61 (28.1)
University education	120 (55.3)
Age	
10-33	103 (47.5)
34-57	91 (41.9)
58-80	14 (6.5)
Marital status	
Single	81 (39)
Married	127 (61)

Table 2: Frequency distribution and mean and standard deviation of mental health of family members of nurses

Demographic variables	n	Mean \pm SD	F	P
Age				
13-35	112	10.82 \pm 2.88	68.814	<0.001
36-57	82	14.91 \pm 2.99		
58-80	14	17.92 \pm 2.64		
Education				
Under diploma	27	12.70 \pm 5.66	0.282	0.75
Diploma	61	13.21 \pm 3.79		
University education	120	12.80 \pm 3.18		

SD=Standard deviation

Table 3: Comparison of mental health among age groups and level of education in family members of nurses

Variables	Weak, n (%)	Moderate, n (%)	Good, n (%)	Mean \pm SD
Mental health	49 (22.6)	155 (71.4)	49 (22.6)	91.75 \pm 12.3

SD=Standard deviation

Table 4: Comparison of mental health based on gender and marital status in family members of nurses participating in the study

Demographic variables	n	Mean \pm SD	t	P
Gender				
Male	96	11.92 \pm 3.42	4.02	<0.001
Female	112	13.84 \pm 3.78		
Marital status				
Single	81	10.43 \pm 3.34	3.34	<0.001
Married	127	14.98 \pm 3.87		

SD=Standard deviation

among family members of nurses working at Hajar Hospital in Shahrekord during the COVID-19 epidemic, which was much higher than the level reported among the general population at the time of the COVID-19 pandemic.^[18] It also seems that there is a significant relationship between mental health and

age, as mental health problems are more common in people over 57 years of age than other age groups. However, there was no significant relationship between educational level and mental health. Data analysis also showed a statistically significant relationship between mental health and sex, suggesting that mental health problems are more common among women than men. There is also a statistically significant relationship between mental health and marital status, suggesting that married people experience more mental health problems than single ones.

In this regard, we can refer to the study by Ying *et al.*, which examined the mental health status and related factors among family members of health-care workers during the COVID-19 outbreak. They showed that psychological responses to COVID-19 were among the most significant cases in the family members of health-care workers in the elevated prevalence phase and put them at greater risk for mental health problems. There was also a significant relationship between mental health status with age and sex, so that the symptoms of depression and anxiety were more commonly seen among women than men and more severe in the 38–45-year age groups. However, there was no significant relationship between mental health status and educational level. The findings provide strong evidence for greater attention to the mental health status of this vulnerable population, which is often not seen during the COVID-19 epidemic.^[13] In this regard, Chevance *et al.* state that we need to be prepared to prevent and manage the expected negative mental health impacts during the COVID-19 epidemic. They also express that the mental health-care system is more vulnerable than other health-care systems,^[19] which is consistent with the results of the present study.

In a review study on the prevalence of psychological symptoms in susceptible populations and risk factors involved in disrupting the mental health of individuals during COVID-19 epidemic, Mohammadi found that nurses' family members were vulnerable groups, and this communicable disease not only caused physical health concerns but also led to a number of psychological illnesses, and significant psychological disorders such as stress, anxiety, and depressive symptoms,^[20] which is consistent with the results of the present study. Consistent with the present study, Alavi Arjomand *et al.* state that there is always a conflict between nursing work and family. Furthermore the conflict between work and family has a two-sided nature, nursing work may also affect the family and, due to job stress, causes important psychological disorders such as stress, anxiety, and depression symptoms among family members of health-care workers and puts this population in at risk of

psychological disorders and ultimately disrupts the mental health of their family.^[12]

In a study on the impact of COVID-19 on the general population, Rossi *et al.* reported negative mental health outcomes in the Italian general population and called for more monitoring of the mental health of the Italian population. They also found a significant relationship between mental health problems such as depression with sex and age. In other words, female gender and younger age have consistently been associated with an increased risk of mental health problems. They also state that if confirmed in other populations around the world, these findings could be very important for the next COVID-19-related global mental health intervention strategy.^[21] Wang *et al.* also noted that they perceived degrees of depression and high levels of stress regarding COVID-19 mental health outcomes in China. Our demographic sociological data suggest that women suffer from higher levels of stress, anxiety, and depression. Depression is significantly associated with age and female gender and suggests that young women may be at greater risk for mental disorders.^[22] The results of these two studies are consistent with the results of the present study in terms of sex but inconsistent with the present study in terms of age. The results of a study by Xiong *et al.* also show a relatively high rate of psychological symptoms, especially depression, in the general COVID-19 population in China, Spain, Italy, Iran, the United States, Turkey, Nepal, and Denmark. They also referred to risk factors associated with mental health problems, including female gender and younger age group (40 ≤ 40 years). Reports also suggest that low levels of education are important risk factors for the development of symptoms of mental disorders, especially depression symptoms during the epidemic. They also demonstrate that reduced quality of life can put individuals at greater risk for developing psychological disorders.^[18] The results of this study are consistent with the present study in terms of female gender but inconsistent in terms of age and educational level.

Zhang showed in a study that although more than half of the participants felt panic due to the COVID-19 epidemic, they were not helpless, which was inconsistent with the results of the present study. Besides, most participants received increased support from friends and family, increased shared feelings, and care from family members and relatives. Therefore, COVID-19 pandemic disease is associated with mild stress, even if COVID-19 pandemic disease persists. Besides, the majority of participants reported that they paid more attention to their mental health, spent more time resting and exercising after the outbreak of the COVID-19 pandemic, indicating a change in lifestyle and quality of life.^[23] The results of the study by Shi *et al.* were also inconsistent

with the results of the present study. They found that 31% of the general population participating in the study were family members or friends of frontline health-care workers. The results of this study showed that family members or friends of frontline health-care workers had depression in 29.3% of cases and suffered from anxiety, insomnia, and acute stress. The results of the above study also showed that people <40 years old and the male sex had more depression, insomnia, and symptoms of acute stress compared to the female gender. They state that this may be due to the fact that young adults frequently participate in social networks and may consequently be more exposed to incorrect information online, which can, in turn, lead to psychological distress.^[24]

The nursing job is stressful by nature and there is always a conflict between the nursing job and the family. The job stress affects the personal and professional life of nurses and their family life. The COVID-19 crisis leads to higher stress and job anxiety level on the family, followed by significant psychological disorders such as stress, anxiety, and depression symptoms among nurses' family members.

Conclusion

The results of the present study showed a decrease in the mental health of family members of nurses and reported that most of these people suffer from moderate depression during the COVID-19 pandemic. Considering that it is important to improve well-being and the health status of people by being aware of warning signs such as emotional imbalance and stress, there is an urgent need to plan and implement supportive mental health-care interventions by officials and health-care planners for individuals, especially family members of nurses at different levels of prevention, care, and promotion under the current turbulent and critical situation.

Acknowledgment

The authors would like to express their gratitude to all the dedicated and hardworking nurses, their family members, and officials of Hajar Hospital in Shahrekord for their assistance and patience. The authors would also show their sincere respect to all health-care workers who are fighting the COVID-19 epidemic. This article is the result of a research project funded by Shahrekord University of Medical Sciences.

Financial support and sponsorship

This study has been funded and supported by Shahrekord University of Medical Sciences; Grant No: 1399.99.

Conflicts of interest

There are no conflicts of interest.

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