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Research Article,

A Questionnaire Study Effect of COVID-19 Pandemic on Anxiety and Burnout Levels in Emergency Healthcare Workers

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Abstract:

Objectives

During the COVID19 pandemic, an increase in anxiety and burnout levels may occur unwittingly due to the increased workload and intense stress experienced by emergency healthcare workers (HCWs) dealing with potential or suspected COVID-19 and other emergency patients. In our study, it is aimed to investigate whether there is an increase of anxiety and burnout levels of the HCWs working in ES and pandemic fields fighting against the outbreak of COVID-19 in Turkey.

Methods

The study was carried out between April 1 to May 15, 2020, with the online questionnaire method with the participation of 920 HCWs that are working actively in pandemic areas across the country. In the questionnaire, the sociodemographic characteristics of the participants were questioned, and Beck anxiety scale (BAI) and Maslach Burnout Inventory (MBI) were applied.

Results

The pandemic area and the intensive care workers' BAI score are similar to those in the emergency service and ambulance ($p = 0.05$). The MBI-desensitization score of those working in the field of ED, ICUs and pandemics was higher than other places ($p < 0.05$). The MBI-emotional score of the emergency and ambulance workers was higher ($p = 0.001$), and the MBI-personal accomplishment score was lower than radiology, laboratory and office personnel ($p=0.049$).

Conclusions

The COVID-19 outbreak may create stress in HCWs, leading to various psychiatric disorders such as anxiety, depression, and burnout syndrome. Early recognition, prevention and coping methods of burnout and anxiety in HCWs play a key role in during the pandemic period.

Introduction:

Coronaviruses (CoV) is a large family of viruses that cause serious diseases such as common cold, Middle East Respiratory Syndrome Coronaviruses (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV) (1,2). On December 31, 2019, Country Office of WHO for China reported pneumonia cases of unknown aetiology in Wuhan Hubei province, China. On January 7, 2020, the causative agent has been identified as a new coronavirus (2019-nCoV) that has not previously been detected in humans. Later, the name of the 2019-nCoV disease was accepted as COVID-19 (3,4). After the first COVID-19 cases were seen in

China, the disease spread rapidly in other countries and WHO declared the COVID-19 outbreak on March 11, 2020 as a pandemic (4). Panic and chaos began to occur around the world due to new cases and deaths, and severe measures had to be taken in healthcare systems. Hospitals had to accept a large number of new COVID-19 cases. Meanwhile, emergency services (ES) remained in the middle of the pandemic due to excessive patient entry. During the pandemic, ES were forced to look after both COVID-19 patients and other emergency patients, and even non-emergency polyclinic patients. Anxiety is an intense emotion which is experienced in some periods of a person's life and which resembles fear (5). Anxiety not at the degree of a disease is the body's response to a stressor, helping the person survive by keeping him/her alert against danger. It may cause a very mild sense of anxiety or tension to intense emotion in the degree of panic. If it is experienced seriously, the person's self is crushed under this intense emotion and it becomes disturbing (5). Beck Anxiety Inventory (BAI), Self-Rating Anxiety Scale (SAS) and Generalized Anxiety Disorder Scale (GAD-7) are used in the definition of anxiety (6). BAI was developed by Beck, Epstein, Brown and Steer in 1988. BAI is an indicator that has become a standard tool to measure anxiety level in researches. The scale aims to determine the frequency and severity of anxiety symptoms experienced by individuals (7–9) We used the BAI score, which is currently used in the definition of anxiety in our country, and whose validity and reliability test of the inventory in Turkey was performed by Ulusoy, Sahin et al, in our study because it is easily applicable in our country (9). Burnout syndrome (BOS) was defined in the early 1970s, especially among healthcare workers (HCWs), those working in human services (10). BOS is defined as the excessive use of energy and resources that cause emotional stress in the workplace or feelings of failure and exhaustion (10). The clinical symptoms of BOS are not specific and include fatigue, headaches, eating problems, insomnia, irritability, emotional instability, and stiffness in relationships with other people. BOS measurement in Maslach Burnout Inventory (MBI) has been used in many studies conducted around the world for the definition of burnout in the literature. It was developed by Maslach and Jackson (11). Therefore, we preferred MBI to evaluate the burnout of the participants. MBI scale measures the effects of emotional exhaustion (EE), depersonalization (DP, negative or sarcastic attitudes towards patients) and a reduced sense of personal accomplishment (PA). This indicator has become a standard tool to measure BOS in researches related to the syndrome. People who experience all three symptoms feel the BOS most, but emotional exhaustion has been identified as a hallmark of BOS (10,12). Therefore, we preferred MBI to evaluate the burnout of the participants. The main goal of this study is to determine whether there is an increase of anxiety and burnout levels of the HCWs working in ES and pandemic fields (PF) fighting against the early outbreak of COVID-19 in Turkey, compared to other HCWs.

Methods:

Study design and setting

Our study was created with a web-based and multiple-choice questionnaire method. Healthcare staff working throughout the country were contacted by phone, and the link of the questionnaire prepared in Turkish was sent by text message or e-mail and their consents were requested. BAI was used to determine the level of anxiety, and MBI was used to assess the level of burnout, and participants were asked to fill these scales as multiple choice. These scales are in the form of multiple-choice options, and score according to the peer equivalents of each option. Statistical analysis of the data obtained have been performed by a computer.

Selection of Participants:

The consents of the participants were asked in the questionnaire form and the people giving consent were included in the study. 930 people participated in the study including doctors, nurses, emergency medical technician(EMT) or paramedics, laboratory staff working actively in places such as ES, PF policlinics, intensive care units (ICU), laboratory, radiology and office workers of pandemic hospitals, and also dental unit staff, ambulance staff, patient transport staff, security staff, cleaning, office and administrative staff between the ages of 20 and 65, 10 people who did not give consent have been excluded from the study and as a result, 920 people who gave permission filled the online questionnaire between April 1 to May 1, 2020.

Ethics approval:

Ethics approval was obtained through the Turkish Ministry of Health Scientific Research Platform with May 1, 2020 date and the ethics board of the Kayseri City Hospital April 30, 2020 date and with 30 number. The study adhered to Declaration of

Helsinki (13).

Statistical analysis:

The data obtained as a result of our research was processed on the computer using IBM SPSS Statistics for Windows, version 21 package program. In the analysis of the data, frequency, mean, median and standard deviation, minimum and maximum values were determined as descriptive data. Chi-square test was used to compare categorical data. In the numerical data, Student's t-test was applied in binary groups that conformed to the normal distribution, and the Mann Whitney U test was used in the groups that did not conform to the normal distribution. One Way Anowa test was used to compare more than two groups that conform to normal distribution and Kruskal Wallis test was used to compare more than two groups that did not conform to normal distribution. Post-Hoc Tukey correction and Dunn correction was made. Spearman correlation analysis was used to evaluate the relationship among numerical data and the significance level was set at a p-value of 0.05.

Results:

Subject Characteristics

A total of 545(59.2%) of the 920 participants were female and 375 (40.8%) were male. The median age of the participants was 35.00 (youngest: 20, oldest: 65). A total of 249 (27.1%) of them were single or divorced and; 671 (72.9%) were married. Of the participants 205 (22.3%) were working in ES,192 (20.9%) in the ambulance, 112 (12.2%) in pandemic polyclinics and ICU, and 411 (44%) 6) in other hospital areas such as other polyclinics, patient services (PS), public health (PH), family medicine (FP), laboratory, radiology unit, office and dental units. Of the participants 249 (27.1%) were doctors, 301 (32.79%) were health officials and nurses, 180 (19.6) were paramedics and/or EMT, 190 (20.7%) were radiology, laboratory, office and other hospital area staff. The average term of office of the participants were 12, 00(minimum: 1, maximum: 35) years. 390 (42.4%) of the participants were working daytime shift, while 530 (57.6%) were working 24-hour shift (Table 1). Of the participants, 226 (24.6%) of them were living with their family members over the age of 65 or with a chronic disease. 596 (64.8%) of them had children (Table 1).

Table 1. Distribution of participants by age, gender, marital status, workplace, profession, term of office and work shift

Age*(year) Mean (min-max)*	35,00(20-65)
Gender *n (%)*	
Female	545 (59,2)
Male	375 (40,8)
Marital status *n (%)*	
Alone or divorced	249 (27,1)
Married	671 (72,9)
Workplace *n (%)*	
Emergency Service	205 (22,3)
Ambulance	192 (20,9)
Pandemic Policlinic and ICU	112(12,2)
Other Policlinic	112(12,2)
Patient Service	77(8,4)
Public health and Family Practise	102(11)
Laboratory, Radiology Unit and Office	120(13)
Profession *n (%)*	
Doctor	249 (27,1)
Nurse	301(32,79)
Radiologist, Laboratory and other	190(20,7)
Paramedic/EM technician	180 (19,6)
Term of office*(year)*	12,00(1-35)
Work shift *n (%)*	
Day	390 (42,4)
24 hour	530 (57,6)
Live with *n (%)*	
Live with an over 65 years old family member and/or has chronic disease any family person n (%)	
Yes	226(24,6)
No	694 (75,4)
Live with a child n (%)	
Yes	596 (64,8)
No	324 (35,2)

Descriptive statistics are given as number (%) for categorical variables and mean for numerical variables.

Of the participants, 743 (80.8%) of them thought the COVID-19 outbreak had affected their mental health and, 472 (51.3%) of them were serving COVID-19 patients with possible or definitive diagnosis and, 654 (71.1%) of them were thinking that they had adequate personal protective equipment (PPE) or disinfectant at the place where they were working, but 729 (79.2%) of them were thinking that PPE was not adequately protecting themselves. Of the participants, 801 (87.1%) was afraid being infected with COVID-19 and therefore was washing their hands on average 15.00 (minimum: 2, maximum: 95) times a day (Table 2).

Table 2. Participants' feelings about COVID-19, distribution by PPE protection and handwashing status questions.

Do you think that current events about COVID-19 affect your mental health? *n (%)*	
Yes	743 (80,8)
No	87 (9,5)
Undecided	90 (9,8)
Do you provide service to a patient with suspected / definitive COVID-19?*n (%)*	

Yes	472 (51,3)
No	448 (48,7)
Do you think there is enough personal protective equipment (mask, apron, glasses) and disinfectant in the hospital / where you work? *n (%)*	
Yes	654 (71,1)
No	266 (28,9)
Do you believe that personnel protective equipment protect you? *n (%)*	
Yes	191 (20,8)
No	729 (79,2)
Are you afraid of getting COVID-19 infection? *n (%)*	
Yes	801 (87,1)
No	119 (12,9)
How many times have you washed your hands / used disinfectants lately? *Mean ± SS(min-max)*	15,00 (2-95)

Descriptive statistics are given as number (%) for categorical variables

The BAI and MBI score analysis of all participants and their median scores by the study field and professions

The mean BAI score of the HCWs was 14 (minimum: 0, maximum: 63). The mean of the HCWs MBI-EE score was 10 (minimum: 9, maximum: 45), the mean of MBI-DP score was 5.8 (minimum:5, maximum: 5-25) and, the mean of MBI-PA score was 6.7 (minimum:8-maximum:40), (Table 3).

Table 3. The median BAI and MBI scores of all participants and their median scores by field of study and profession

	Count*n (%)*	**BAI score** *Median (min-max)*	**MBI score** *Median(min-max)*		
			EE	***DP***	***PA***
Median of all participants	920	14(0-63)	10(9-45)	5.8(5-25)	6.7(8-40)
Study field					
Emergency and ambulance	397	13(0-63)	28 (9-45)	11(5-25)	26(8-40)
Emergency Service	*205*	*13(0-55)*	*31(10-45)*	*13(5-25)*	*25(10-39)*
PH, FP, OP and PS	291	16 (0-47)	28 (9-45)	11 (5-25)	27(8-40)
Laboratory, Radiology Unit and Office	120	11 (0-54)	23 (9-45)	9(5-25)	29 (9-40)
Pandemic Policinic and ICU	112	18 (4-61)	30 (9-45)	12(5-25)	25 (9-40)
Total	920				
Profession					
Doctor	249	15(0-59)	25 (8-39)	31(11-45)	13(5-25)
Nurse	301	17 (0-63)	27 (8-40)	27 (9-45)	10(5-25)
Paramedic or EMT	180	13,5(0-58)	28(10-40)	26(9-45)	10(5-25)
Other	190	11 (0-61)	26 (9-40)	25,5(9-45)	10 (5-25)
Total	920				

Descriptive statistics are given as number (%) for categorical variables and median(minimum-maximum value) for numerical variables. BAI: Beck Anxiety Inventory, MBI: Maslach Burnout Inventory, PH: Public Health, FP: Family Practise, OP: Other Policlinics, PS: Patient Service, EMT: Emergency Medicine Technician

Table 4. The MBI-EE, DP and PA scores comparison by study areas

MBI-EE score		
Study area	***Compare to***	***p-value***
Emergency and ambulance	Laboratory, Radiology Unit and Office	0,001
Pandemic Policinic and ICU	Laboratory, Radiology Unit and Office	0,000
PH, FP, OP and PS*	Laboratory, Radiology Unit and Office	0,006
MBI-DP score		
Study area	***Compare to***	***p-value***
Emergency and ambulance	Laboratory, Radiology Unit and Office	0,003
Pandemic Policinic and ICU	Laboratory, Radiology Unit and Office	0,026
MBI-PA score		
Study area	***Compare to***	***p-value***
Emergency and ambulance	Laboratory, Radiology Unit and Office	0,049
Pandemic Policinic and ICU	Emergency and ambulance	0,027
Pandemic Policinic and ICU	Laboratory, Radiology Unit and Office	0,000
Pandemic Policinic and ICU	PH, FP, OP and PS*	0,023

**PH: Public Health, FP: Family Practise, OP: Other Policlinics, PS: Patient Service, MBI: Maslach Burnout Inventory*

The BAI scores analysis of the participants by the study field

There was no statistically significant difference between the groups when the BAI score was analyzed according to the study fields (p: 0.005) (Table 3). The BAI score of PF and ICU workers was significantly higher than that of PH, FP, service and other policlinic workers, and there was a statistically significant difference **(p: 0.046)**. The BAI score of PF and ICU workers was significantly higher than that of radiology, laboratory and office workers, and there was a statistically significant difference **(p: 0.004),** (Table 3).

The MBI scores analysis of the participants by the study field

There was a statistically significant difference between the groups the MBI scores were observed

by study fields **(p: 0.001)**. (Table 3, 4).
The ES and ambulance workers had a statistically significant difference in MBI-EE score compared to the radiology, laboratory and office workers. The MBI-EE score of the ES and ambulance workers was higher than the others **(p:0.001)**.(Table 4). There was a statistically significant difference between the groups the MBI-DP scores were observed by study areas **(p: 0.015)**.(Table 3,4). The ES and ambulance workers had a statistically significant difference in MBI-DP score compared to the radiology, laboratory and office workers. The MBI-DP score of ES workers was higher than the others **(p: 0.003)**, (Table 3,4).
There was a statistically significant difference between the groups the MBI-DP scores were observed by study areas **(p: 0.000)**. (Table 3,4).
The ES and ambulance workers had a statistically significant difference in MBI-DP score compared to the radiology, laboratory and office workers. The MBI-PA score of ES and ambulance workers was lower than the others **(p: 0.049)**, (Table 3,4)

The BAI and MBI score analysis of all participants and their median scores by profession

The groups were classified and analyzed according to the professions of the participants (Table 3).
There was no statistically significant difference between the groups BAI score by profession was observed **(p: 0.154)**. (Table 3).

The MBI score analysis of all participants and their median scores by profession

There was a statistically significant difference among groups when looking at MBI-EE score by profession **(p: 0.000)**. Kruskal Wallis Test was applied. Accordingly, the MBI-EE score of the doctors was significantly higher than that of the nurse and health officers **(p: 0.003),** paramedic, EMT and other staff **(p: 0.000)**, (Table 3,4).
There was a statistically significant difference among groups when MBI-DP score was observed by profession **(p: 0.000)**. Kruskal Wallis Test was applied. Accordingly, the MBI-DP score of the doctors was significantly higher than that of the nurses, officers, paramedics, EMTs and other staff **(p: 0.000)**, (Table 3,4).
There was a statistically significant difference among groups when MBI-PA score by profession was observed **(p: 0.000)**. (Table 3,4). Accordingly, the MBI-PA score of the doctors was significantly lower than that of the paramedic and EMT group **(p: 0.000)**. The MBI-PA score of the doctors was significantly lower than that of the nurses **(p: 0.028)** and the MBI-PA score of the doctors was lower than that of the other staff, but there was no statistically significant difference (p: 0.499). (Table 3,4).

The BAI and MBI scores analysis of the participants by the survey questions

The HCWs who lived with their relatives over 65 years and females the BAI scores were significantly higher than others **(all p: 0.000)**, (Table 5).
The BAI score of the HCWs who thought that they were mentally affected by COVID-19 outbreak, serving for the patient with suspected COVID-19, those who were thinking that there was enough PPE but, that PPE did not protect themselves sufficiently and were afraid of infected with COVID-19 was significantly higher than the others**(all p:0.000)**, (Table 5).
Female and singles HCWs' MBI-EE scores was significantly higher than others**(p: 0.000)**. The HCWs who lived with over 65 years old relative or had a relative with a chronic disease had significantly higher MBI-EE scores than others (p: 0.007). Also, the HCWs who lived with their children had significantly higher MBI-EE scores than the others **(p: 0.005),** (Table 5). The MBI-EE score of the HCWs who thought that they were mentally affected by COVID-19 outbreak, serving for the patient with suspected COVID-19, those who were thinking that there was enough PPE but, that PPE did not protect themselves sufficiently and was afraid of infected with COVID-19 was significantly higher than the others (**all p:0.000)**, (Table 5).
The HCWs who thought that they were mentally affected by COVID-19 outbreak had significantly higher MBI-DP scores than others **(p: 0.04)**. The HCWs who lived with their children had significantly higher MBI-DP scores than others **(p: 0.003).** The MBI-DP score of the HCWs who serving for the patient with suspected COVID-19, and who was thinking that PPEs were not adequately protected was significantly higher than the others **(all p: 0.000)**. The HCWs who were thinking that there was enough PPE had significantly higher MBI-DP score than the others. **(p:0.004)** (Table 5).

Table 5. Comparison of Beck Anxiety Inventory and Maslach Burnout Inventory scores according to the survey questions

Questions	**BAI Score** *Median (min-max)*	**MBI Score** *Median(min-max)*			**p values**			
		EE	**DP**	**PA**	**P1**	**P2**	**P3**	**P4**
Gender								
Female	19 (0-63)	30 (9-45)	11 (5-25)	27 (8-40)	**0.00**	**0.00**	0,31	0,19
Male	10 (0-59)	24 (9-45)	11 (5-25)	26 (8-40)				
Marital status								
Alone or divorced	15 (0-63)	29 (9-45)	11 (5-25)	27 (9-40)	0,26	**0,03**	0,06	0,54
Married	14 (0-59)	27 (9-45)	11 (5-25)	27 (8-40)				
Live with over 65 years family member ?								
Yes	18 (0-61)	30 (9-45)	11 (5-25)	27 (10-39)	**0.00**	**0,00**	0,26	0,68
No	13 (0-63)	27 (9-45)	11 (5-25)	27 (8-40)				
Have child?								
Yes	14 (0-63)	29 (9-45)	10 (5-25)	27 (8-40)	0,09	**0,00**	**0,00**	0,44
No	15 (0-61)	27 (9-45)	12 (5-25)	26 (9-40)				
Do you think that COVID19 affect your menthal health?								
Yes	17 (0-63)	29 (9-45)	11 (5-25)	27 (8-40)	**0.00**	**0.00**	**0.00**	0,32
No	4 (0-61)	18 (9-45)	8 (5-25)	27 (8-40)				
Undecided	8 (0-59)	23 (9-45)	9 (5-25)	26 (9-40)				
Do you provide care to supected COVID19 patient?								
Yes	12(0-55)	30 (9-45)	11 (5-25)	27 (8-40)	**0.00**	**0.00**	**0.00**	**0.02**
No	16(0-63)	26 (9-45)	10 (5-25)	26 (8-40)				
Is there enough PPE and disinfectant where you work?								
Yes	15 (0-63)	29 (9-45)	10 (5-25)	27 (8-40)	**0.00**	**0.00**	**0.00**	**0.03**
No	12 (0-61)	24 (9-45)	11 (5-25)	26 (8-40)				
Do you believe that PPE protect to you?								
Yes	16 (0-63)	22 (9-45)	9 (5-25)	27 (8-40)	**0.00**	**0.00**	**0.00**	0.27
No	10 (0-61)	29 (9-45)	11 (5-25)	26 (8-40)				
Are you afraid of being COVID19 infection?								
Yes	16 (0-63)	29 (9-45)	11 (5-25)	27 (8-40)	**0.00**	**0.00**	0.32	0.44
No	7 (0-61)	22 (9-45)	10 (5-25)	27 (9-40)				

The HCWs providing care for patients with suspected COVID-19 had significantly lower MBI-PA score than others **(p: 0.02)**. The HCWs who were thinking that there was enough PPE had significantly higher MBI-PA score than others **(p: 0.035)** (Table 5). Correlation analysis performed with Spearman Correlation analysis among BAI and MBI subgroups of the participants. Among BAI and MBI subgroups of the participants. Accordingly, the HCWs had a weakly significant correlation between the BAI score and the MBI-DP score **(p: 0.000, r: 0.470)**; also, they had a weakly positive and significant relationship between the BAI score and the MBI-DP score **(p: 0.000, r: 0.240)**.(Table 6). While, there was a weakly negative and significant relationship between the BAI score and the MBI-DP score of the HCWs **(p: 0.000, r: -0.162)**. There was a positive and highly significant relationship between BAI score and the MBI-DP score of the HCWs **(p: 0.000, r: 0.693)**. (Table 6).

Finally, there was a negative and weakly significant relationship between the MBI-EE score and the MBI-PA score of HCWs **(p: 0.000, r: -0.306)**. There was a negative and weakly significant relationship between the MBI-DP score and the MBI-PA score of HCWs **(p: 0.000, r:-0.335).** (Table 6).

Table 6. Spearman Correlation analysis of BAI and MBI scores.

		Spearman Correlation	BAI score		MBI score	
				EE	***DP***	***PA***
BAI score		*r*	1	,470	,240	-,162
		p value	.	0	0	0
MBI score	***EE***	*r*	,470	1	,693	-,306
		p value	0	.	0	0
	DP	*r*	,240	,693	1	-,335
		p value	0	0	.	0
	PA	*r*	-,162	-,306	-,335	1
		P value	0	0	0	.

BAI: Beck Anxiety Inventory, MBI: Maslach Burnout Inventory, EE: Emotional exhaustion, DP: Depersonalization, PA: Personal accomplishment

Discussion:

The COVID-19 pandemic caused stress and tension in all people around the world increases future related anxiety due to changing conditions, and brings together findings of many psychiatric disorders such as anxiety, BOS and depression (14,15). In studies published in countries such as China, Italy, Spain, India and the USA around the world, it has been reported that HCWs experienced many mental problems during the COVID-19 pandemic period (7,14). It had been reported that burnout levels were high in HCWs for various reasons before the pandemic also (6). Also, especially in ES and other HCWs, the intensive workload, the necessity of continuing work life during the pandemic increases the stress and burnout related to the risks taken during the care and treatment processes of COVID-19 patients. ES workers experienced this workload and intense stress in the H1N1 influenza pandemic in 2009 and locally in the SARS pandemic in 2003 and MERS in 2012 and remained amid the pandemic (1,2). The HCWs who are working in COVID-19 pandemic fields, especially in EPs, are at the forefront of fighting against this pandemic disease in our country as in the whole world. For this reason, ES workers are faced with a more intensive working tempo during the pandemic period in Turkey as well as all over the world. Therefore, anxiety level increase or BOS symptoms may occur in all the HCWs who working in the field of pandemics, especially ES. In general, HCWs are not aware of these situations. We found that HCWS showed signs of burnout and anxiety and were not generally aware of the condition, too. Also, we found when HCWs evaluated in terms of workers groups, there was no difference in terms of their anxiety levels, while MBI-EE and MBI-DP scores of ES and ambulance workers were significantly higher and their MBI-PA scores were lower than other HCWs. Besides, MBI-EE and DP scores were significantly higher in pandemic polyclinics and ICU workers compared to other HCWs, while MBI-PA scores were similarly lower. The HCWs who worked in PF policlinics and ICU had higher BAI scores than PH, FP, PS, other policlinics, radiology, laboratory and office workers. The findings are similar to the literature. In studies conducted, higher levels of burnout of HCWs providing emergency health services were specified (8,16–18).

While the COVID-19 pandemic, Du et al. in their study with HCWs in Wuhan, they reported an average BAI score of 4.96 (6). This rate found to be low compared to our research. These results of the BAI and MBI scores in our study are compatible with low levels of anxiety and burnout in HCWs, and lower than some studies in the literature (7,19–22) and, are similar to some studies (14,17,18). In our study, working in ES was found to be a factor increasing MBI-EE and DP scores, while decreasing MBI-PA scores. BOS can be considered as a marker of the health of the healthcare team. ICU workers, like ES workers, are under heavy workload and stress. Takayesu JK et al. in their study specified that 65% of ES workers had BOS symptoms (23). In the literature study of investigating the BOS level, they stated that even if there was no pandemic, the number of people who showed BOS symptoms in ES workers was up to 60% levels (8). We thought that the reasons for intense stress, increase in BAI and MBI levels of ES workers are working with intense tempo, having to look at other emergency cases besides suspect cases of COVID-19, extended shift hours, job dissatisfaction and not being appreciated by hospital administrations. In a multi-national study reported that being older and have pre-existing comorbidities were linked with depression, anxiety, stress, and PTSD (20). Similarly, our study showed that HCWs were faced with different levels of stress, anxiety and burnout. Also, in our study the BAI score and MBI-EE and DP scores of women and HCWs those who lived with their relatives over 65 years of age were higher, while MBI-PA scores were significantly lower. In the literature, anxiety and burnout levels were generally reported higher in women HCWs, and

the findings were consistent with the literature (24,25). Another study reported that women HCWs had approximately two times the increased odds of developing moderate or high-level stress, depressive symptoms requiring treatment, and anxiety symptoms requiring further evaluation (22). In a systematic review and meta-analysis reported that in different studies showed that the revealed gender and occupational differences with female HCPs and nurses exhibiting higher rates of affective symptoms compared to male and medical staff respectively(14). Besides, in a comprehensive study conducted in China due to the COVID-19 outbreak, anxiety levels were found higher in women HCWs (26). The MBI-EE and DP scores of the HCWs who had children included in our study were significantly higher. The fact that MBI-EE is less common among those who have children is a finding highlighted in previous studies (27,28). In our study, we thought that HCWs, who have children at home, who live with a family member over 65 years old and/or who have a chronic illness living in their homes, maybe a reason that increases the level of fear, anxiety and burnout of these people.

Yuan W. Et al. reported that in their study, was to compare the frequency of burnout between physicians and nurses on the frontline wards groups had a lower frequency of burnout and were less worried about being infected compared with the usual wards group (7). In a systematic review and meta-analysis reported that in different studies, the doctor and nurse groups, the Prevalence of anxiety calculated 21.73% and 25.80% in six studies respectively (14). Also in our study, while the MBI-EE and DP scores of the doctors were higher than the other staff, the MBI-PA scores were low. Again, MBI-EE and DP scores of doctors and nurses were found to be higher than other HCWs and MBI-PA scores were similarly lower. In the literature, it is stated that nurses and physicians are the riskiest group among HCWs in terms of burnout (29). We thought that this finding, which was supported in our study, may be due to active workloads in the diagnosis and treatment processes of doctors and nurses during the COVID-19 pandemic period and their close contact with COVID-19 patients. Unlike studies conducted during SARS, H1N1 and COVID-19 pandemic studies (2,30,31) in our research, we thought that the reason of anxiety levels of doctors being higher than anxiety levels of other HCWs might be that doctors had to take nose, throat swabs from patients, and had closer contact with the patient while examining and they were afraid of getting infected. Considering the literature studies on the BOS level of ES workers who are constantly facing pandemic and infectious diseases, BOS levels of ES workers are generally calculated to be higher. In our study, the BAI score of the HCWs who were providing care for the patient with suspected COVID-19 was significantly higher. While MBI-EE and DP scores were significantly higher, MBI-PA scores were also significantly lower. In a study reported recently from Hubei, average anxiety scores found to be significantly higher in HCWs who directly treated confirmed cases of COVID-19 than those who treated the patients that were not diagnosed with COVID-19 (32). In the light of this information, it can be said that HCWs who directly treat cases with confirmed COVID-19 during the COVID-19 outbreak are mentally at more risk. In our study, although 71.1 per cent of the respondents thought that there was sufficient personal protective equipment (PPE), the rate of those who believed that PPE did not protect itself sufficiently is 79.2 per cent. Zhu Z. et al. in a study they conducted on COVID-19, stated that 83.6 per cent of the participants were satisfied with the support provided by the hospital management and PPE status (30). Interestingly, HCWs, who thought that there was enough PPE in our study, are found to have a significantly higher the BAI score as well as the MBI-EE and DP scores. This may be because most of the participants (80.8 per cent) thought that the COVID-19 outbreak affected them spiritually.

Limitations:

In addition to determining the anxiety and burnout levels of ES and ICU workers, we thought that non-evaluation of depression levels and quality of life is the deficiency of our study. Before the study, the anxiety and burnout levels of the participants were not known that can also be considered as a limitation of the study. Also, it is a limitation that the evaluations are not supported by clinical examinations. In subsequent studies, clinical psychiatric analyses of the participants can be performed, and comparisons can be made with BAI and MBI scores.

Conclusions:

Mental health of HCWs also affects the quality of healthcare service they provide. It is obvious that it has a negative effect on the mental status of HCWs as long as the pandemic continues. For this reason, we think that it is important to identify and prevent

burnout and anxiety early in HCWs, identify effective methods for coping and increase their quality of life.

As a result, we found that ES workers' anxiety levels were similar to those of ICU and pandemic region, and that ES workers had higher MBI-EE and DP and lower MBI-PA scores than other HCWs. We recommend that in-service training and psychosocial support should be provided by hospital administrations to HCWs, especially those working in ES, ICU, and pandemic services of pandemic hospitals and pandemic fields.

Declarations:

Consent for publication:

The individual informed consent was taken in the online questionnaire form to publish the study.

Availability of data and material

All data presented in this study were retrieved from corresponding author Taner Sahin MD's archive.

Competing interests

The authors declare that they have no competing interest.

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Author's contributions:

TS, HA, MBG and MD reached the participants via SMS or e-mail and conducted a questionnaire. TS, HA, MBG and OOE evaluated the questionnaire results. HA and MBG made a statistical analysis of the study. OOE and TS evaluated the BAI and MBI forms of the participants. TS, MD and OOE conducted a literature review of the study. TS and OOE read and approved the final format of the manuscript. TS drafted the manuscript.

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Additional files

Additional file 1: Questionnaire Tool (PDF 253 kb)

Abbreviations:

CoV: Coronaviruses
MERS-CoV: Middle East Respiratory Syndrome Coronaviruses
SARS-CoV: Severe Acute Respiratory Syndrome
ES: Emergency Services
BOS: Burnout Syndrome
HCWs: Health Care workers
BAI: Beck Anxiety Inventory
MBI: Maslach Burnout Inventory
EE: Emotional Exhaustion
DP: Depersonalization
PA: Personal Accomplishment
PF: Pandemic Field
ICU: Intensive Care Unit
PS: Pandemic Service
FP: Family Practitioner
PH: Public Health
PTSD: Post Traumatic Stress Disorder
EMT: Emergency Medicine Technician
PPE: Personal Protective Equipment
WHO: World Health Organization

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