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PSYCHOLOGICAL DISTRESS AND FEAR OF COVID-19 IN PRIMARY HEALTHCARE WORKERS

Birinci basamak sağlık çalışanlarında psikolojik sıkıntı ve COVID-19 korkusu

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Abstract

Primary healthcare workers as the front-line fighters against the pandemic have high risk for mental problems. The aim of this study is to investigate the predictors of psychological distress and the fear of COVID-19 in the primary health care workers. This cross-sectional study was conducted among the primary health care workers in Antalya. The data was collected using a self-administered hardcopy questionnaire which included three parts as participants' sociodemographic characteristics, Brief Symptom Inventory (BSI) and Fear of COVID-19 Scale. 65.7% of the participants are female and 40.4% are nurses-midwives. 42.2% of the participants' departments were changed during the pandemic. Fear of COVID-19 Scale, GSI and PST scores of the females are significantly higher than males' (all comparisons, p<0.001). Participants who changed their departments during the pandemic have significantly higher scores in all scales than who did not (all comparisons, p <0.05). Fear of COVID-19, GSI and PSDI scores of those who live in the same house with people aged 65 and over are significantly higher than those who do not (all comparisons, p <0.05). There is a moderate and significant correlation (r=0.411 and p<0.001) between the BSI scores and the Fear of COVID-19 Scale. The front-line healthcare workers are at high risk of psychological distress and the fear of being infected during the COVID-19 pandemic. The positive correlation between fear of COVID-19 and frequency of psychiatric symptoms is concluded as that the remedial interventions in one can also have a positive effect on the other.
Keywords: Healthcare workers, fear of COVID-19, BSI, pandemic.

Özet

Birinci basamak sağlık çalışanları, pandemiyle ön safta mücadele eden kişiler olarak ruh sağlığı sorunları açısından risk altındadır. Bu çalışmanın amacı, birinci basamak sağlık çalışanlarında psikolojik stres ve COVID-19 korkusunun incelenmesidir. Kesitsel türdeki bu çalışma Antalya ilinde görev yapan birinci basamak sağlık çalışanları arasında yapılmıştır. Veriler, katılımcıların sosyodemografik özellikleri, Kısa Semptom Envanteri (KSE) ve COVID-19 Korku Ölçeği olmak üzere üç bölümden oluşan bir anket formuyla kullanılarak toplanmıştır. Katılımcıların %65,7'si kadın, %40,4'ü hemşire-ebedir. Pandemi sırasında katılımcıların %42,2'sinin görev yeri değişmiştir. Kadınların COVID-19 Korku Ölçeği, GSI ve PST puanları erkeklere göre yüksektir (tüm karşılaştırmalarda p<0,001). Pandemide görev yeri değişen katılımcılar, görev yeri değişmeyenlere göre tüm ölçeklerde daha yüksek puanlara sahiptir (tüm karşılaştırmalarda p <0,05). 65 yaş ve üstü kişilerle aynı evde yaşayanlarda COVID-19 korkusu, GSI ve PSDI puanları yaşamayanlara göre yüksektir (tüm karşılaştırmalarda p<0,05). KSE ile COVID-19 Korkusu Ölçeği puanları arasında orta düzeyde ve anlamlı bir ilişki vardır (r=0,411 ve p<0,001). Birinci basamakta görev yapan sağlık çalışanları, COVID-19 salgını sırasında hastalığa yakalanma korkusunun yanı sıra ruh sağlığı sorunları açısından risk altındadır. COVID-19 korkusu ile ruh sağlığı belirtilerinin görülme sıklığı arasındaki pozitif ilişki, yapılacak iyileştirici müdahalelerin her iki konuyu da olumlu etkileyebileceğini göstermektedir.
Anahtar kelimeler: Sağlık çalışanları, COVID-19 korkusu, kısa semptom envanteri, pandemi.

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Introduction

Changes in daily living conditions, lockdowns, curfews, fear of infection, and uncertainties due to insufficient information about the situation during pandemics may negatively influence the mental health of the people (1).

Primary health care workers as the front-line fighters against the pandemic are especially under substantial risk for mental problems. It is known that working under difficult conditions, time urgency, increased workload and the high risk of being infected are some of the factors that may have unwanted consequences on their psychosocial functionality and mental health (2). Studies on previous outbreaks such as Middle East Respiratory Syndrome (MERS), Severe Acute Respiratory Syndrome (SARS), Ebola and H1N1 have revealed that healthcare workers are at considerable risk in terms of anxiety, depression and acute stress disorder during these periods (3–6). In a study conducted in Canada, it has been shown that even 2 years after the SARS epidemic ended, the prevalence of posttraumatic stress disorder, psychological distress and burnout was higher in healthcare workers who had contacted with the cases during the epidemic period compared to those who did not (7). Similar findings were reported in studies so far on the COVID-19 period as well. In a study conducted among healthcare workers in China, an increase in mental disorders was reported in healthcare workers following the start of the epidemic (8). In a study conducted in our country during the pandemic it was found that anxiety and hopelessness are more common in healthcare workers than the others (9).

The fear due to the uncertainties during the pandemic seems to be a key factor. Fear is defined as an adaptive response like a defense mechanism to survive against stimuli in the environment (10). Such a response is normal for both the society and the healthcare workers because of unknowns about infectiveness, treatment, vaccination, and other issues during a new pandemic (11). However, excessive fear can lead to individual distress and societal consequences such as violence and chaos (12). Thus, it is necessary to manage fear to prevent panic and maintain social life during the pandemic.

Front-line healthcare workers of the public health organizations have the major responsibility for preventive measures and management of the cases in the community during a pandemic. They have to carry out the critical tasks such as case investigation, contact tracing, home visits, psychosocial support, and vaccination without any disruption. On the other hand, they also have to maintain the routine services that should be done within the public health system. Under these extraordinary conditions, some healthcare workers are exposed to new conditions such as changes in their departments, reorganization and lengthening of their shifts, reduced leave and rest, assignment of new tasks in addition to their routine and taking part in different units. All these changes may cause psychological distress. Moreover, many healthcare workers may get infected, become ill, loose their lives, carry the risk of infecting their loved ones or must stay away from home for reducing the risk of transmission. Thus, it is important to understand their worries and the predictors of their psychological distress level for protection and maintenance of their well-being, and this is necessary to continue the fight against the pandemic uninterruptedly. Primary health care services in Türkiye are mostly served by family health centers, district health directorate and community health centers. While family health centers provide individual level healthcare services, other institutions focus on populational level services. During the pandemic, home visit-based contact tracing was provided by the healthcare workers of directorates and community health centers.

The aim of this study is to investigate the predictors of psychological distress and the fear of COVID-19 among the front-line primary health care workers during the pandemic.

Material and Method

We conducted this cross-sectional study among the primary health care workers of 19 districts of Antalya/Türkiye (15 district health directorates and 4 community health centers) during September-November 2020. Antalya, which has 19 districts, is the 5th most crowded province of Türkiye with approximately 2.5 million residents. We did not select a sample and our aim was to collect data from the whole study population. We collected the data by using a self-administered hardcopy questionnaire. The questionnaire consisted of three parts. The first part included questions regarding the sociodemographic characteristics of the participants. The second part was the "Brief Symptom Inventory" (BSI) to assess psychiatric symptoms and psychological distress level and the third part consisted of "Fear of COVID-19 Scale". The independent variables of the study were the sociodemographic characteristics of the participants, and the dependent variables were the Brief Symptom Inventory and the Fear of COVID-19 Scale scores.

Brief Symptom Inventory (BSI): The BSI is the short version of the Symptom Check List 90-Revised (SCL-90-R), which measures the psychological distress and psychiatric symptom frequency within the last month. SCL-90-R is a self-report screening measure of general psychiatric symptomatology. It measures many dimensions such as somatization, obsessive-compulsive, depression, anxiety, phobic anxiety, hostility, interpersonal sensitivity, paranoid ideation, and psychoticism. BSI was created by selecting the highest loading 53 items of SCL-90 (13). It was adapted to Turkish and found to be valid and reliable (14). For each item in the scale, the answers given to the choices are scored between 0 and 4 (0=not at all, 4=extremely). The total points for each participant ranged between 0-212 and the higher scores indicated a higher frequency of symptoms. Three indices are calculated in terms of the answers given to the scale items.

Global Severity Index (GSI): GSI is the average score of all questions. It is calculated by dividing the total score obtained from the scale by the number of items. It ranges from 0 to 4. It is the most sensitive indicator that shows the distress level of the participants. It combines information about the number of symptoms and the intensity of distress.

Positive Symptom Total (PST): The number of items marked except ''not at all''. It shows the number of symptoms that participants experience.

Positive Symptom Distress Index (PSDI): It is calculated by dividing the total scores of the answers in the items marked except ''not at all'' by the PST. It shows the intensity of symptoms. It helps to assess if the respondent is prone to enhance or lessen their symptoms.

Fear of COVID-19 Scale: It was developed to measure the COVID-19 fear level in adults (15). The scale consists of seven questions in five-point Likert type scale (1 = Strongly disagree; 5 = Strongly agree), and the range of total points varies between 0 and 35. A higher score means higher fear of COVID-19. The validity and reliability of the Turkish version of the scale were shown (16).

The official permission for the study was obtained from the Ministry of Health COVID-19 Scientific Research Evaluation Commission and Antalya Provincial Health Directorate. The study was approved by the Non-Interventional Clinical Research Ethics Committee of Istanbul Medipol University (number: 676, date: 03/09/2020).

Statistical analysis

We excluded the data of the participants who left more than 50.0% of the scale items blank (n=1). SPSS 24.0 was used for statistical analysis. We summarized descriptive variables as median, interquartile range (IQR), frequency and percentage. Mann-Whitney U and Kruskal Wallis tests were used for group comparisons. Spearman correlation analysis was performed for estimation of associations among the numeric variables. Multiple linear regression analysis was used to understand the effects of independent variables on dependent ones. Statistical significance level was accepted as $p<0.05$.

Results

Participation rate in the study was 81.7% (n = 470). The mean age of participants was 40.81±8.17. Descriptive characteristics of the study participants are presented in Table 1.

Table 1: Descriptive characteristics of participants.

	n	%
Gender (n=469)		
Female	308	65.7
Male	161	34.3
Education (n=467)		
University	381	81.6
Secondary/high school	78	16.7
No school/primary school	8	1.7
Occupation (n=408)		
Nurse and midwife	165	40.4
Health officer	77	18.9
Physician	62	15.2
Technician	24	5.9
Secretary	14	3.4
Driver	14	3.4
Dentist	6	1.5
Other	46	11.3
Department (n=444)		
Public health services	235	52.9
Administrative services	106	23.9
Supporting services	93	20.9
Other	10	2.3
Change of department during pandemic (n=464)		
No department change	268	57.8
Case and contact tracing	158	34.1
Data processing	20	4.3
Other	18	3.8
Having a chronic disease (n=400)		
No	274	68.5
Yes	126	31.5
Living in the same house with an aged individual (n=449)		
No	403	89.8
Yes	46	10.2
Presence of a chronic disease among households		
No	312	68.7
Yes	142	31.3

65.7% of the study group are female, 81.6% graduates of university and 40.4% are nurses and midwives (Table 1). More than fifty percent (52.9%) of the participants are working at the public health services. Among all participants 42.2% state that they had department change and new job descriptions during pandemic. New tasks usually included case finding and contact tracing activities. Among the participants 31.5% have at least one chronic disease. The proportion of the participants living with a family member above 65 years of age is 10.2% and 31.3% have at least one individual with chronic diseases among the household.

BSI and the Fear of COVID-19 Scale scores of participants are presented in Table 2.

Table 2: BSI and the Fear of COVID-19 Scale scores of participants.

	Median (IQR)
BSI (n=460)	
GSI	0.58 (0.20-1.22)
PST	20.0 (8.0-34.0)
PSDI	1.66 (1.33-2.21)
The Fear of COVID-19 Scale (n=459)	21.0 (16.0-25.0)

BSI: Brief Symptom Inventory, GSI: Global Severity Index, PST: Positive Symptom Total, PSDI: Positive Symptom Distress Index

Participants' median Fear of COVID-19 Scale score is 21.0 (Table 2). The median values of the BSI indices are GSI=0.58; PST=20.0 and PSDI=1.66.

Distribution of BSI scores by descriptive characteristics of the participants are given in Table 3.

Table 3: Distribution of BSI scores by descriptive characteristics of the participants.

	GSI			PST			PSDI		
	n	Median (IQR)	p	n	Median (IQR)	p	n	Median (IQR)	p
Gender									
Female	302	0.7 (0.3-1.3)	**<0.001**	302	23.5 (10.0-36.0)	**<0.001**	288	1.7 (1.4-2.2)	0.126
Male	157	0.4 (0.1-0.9)		157	16.0 (4.0-29.0)		136	1.6 (1.3-2.1)	
Education									
University	375	0.6 (0.2-1.2)		375	20.0 (8.0-34.0)		352	1.6 (1.3-2.2)	
Secondary/high school	67	0.7 (0.2-1.2)	**0.022**	67	18.0 (7.0-35.0)	0.140	59	1.8 (1.6-2.5)	**<0.001**
No school/primary school	15	0.4 (0.004-0.5)		15	19.0 (1.0-22.0)		12	1.2 (1.0-1.5)	
Occupation									
Nurse and midwife	162	0.8 (0.3-1.4)		162	27.5 (11.8-37.0)		157	1.7 (1.3-2.3)	
Health officer	76	0.5 (0.2-1.1)		76	17.5 (6.0-33.0)		68	1.6 (1.4-2.4)	
Physician	60	0.8 (0.2-1.4)		60	24.5 (8.3-37.0)		55	1.7 (1.1-2.0)	
Technician	24	0.7 (0.3-1.3)	**0.001**	24	20.0 (9.3-32.8)	**<0.001**	23	1.7 (1.5-2.3)	0.798
Secretary	13	0.2 (0.1-0.5)		13	8.0 (1.5-16.5)		11	1.5 (1.3-2.0)	
Driver	14	0.5 (0.3-0.8)		14	17.0 (9.3-29.3)		12	1.6 (1.5-2.3)	
Dentist	6	0.3 (0.0-0.8)		6	8.5 (0.0-21.3)		4	1.9 (1.3-2.6)	
Other	46	0.5 (0.1-0.9)		46	16.0 (4.0-28.5)		45	1.6 (1.3-2.0)	
Department									
Public health services	228	0.7 (0.3-1.2)		228	22.0 (10.-35.0)		212	1.6 (1.3-2.3)	
Administrative services	93	0.5 (0.2-1.0)	0.057	93	18.0 (5.0-31.5)	**0.044**	81	1.7 (1.4-2.1)	0.949
Supporting services	104	0.5 (0.2-1.3)		104	16.0 (7.3-33.5)		99	1.6 (1.3-2.3)	
Other	10	1.1 (0.4-1.8)		10	29.5 (17.5-38.8)		10	1.9 (1.3-2.6)	
Change of department during pandemica									
No	264	0.5 (0.2-1.1)	**<0.001**	264	16.5 (6.0-31.0)	**<0.001**	239	1.6 (1.2-2.0)	**<0.001**
Yes	190	0.8 (0.4-1.4)		190	27.0 (12.0-37.0)		180	1.8 (1.4-2.5)	
New tasks during pandemic									
Case and contact tracing	154	0.8 (0.3-1.4)		154	28.0 (11.0-37.0)		143	1.8 (1.4-2.5)	
Data processing	16	1.0 (0.4-1.6)	0.632	16	30.0 (14.3-42.8)	0.779	16	2.2 (1.5-2.6)	0.371
Other	11	0.5 (0.5-1.2)		11	19.0 (15.0-36.0)		11	1.7 (1.5-1.9)	

Having a chronic disease									
No	268	0.5 (0.2-1.1)	**0.015**	268	19.0 (7.0-33.0)	**0.038**	248	1.6 (1.3-2.1)	0.066
Yes	123	0.7 (0.3-1.4)		123	23.0 (11.0-36.0)		115	1.8 (1.4-2.4)	
Living in the same house with an aged individual									
No	398	0.6 (0.2-1.1)	**0.004**	398	20.0 (8.0-33.0)	0.883	366	1.7 (1.3-2.2)	**<0.001**
Yes	45	0.9 (0.5-1.6)		45	31.0 (16.5-44.0)		44	1.6 (1.2-2.5)	
Presence of a chronic disease among households									
No	308	0.6 (0.2-1.2)	0.215	308	20.0 (7.0-33.0)	0.119	283	1.7 (1.3-2.2)	0.975
Yes	140	0.7 (0.3-1.3)		140	23.0 (10.3-36.0)		133	1.6 (1.4-2.2)	

BSI: Brief Symptom Inventory, GSI: Global Severity Index, PST: Positive Symptom Total, PSDI: Positive Symptom Distress Index, IQR: Interquartile Range

GSI and PST scores of the females are significantly higher than males' (for both comparisons, p<0.001). GSI and PSDI scores of the "No school/primary school" group are significantly lower than the other education level groups (p=0.022 and p<0.001, respectively). Secretaries and dentists have the lowest GSI and PST scores among the occupation groups (p=0.001 and p<0.001, respectively). Participants who changed their departments during the pandemic have significantly higher scores than who did not (for all index score comparisons, p <0.001). GSI and PST scores of those who have chronic health problems are higher than those who do not have (p=0.015 and p=0.038, respectively). GSI and PSDI scores of those who live in the same house with people aged 65 and over are significantly higher than those who do not (p=0.004 and p<0.001, respectively).

Distribution of The Fear of COVID-19 Scale scores by descriptive characteristics of the participants is presented in Table 4.

Table 4: Distribution of The Fear of COVID-19 Scale scores by descriptive characteristics of the participants.

	The Fear of COVID-19 Scale Median (IQR)	**p**
Gender		
Female (n=304)	22.0 (17.0-26.0)	**<0.001**
Male (n=154)	19.5 (14.0-24.0)	
Education		
University (n=376)	21.0 (16.0-25.0)	
Secondary/high school (n=67)	21.0 (17.0-26.0)	0.307
No school/primary school (n=15)	20.0 (7.0-23.0)	
Occupation		
Nurse and midwife (n=163)	23.0 (18.0-27.0)	
Health officer (n=74)	21.0 (15.5-26.3)	
Physician (n=60)	20.0 (15.0-23.0)	
Technician (n=24)	22.0 (17.3-25.0)	**0.005**
Secretary (n=12)	21.0 (11.8-24.0)	
Driver (n=14)	17.0 (13.0-22.0)	
Dentist (n=6)	19.0 (15.0-21.3)	
Other (n=45)	20.0 (16.5-23.5)	
Department		
Public health services (n= 226)	22.0 (17.0-26.0)	
Administrative services (n=106)	20.0 (16.0-26.0)	0.159
Supporting services (n=91)	21.0 (17.0-24.0)	
Other(n=10)	21.0 (20.0-27.3)	
Change of department during pandemic		
No (n=263)	20.0 (16.0-25.0)	**0.005**
Yes (n=190)	22.0 (18.0-26.0)	

New tasks during pandemic		
Case and contact tracing (n=155)	22.0 (17.0-25.0)	
Data processing (n=17)	24.0 (15.5-34.0)	0.194
Other (n=11)	22.0 (18.0-29.0)	
Having a chronic disease		
No (n=266)	20.0 (16.0-25.0)	**0.015**
Yes (n=125)	23.0 (17.5-28.5)	
Living in the same house with an aged individual		
No (n=401)	21.0 (16.0-25.0)	**0.004**
Yes (n=46)	23.0 (18.0-29.0)	
Presence of a chronic disease among households		
No (n=310)	21.0 (16.0-25.0)	0.215
Yes (n=142)	22.0 (17.8-26.3)	

IQR: Interquartile Range

Females have significantly higher Fear of COVID-19 Scale scores than males (p<0.001). In terms of the occupation groups, “nurse-midwife” has higher scores, ‘’driver’’ has lower scores than the other groups (p=0.005). The scores of those who have department change during the pandemic are significantly higher than those who have not (p=0.005). Scale scores of the participants who have chronic health problems are higher than who do not (p=0.004) and participants who live in the same house with an aged people (65 and over) have significantly higher scores than the others (p<0.001).

The association between the scales is analyzed by Spearman’s correlation analysis. There is a moderate and significant correlation (r=0.411 and p<0.001) between the BSI scores and the Fear of COVID-19 Scale.

Multiple linear regression analysis findings are given in Table 5. “Change of department” and “living in the same house with an aged individual” are the significant predictors of BSI, while “gender”, “presence of a chronic disease” and “living in the same house with an aged individual” are significant predictors of the Fear of COVID-19 Scale scores.

Table 5: Multiple linear regression findings of both BSI and The Fear of COVID-19 Scale.

	BSI			
	B	**SE**	**β**	**p**
Constant	152.194	27.711		**<0.001**
Gender				
1: Female 2: Male	-9.140	5.236	-0.099	0.082
Educational level				
1: No school/primary school graduate 2: Secondary/high school graduate 3: University	-3.741	3.883	-0.054	0.336
Occupation				
1: Nurse and midwife 2: Health officer 3: Physician 4: Technician 5: Driver 6: Secretary 7: Dentist 8: Other	-2.453	1.135	-0.122	0.061
Change of department				
1: Yes 2: No	-14.327	4.683	-0.168	**0.002**
Having a chronic disease				
1: Yes 2: No	4.124	5.482	0.045	0.452
Presence of a chronic disease among households				
1: Yes 2: No	-9.936	5.070	-0.109	0.051
Living in the same house with an aged individual				
1: Yes 2: No	-20.070	8.003	-0.146	**0.013**

The Fear of COVID-19 Scale				
	B	**SE**	**β**	**p**
Constant	35.629	4.480		**<0.001**
Gender				
1: Female 2: Male	-2.366	0.841	-0.160	**0.005**
Educational level				
1: No school/primary school graduate 2: Secondary/high school graduate 3: University	-0.295	0.627	-0.026	0.638
Occupation				
1: Nurse and midwife 2: Health officer 3: Physician 4: Technician 5: Driver 6: Secretary 7: Dentist 8: Other	-0.312	0.183	-0.097	0.089
Change of department				
1: Yes 2: No	-0.894	0.755	-0.065	0.237
Having a chronic disease				
1: Yes 2: No	-0.316	0.883	-0.022	0.721
Presence of a chronic disease among households				
1: Yes 2: No	-1.721	0.816	-0.118	**0.036**
Living in the same house with an aged individual				
1: Yes 2: No	-2.459	1.295	-0.097	**0.016**

BSI: Brief Symptom Inventory, B: The unstandardized beta, SE: the standard error for the unstandardized beta, β: the standardized beta, p: the probability value.

Discussion

In this study with a high participation rate (81.7%), we investigated the presence of psychiatric symptoms and fear of COVID-19 in a group of primary health care workers who served at the front-line tasks during the COVID-19 pandemic. It is known that healthcare workers have high risk of COVID-19 morbidity (17,18). Mental health problems are also seen more frequently due to their workload, intense working conditions and uncertainties about the pandemic (19). BSI scores of the participants in our study were higher than another study which was carried out among healthcare workers before the COVID-19 pandemic in our country (20). In a study conducted among healthcare professionals in China by Liu et al. during first months of the pandemic, it was reported that the scores in 3 global indices were lower than in our study and the scores decreased significantly in the process of time (21).

In our study both the psychiatric symptom frequency indices and the fear of COVID-19 scores were significantly higher in females than males. It is similar to the findings of studies which reported that some psychological problems are more common among women than men during the pandemic (12,22). Gender inequalities in private and working life, along with biological and behavioral factors, are listed as underlying reasons for the higher prevalence of mental health problems among females than males (23,24). However, our finding may be confounded by the occupational status of females rather than their gender may be the cause of high morbidity. Midwifery and nursing professions are usually preferred by females in Türkiye, and they have key roles as front-line fighters during the pandemic. Some studies indicate that mental health status of nurses is more adversely affected than other healthcare workers during the pandemic (9,25). In Liu et al.'s study, it was determined that the GSI, PST and PSDI indices were higher in the nursing staff than in the doctors, and they were still higher in the second evaluation after 6 weeks (21). Moreover, gender and occupation were among significant factors on the total score. However, in our study, bivariate analysis by occupations indicated that dentists and secretaries have

significantly lower GSI and PST scores and the difference between nurse-midwives and other professions is not significant. Additionally, gender and occupation are not among the significant predictors of BSI scores according to the results of multivariate analysis (Table 5). Bivariate analysis indicated that BSI scores are significantly lower in the "no school/primary school graduate" group. However, this finding is also not found to be a significant predictor in multivariate analysis.

Studies indicate that mental health problems of the healthcare workers vary according to the departments served during the pandemic (22,26). For instance, anxiety is more common among the healthcare workers who contact COVID-19 cases than those who do not (25). In many countries, various changes and reorganizations were implemented for fighting with COVID-19 outbreak without interrupting the provision of routine healthcare services during the pandemic. The vast majority of human resources were shifted to departments related to the pandemic, and their working conditions and job descriptions were revised (27,28). In Türkiye, new task groups have been put into service for contact tracing, case finding and data processing activities. Health workers' leave and resignation rights have even been restricted. In addition, with the decrease in mobility in daily life due to both official restrictions and stay at home preferences, visits to health institutions for non-emergent conditions had also declined. Significant changes in daily routines and new responsibilities have influences on mental status of the workers. According to Liu et al.' study occupation and work position were among significant factors on the total score (21). In our study, both psychiatric symptoms and the fear of COVID-19 are more frequent in those whose departments were changed during the pandemic. Among the participants of our study, distress and fear were more frequent in those whose duties changed during the pandemic. It should be emphasized that almost half of the employees started to take a role in the pandemic instead of their primary duties. No significant difference is found among the new task groups regarding the nature of new job descriptions, while change of department is a significant predictor of BSI according to the multivariate analysis results.

Multiple regression analysis of our data indicated that living in a house with an aged individual is the most significant predictor for both the BSI and fear of COVID-19 scores. Gender and having chronic disease are other significant predictors of COVID-19 fear (Table 5). Higher levels of psychological distress and COVID-19 fear among the healthcare workers who live in a family with a member older than 65 years of age is reasonable since geriatric age groups have higher morbidity and mortality rates than the other age groups. Since the beginning of COVID-19 pandemic several studies have reported that the most severely affected groups during the pandemic are the population aged 65 and over, and those with any chronic health problems (29). In both groups, the disease progress was more severe, and the case-fatality rate was higher than other groups.

The concerns of healthcare workers about infecting themselves or their family members and the presence of high-risk group individuals in the same house are shown to be factors that increase their anxiety (30). In our study, having a chronic disease seems to be a significant predictor of the fear of COVID-19 but not for psychiatric symptoms. Some studies report that acute stress, depression, and anxiety were higher in healthcare workers with chronic diseases during the pandemic (30,31). Although bivariate analysis indicated significantly higher GSI and PST scores for the participants who have a chronic disease, multivariate analysis results did not find this variable to be a significant predictor of BSI.

The moderate positive correlation between psychiatric symptoms and the fear of COVID-19 is another finding of our study, and it can be concluded that the remedial interventions in one can also have a positive effect on the other. In particular, the fear of COVID-19 may also bring about or multiply the severity of various mental health problems. In a study, it has been shown that fear and negative perceptions about a pandemic can increase anxiety in healthcare workers (32).

Healthcare workers have a priority to be protected in emergencies such as epidemics and disasters, due to the important

tasks they undertake. Not only in the COVID-19 pandemic, but also in the MERS, SARS, Ebola and H1N1 outbreaks that occurred in the last 20 years, it has been shown that healthcare workers had a higher risk for mental health problems than the population (3-7). The findings of our study support that healthcare workers are still at risk for outbreaks in future. Preventive interventions to protect them during an outbreak should be taken before it occurs.

Our study has some limitations. Because it is conducted as a cross-sectional study in a single province it is not possible to generalize the results. The second limitation is related to data collection methodology. Data was collected through self-administered questionnaires and so findings did not base on clinical examinations or observations. Since our study was conducted during the pandemic, the pre-pandemic period could not be evaluated. Finally, the structure of the scales used in the study might also have affected the results.

Conclusions

Front-line healthcare workers have a substantial risk of psychological distress and fear of being infected during COVID-19 pandemic. Especially change of their department, assignment of new tasks due to extraordinary conditions of the pandemic can cause increases in their psychiatric symptoms. Females and healthcare workers who have a chronic disease suffer high level of COVID-19 fear. Presence of an individual over 65 years old among the household is the most significant predictor of both the psychiatric symptom frequency and the fear of COVID-19. A positive correlation between fear of COVID-19 and frequency of psychiatric symptoms is concluded as that the remedial interventions in one can also have a positive effect on the other. Interventions to protect healthcare workers should be implemented to avoid similar problems in future outbreaks.

References

1. Kaya B. Effects of pandemic on mental health. Turkish J Clin Psychiatry. 2020;23(2):123–4.
2. Ataç Ö, Sezerol MA, Taşçı Y, Hayran O. Anxiety and Insomnia Among Healthcare Workers During the Covid-19 Pandemic. Türkiye Halk Sağlığı Derg. 2020;18:47–57.
3. Wu KK, Chan SK, Ma TM. Posttraumatic stress after SARS. Emerg Infect Dis. 2005;11(8):1297–300.
4. Goulia P, Mantas C, Dimitroula D, Mantis D, Hyphantis T. General hospital staff worries, perceived sufficiency of information and associated psychological distress during the A/H1N1 influenza pandemic. BMC Infect Dis. 2010;10(1):322.
5. Li L, Wan C, Ding R, Liu Y, Chen J, Wu Z, et al. Mental distress among Liberian medical staff working at the China Ebola Treatment Unit: A cross sectional study. Health Qual Life Outcomes. 2015;13(1):1–6.
6. Temsah MH, Al-Sohime F, Alamro N, Al-Eyadhy A, Al-Hasan K, Jamal A, et al. The psychological impact of COVID-19 pandemic on health care workers in a MERS-CoV endemic country. J Infect Public Health [Internet]. 2020;13(6):877–82. Available from: https://doi.org/10.1016/j.jiph.2020.05.021
7. Maunder RG, Lancee WJ, Balderson KE, Bennett JP, Borgundvaag B, Evans S, et al. Long-term psychological and occupational effects of providing hospital healthcare during SARS outbreak. Emerg Infect Dis. 2006;12(12):1924–32.
8. Kang L, Ma S, Chen M, Yang J, Wang Y, Li R, et al. Impact on mental health and perceptions of psychological care among medical and nursing staff in Wuhan during the 2019 novel coronavirus disease outbreak: A cross-sectional study. Brain Behav Immun. 2020;87:11–7.
9. Hacimusalar Y, Kahve Civan A, Yasar AB, Aydin MS. Anxiety and hopelessness levels in COVID-19 pandemic: A comparative study of healthcare professionals and other community sample in Turkey. J Psychiatr Res. 2020;129(January):181–8.
10. Steimer T. The biology of fear- and anxiety-related behaviors. Dialogues Clin Neurosci. 2002;4(3):231–49.
11. Mosheva M, Hertz-Palmor N, Dorman Ilan S, Matalon N, Pessach IM, Afek A, et al. Anxiety, pandemic-related stress and resilience among physicians during the COVID-19 pandemic. Depress Anxiety. 2020;37(10):965–71.
12. García-Reyna B, Castillo-García GD, Barbosa - Camacho FJ, Cervantes - Cardona GA, Cervantes-Pérez E, Torres-Mendoza BM, et al. Fear of COVID-19 Scale for Hospital Staff in Regional Hospitals in Mexico: a Brief Report. Int J Ment Health Addict. 2020;
13. Derogatis L. The Brief Symptom Inventory (BSI): Administration, Scoring and Procedures Manual. 4th ed. Minneapolis: National Computer Systems; 1993.
14. Hisli Şahin N, Durak A. Psychometric Properties of Brief Symptom Inventory-BSI in Turkish people. Turkish J Psychol. 1994;9(31):44–56.
15. Ahorsu DK, Lin CY, Imani V, Saffari M, Griffiths MD, Pakpour AH. The Fear of COVID-19 Scale: Development and Initial Validation. Int J Ment Health Addict. 2020;
16. Ladikli N, Bahadır E, Yumuşak FN, Akkuzu H, Karaman G, Türkkan Z. The Reliability and Validity of Turkish Version of Coronavirus Anxiety Scale. Int J Soc Sci. 2020;3(2):71–80.
17. Ataç Ö, Uçar A, Taşdemir M. COVID-19; What is it; Epidemiology, Source of Infection and Transmission Routes, What are the Risk Groups? In: Yiğit Ö, editor. ENT and COVID-19. 1st ed. Ankara: Turkish Clinics; 2020. p. 1–8.

18. The International Council of Nurses. ICN calls for data on healthcare worker infection rates and deaths [Internet]. ICN. 2020 [cited 2020 Jul 8]. Available from: https://www.icn.ch/news/icn-calls-data-healthcare-worker-infection-rates-and-deaths
19. Simione L, Gnagnarella C. Differences Between Health Workers and General Population in Risk Perception, Behaviors, and Psychological Distress Related to COVID-19 Spread in Italy. Front Psychol. 2020;11(September).
20. Cevizci O, Müezzin EE. Investigation of the Psychological Symptoms and Psychological Resistance in Health Professionals. Cyprus Turkish J Psychiatry Psychol. 2019;1(3):166–72.
21. Liu Z, Wu J, Shi X, Ma Y, Ma X, Teng Z, et al. Mental health status of healthcare workers in China for COVID-19 epidemic. Ann Glob Heal. 2020;86(1):1–8.
22. Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N, et al. Factors Associated With Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019. JAMA Netw open. 2020;3(3):e203976.
23. Olff M. Sex and gender differences in posttraumatic stress disorder: an update. Eur J Psychotraumatol. 2017;8(sup4: 1351204).
24. Cabezas-Rodríguez A, Utzet M, Bacigalupe A. Which are the intermediate determinants of gender inequalities in mental health?: A scoping review. Int J Soc Psychiatry. 2021;67(8):1005–25.
25. Zhang WR, Wang K, Yin L, Zhao WF, Xue Q, Peng M, et al. Mental Health and Psychosocial Problems of Medical Health Workers during the COVID-19 Epidemic in China. Psychother Psychosom. 2020;89(45):242–50.
26. Bohlken J, Schömig F, Lemke MR, Pumberger M, Riedel-Heller SG. COVID-19 Pandemic: Stress Experience of Healthcare Workers - A Short Current Review. Psychiatr Prax [Internet]. 2020;47:190–7. Available from: https://dx.doi.org/10.1055/a-1159-5551
27. Duggal M, Dahiya N, Kankaria A, Chaudhary M, Bachani D. Restructuring the Healthcare System to Protect Healthcare Personnel Amidst the COVID-19 Pandemic. Front Public Heal. 2020;8(December):6–9.
28. De Filippis G, Cavazzana L, Gimigliano A, Piacenza M, Vimercati S. Covid-19 pandemic: A frontline hospital reorganization to cope with therapeutic and diagnostic emergency. Pharmacol Res. 2020;161(January).
29. Jordan RE, Adab P, Cheng KK. Covid-19: Risk factors for severe disease and death. BMJ [Internet]. 2020;368 (March):1–2. Available from: http://dx.doi.org/doi:10.1136/bmj.m1198
30. Zhu Z, Xu S, Wang H, Liu Z, Wu J, Li G, et al. COVID-19 in Wuhan: Sociodemographic characteristics and hospital support measures associated with the immediate psychological impact on healthcare workers. EClinicalMedicine. 2020;24.
31. Tan BYQ, Chew NWS, Lee GKH, Jing M, Goh Y, Yeo LLL, et al. Psychological Impact of the COVID-19 Pandemic on Health Care Workers in Singapore. Ann Intern Med. 2020 Aug;173(4):317–20.
32. Monterrosa-Castro A, Redondo-Mendoza V, Mercado-Lara M. Psychosocial factors associated with symptoms of generalized anxiety disorder in general practitioners during the COVID-19 pandemic. J Investig Med. 2020;68(7):1228–34.