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Özgün Araştırma Makalesi

The Impact of the COVID-19 Pandemic on the Mental Health of Healthcare Workers

COVID-19 Pandemisinin Sağlık Çalışanlarının Mental Sağlığına Etkisi

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ABSTRACT

Aim: The Coronavirus Disease-2019 (COVID-19) pandemic has been potentially affecting the mental health of healthcare workers (HCWs) especially frontline workers due to isolation and loss of social support, risk of transmission to friends and relatives. We aimed to evaluate the mental health status of healthcare workers during the pandemic with the General Health Questionnaire-28 (GHQ-28).

Materials and Method: This was a single-center, cross-sectional study with a population of 250 health workers at Baskent University. The GHQ-28 scale was used to detect mental disorders in study participants. The online questionnaire was transferred via official email to the participants. The data were analyzed with descriptive statistics, Kruskal–Wallis, Mann-Whitney U tests, and multiple logistic regression analysis. A p-value of <0.05 was set as statistically significant with a confidence interval of 95% level.

Results: Of the respondents (n=250), 66% (n=165) were women and 61% were between 20-45 years, and 63.2% were married. Compared with second line health workers (n=196), frontline workers (n=54) had a higher prevalence of somatic symptoms (p<0.01), anxiety/insomnia and depression (p<0.01). Multiple regression analyses showed that younger age (≤55 years), female gender and being frontline workers were more likely to have mental problems (p<0.01).

Conclusion: Evaluating the mental status of HCWs and providing psychological support are essential to increase healthcare professionals' ability to manage the pandemic process.

Keywords: COVID-19; General Health Questionnaire-28; Healthcare workers; Mental health

ÖZET

Amaç: Coronavirüs Hastalığı-2019 (COVID-19) pandemisi, izolasyon ve sosyalleşme kısıtlaması, arkadaş ve akrabalara bulaştırma riski vb. nedenlerle sağlık çalışanlarının özellikle birinci basamak sağlık çalışanlarının mental sağlığını etkileme potansiyeline sahiptir. Bu nedenle, bu çalışmanın amacı sağlık çalışanlarının pandemi sürecinde mental sağlık durumlarını Genel Sağlık Anketi-28 (GHQ-28) ile değerlendirmektir.

Gereç ve Yöntem: Bu araştırma, tek merkezli, kesitsel bir çalışmadır. Araştırmanın örneklemini Başkent Üniversitesi'nde görev yapan 250 sağlık çalışanı oluşturmuştur. Mental rahatsızlıkların saptanmasında tarama aracı olarak 28 maddelik GHQ-28 kullanılmıştır. Çevrimiçi anket, katılımcılara resmi e-posta yoluyla iletilmiştir. Veriler tanımlayıcı istatistikler, Kruskal-Wallis, Mann-Whitney U testleri ve çoklu lojistik regresyon analizi ile analiz edilmiştir. Anlamlılık, p<0.05 olarak belirlenmiş ve güven aralığı %95 düzeyinde belirlenmiştir.

Bulgular: Ankete katılanların büyük çoğunluğu (n=250) kadın (%66), 20-45 (%61) yaş arasında ve evlidir (%63.2). İkinci basamak sağlık çalışanları (n=196) ile karşılaştırıldığında birinci basamak çalışanları (n=54) istatistiksel olarak daha yüksek somatik semptom (p<0.01), anksiyete/uykusuzluk ve depresyon (p<0.01) prevalansına sahip olduğu tespit edilmiştir. Çoklu regresyon analizlerine göre, genç yaş (≤55 yaş), kadın cinsiyet ve birinci basamak çalışan olmak mental problemlere sahip olma riskini arttırmaktadır (p <0.01).

Sonuç: Sağlık çalışanlarının mental durumlarının değerlendirilmesi ve psikolojik destek sağlanması, sağlık çalışanlarının pandemi sürecini yönetme becerisini artırmak için önemlidir.

Anahtar Kelimeler: COVID-19; Genel Sağlık Anketi-28; Mental sağlık; Sağlık çalışanları

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INTRODUCTION

At the end of 2019, many cases of new coronavirus infection were reported in Wuhan, China. The World Health Organization (WHO) on January 7, 2020, officially named this causative viral agent as severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2).[1] As a result of the rapidly increasing numbers of infections the WHO announced that the status of coronavirus disease (COVID-19) had reached pandemic level.[2]

In Turkey, the first confirmed COVID-19 cases and death due to COVID-19 were reported on March 2020. To date (September 6, 2021), over six million cases have been confirmed and 58106 deaths due to this disease have been reported in Turkey.[3]

In a study of 1099 cases, it has been reported that the most observed clinical manifestations of COVID-19 were most commonly shortness of breath, fever, cough, fatigue, phlegm, sore throat, and headache, and less frequently some gastrointestinal symptoms such as vomiting and diarrhea.[4] Normal white blood cell counts or leukopenia, and lymphocytopenia were reported in most patients with COVID-19 infection. However, it was found that the neutrophil, D-dimer, blood urea nitrogen (BUN), and creatinine levels were significantly higher while lymphocyte counts were lower in patients with severe disease.[4,5]

The increased spread of disease, the harmful nature of the clinical symptoms, the extraordinary additional burden on the medical staff, the lack of specific treatments for this viral disease and support for workers, plus the extensive media coverage related to the pandemic, have led to many people experiencing negative feelings and stress. In some people, this could develop into mental health symptoms, and healthcare workers are especially vulnerable.[6]

It has been observed that health workers are at risk of developing psychological distress and other mental health symptoms during the pandemic.[7] Similarly the 2003 severe acute respiratory syndrome (SARS), most of healthcare workers have fear, anxiety and discomposure related to the contagion, social isolation, risk of getting infections of family, friends, and colleagues, work stress during the COVID-19 pandemic.[8,9] Similar concerns about rising emotional distress of medical staff are spreading during the COVID-19 pandemic.[10] The factors contributing to adverse psychological outcomes in healthcare workers include staff reorganization, long working periods, the anxiety of being exposed to the virus at work, and in turn, the anxiety of bringing the infection home. Therefore, mental health problems of healthcare workers should be considered and evaluated as an urgent public health problem.[11,12]

Previous reviews focused on the work-related challenges, mental and psychosocial impacts on healthcare workers during the SARS-CoV-2 outbreak. This study was designed to investigate the mental health status of healthcare workers by the GHQ-28 questionnaire during the pandemic.

MATERIALS AND METHOD

This single-center, survey-based study was conducted from June to September 2020 with health workers in Baskent University Faculty of Dentistry and Medicine. Data were collected using Google Drive with an online questionnaire. This survey was transferred via official email to the members of the Baskent University and was aimed to evaluate the prevalence of psychological symptoms of 250 healthcare workers. This study complied with the Declaration of Helsinki, and approval of the study was obtained from Baskent University Institutional Review Board (Project no: D-KA 20/13).

The survey contained three parts: first part was comprised the sociodemographic information, second part the survey questions and the last part question about physical contact status with COVID-19 cases during this period. In the first part of the questionnaire, participants were asked to provide sociodemographic information: age (20-35, 36-45, 46-55, 56-65 and >66 years old), gender (male/female), city of employment, marital status (married/single/widow/divorced), education level (undergraduate/graduate), years of work experience, their departments, psychological support (Yes/No) and how often they worked during the pandemic (full time/part time/not working).

The GHQ-28 is a scale composed of 28 self-report items, used to determine minor psychiatric disorders in the general population, divided into four subscales.[13,14] The four subscales are somatic symptoms (the first seven items), anxiety and insomnia

(the second seven items), social dysfunction (the next seven items) and severe depression (the last seven items). The GHQ-28 items are based on a Likert rating scale from 0 to 3. ''Zero (0)'' means not at all, ''one (1)'' means no more than usual, ''two (2)'' means rather more than usual, and ''three (3)'' means much more than usual.[15] The score for the first two answers is "0" (positive) and the score of the last two answers are "1" (negative).[16] While participants with a score of 4 or less are considered mentally normal, participants with a score of 5 or more are considered to be "a risk group in terms of mental problems." [17]

In the last part of the questionnaire, participants were asked to answer the following question: "Are you directly worked with patients admitted to the hospital with high fever or diagnosed with COVID-19, in the clinic?". They were requested to answer the question as Yes / No. Participants were classified frontline or second line employees regard to the response. (Yes= frontline healthcare worker, No= second line healthcare worker)

Statistical Analyses

SPSS packed program (SPSS version 17; SPSS inc., Chicago, IL, USA) was used for statistical analysis. Descriptive statistics were presented as median and interquartile range (IQR). The significance level for the comparisons was set at α: .05. Kruskal–Wallis and Mann-Whitney U tests were used to comparisons of differences between two and more than two groups, respectively. Logistic regression analysis was used to define risk factors for the group with a score of 5 or more according to the GHQ score.

RESULTS

In total, 250 volunteer healthcare workers (78 from faculty of dentistry and 172 from faculty of medicine) in Baskent University completed the questionnaire. The majority of the participants were working in the Faculty of Medicine (68%) and Ankara (59.6%). The majority of respondents were women (66%), between 20-45 (61%) years old and married (63.2%). Almost fifty-four percent reported that they were working for more than 15 years. Only 21% of the participants were frontline healthcare workers and in direct contact with patients diagnosed with COVID-19 during the pandemic. Only 1.6% of all participants received psychological support during the pandemic process. Demographic and basal characteristics of the participants were shown in Table 1.

Table 1. Demographic and basal characteristics of healthcare workers (n=250)

Variables		n	%
Age	20-35	83	33.2
	36-45	69	27.6
	46-55	69	27.6
	56-65	17	6.8
	>66	12	4.8
Gender	Female	165	66
	Male	85	34
Education Level	High school and below	6	2.4
	University	29	11.6
	Postgraduate	215	86
Marital Status	Married	158	63.2
	Single	73	29.2
	Divorced	13	5.2
	Widow	6	2.4
Years of Working	0-5	41	16.4
	6-10	40	16
	11-15	32	12.8
	16-20	51	20.4
	>21	86	34.4
Frequency of Employment	Part-Time	17	6.8
	Full-Time	188	75.2
	Not Working	45	18
Working Status	Frontline	54	21.6
	Secondline	196	78.4
Psychological Support	Yes	4	1.6
	No	246	98.4
City of Employment	Alanya	6	2.4
	Adana	28	11.2
	Ankara	149	59.6
	İzmir	7	2.8
	İstanbul	21	8.4
	Konya	39	15.6

There was no statistical difference between frontline and second line health workers in age (p=0.117), marital status (p=0.781), educational level (p=0.524), and years of work experience. (p=0.131) However, a statistical difference was observed in terms of gender (p=0.031; Table 2).

Table 2. Comparisons of demographic and basal characteristics of frontline and second line healthcare workers

Variables		Frontline n(%)	Secondline n(%)	P*
Age	20-35	13(24.1)	70(35.7)	0.117
	36-45	22(40.7)	47(24)	
	46-55	14(25.9)	55(28.1)	
	56-65	4(7.4)	13(6.6)	
	>66	1(1.9)	11(5.6)	
Gender	Female	29(53.7)	136(69.4)	**0.031**
	Male	25(46.3)	60(30.6)	
Education Level	University and below	9(16.7)	26(13.3)	0.524
	Postgraduate	45(83.3)	170(86.7)	
Marital Status	Not-married	19(35.2)	73(37.2)	0,781
	Married[Ÿ]	35(64.8)	123(62.8)	
Years of Working (years)	0-5	6(11.1)	35(17.9)	0.131
	6-10	10(18.5)	30(15.3)	
	11-15	12(22.2)	20(10.2)	
	16-20	11(20.4)	40(20.4)	
	>21	15(27.8)	71(36.2)	

Ÿ Not-married category included single, divorced and widow * Determined by Chi square test

Table 3. Comparison of total GHQ-28 and subscales scores between frontline and secondline health workers

Variables	Frontline Median (IQR)	Secondline Median (IQR)	P*
Total GHQ-28 Score	7(14)	2(9)	**<0.01**
Somatic symptoms	1(4)	0(2)	**<0.001**
Anxiety and insomnia	2.5(5)	0(4)	**<0.01**
Social dysfunction	1.5(2)	1(2)	0.056
Depression	0.5(2)	0(1)	**<0.01**

*Determined by Whitney U test
GHQ-28: General Health Questionnaire-28, IQR: interquartile ratio

The mean score of the respondents obtained from GHQ was 5.80 ±6.50 (0-27). Total GHQ score of almost forty four percent of all participants was five and above indicating they were in risk group in terms of mental problems. The median of the total GHQ score of the frontline health workers was significantly higher when compared to the second-line healthcare workers (p<0.01) (Table 3). However, there was no statistical difference between groups in total social dysfunction scores (p=0.056) (Table 3).

While there was a statistically significant difference in terms of total GHQ scores for age, gender, and working status (frontline or second line), no statistical difference was observed in martial and educational status (Table 4). Multiple logistic regression analysis showed that female healthcare workers had 3.61 (95% CI=1.88-6.92) times higher risk of mental problems than male healthcare workers. Frontline workers had 2.72 times (95% CI: 1.36-5.41) greater risk compared to second line workers. Participants with ≤55 years (0.094 times) (95% CI: 0.21-0.42) had more risk of mental disorders than those with 55 years and below. (Table 4)

Table 4. Multivariable logistic regression analysis of the risk factors associated with mental health outcomes

	Total GHQ 28 score<5 n(%)	Total GHQ-28 score ≥5 n(%)	P*	OR	%95 CI	P**
Age						
≤55	114(51.6%)	107(48.4%)	**<0.001**	1		**0.002**
>55	27(93.1%)	2(6.9%)		0.094	0.21-0.42	
Gender						
Male	62(72.9%)	23(27.1%)	**<0.001**	1		**<0.001**
Female	79(47.9%)	86(52.1%)		3.606	1.88-6.92	
Marital Status						
Not married	51(55.4%)	41(44.6%)	0.081	1		0.299
Married	90(57%)	68(43%)		1.37	0.76-2.50	
Educational Level						
University and below	15(42.9%)	20(57.1%)	0,257	1		0.257
Postgraduate	126(58.6%)	89(41.4%)		0.64	0.29-1.39	
Working Status						
Secondline	118(60.2%)	78(39.8%)	**0.021**	1		**0.005**
Frontline	23(42.6%)	31(57.4%)		2.72	1.36-5.41	

* Determined by Ki Kare test

** Determined by Multivariable Logistic Regression Analysis

GHQ-28: General Health Questionnaire-28, CI: confidence interval, OR: odds Ratio

DISCUSSION

The COVID-19 pandemic quickly emerged as a global health concern that has caused unexpected stress for people worldwide, especially healthcare workers.[18] This viral disease, with its high infection and morbidity rates, has affected the physical and mental health of millions of people globally. The high risk of human-to-human transmission, the prolonged working hours, and the necessary isolation from their families contribute to high rates of severe insomnia, anxiety, depression, somatization, and obsessive-compulsive symptoms for healthcare workers in particular.[19] Therefore, it is crucial to evaluate the mental and psychological well-being of healthcare workers and explore the need for psychological support.[20] While the COVID-19 pandemic leads to burnout or severe distress of healthcare professionals and reducing their quality of life, it may also have negative effects on professional cognizance, ability to make decisions, and attentiveness to patients.[21] The purpose of the this study was to compare the anxiety, depression and insomnia symptoms of healthcare workers at Baskent University Hospital during the COVID-19 pandemic.

Rossi *et al*.[22] confirmed that healthcare workers who are young, women, and frontline in particular have a substantial proportion of mental health issues. Similarly, the present study shows that frontline healthcare workers have a higher risk of somatic symptoms, anxiety/insomnia, and depression than second-line workers. The causes of such negative psychological consequences in frontline healthcare workers may be enormous pressure and direct contact with patients with COVID-19 during the diagnosis and treatment phases.[23] Other important reasons for such psychological impacts may be inadequate protective equipment, negative feedback from patients, adverse quarantine conditions, lack of contact with family, prolonged work hours, and increased infection rates among medical staff.[24] Staying safe was the primary focus of frontline healthcare workers; they were concerned about transmitting the virus to their families. In addition, uncertain treatment protocols, lack of information about the side effects of the vaccine, and high mortality rates could result in stress and anxiety disorders for healthcare workers.[25] Thus, it is crucial to identify the psychological and mental disorders caused by all these factors that healthcare professionals are exposed to and to provide the necessary psychological support during the COVID-19 pandemic.[26]

Vindegaard *et al*.[27] evaluated the psychological impact of COVID-19 on healthcare workers who were treating infected and noninfected patients. They found that female healthcare workers have a high risk of psychiatric symptoms and/or low psychological well-being.[27] In addition, according to the study of Zhang *et al*.[28], living in a rural area, female gender, and work-related stress were found to be very closely related with insomnia, anxiety, obsessive-compulsive symptoms and depression. The findings of the present study aligned with these reports; multiple logistic regression analysis showed that female healthcare workers had 3.61 times more risk of mental problems than male healthcare workers.

In the literature, higher self-rated depression scores have found in younger age (<30 years) medical staff.[29] Huang and Zhao *et al*.[30] also reported that younger participants suffered from anxiety and depression more than older participants during the COVID-19 outbreak. Similar to these studies; participants with ≤55 years (0.094 times) (95% CI: 0.21-0.42) have higher risk of mental problems than those were younger than 55 years in the present study. The possible reason could be that young health workers have less clinical experience, long waiting lists of patients, insufficient resources, and daily working overload. It could lead to anxiety, depression, insomnia, and other psychological problems.[30]

This study has several limitations. Firstly, the current study was conducted in different departments of single center, limiting the current generalization of the results. Therefore, the results could not project the status of whole HCWs in Turkey. Secondly, Baskent University was not a pandemic hospital. However, subclinical cases (asymptomatic or mildly symptomatic) who could be considered non-infected may have increased anxiety in healthcare professionals. Thirdly, larger sample size is needed to verify the results. The last limitation is the lack of information about the other stress factors contributing to the mental health problems in HCWs.

CONCLUSION

The present survey study was proposed to determine the psychological status of the HCWs during the pandemic in the single center hospital. HCWs were anxious about the risk of contamination and transmission of the infection, causing 43.6% of them to have improved psychological distress. In particularly frontline health professionals may have more severe psychiatric symptoms due to heavy workload, fear of transmission of the disease to their family members and concern about personal exposure to the virus. Until this study is submitted, unfortunately, the number of confirmed cases and deaths continues to increase globally, and the virus has undergone numerous mutations. Although vaccine administrations continue all over the world, vaccine coverage remains far behind the minimum threshold needed to achieve herd immunity overall. Therefore, mental health status of particularly young age, women, and frontline healthcare workers who are actively worked during the pandemic process should be determined and if necessary, psychological support should be provided to improve mental health.

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