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Post-traumatic Stress Symptoms in Health Care Professionals During the COVID-19 Pandemic

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ABSTRACT

Introduction: The severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) associated pneumonia that emerged in Wuhan, China in December 2019 and was later declared by the World Health Organization to be a pandemic has called coronavirus disease-2019 (COVID-19). Our study aims to determine the anxiety levels, post-traumatic stress disorder (PTSD) symptoms levels and psychiatric symptoms of healthcare workers working at pandemic hospital and effects of these symptoms on psychological adjustment to healthcare professionals during the COVID-19 pandemic in Turkey.

Methods: This study was cross-sectional survey study and conducted between March 2020-June 2020 with 973 consenting participants working at the pandemic hospital. For the study, we used an online questionnaire, which consisted of three parts: an online-informed consent, basic sociodemographic information and a set of online questions. The data were collected by the researchers. All procedures were approved by our hospital's Ethics Committee. Traumatic Stress Symptom Scale (TSSS) was used for the study.

Results: Nine hundred and seventy-three persons participated in the study. Among the three groups, nurses also had the highest fear of dying during the COVID-19 pandemic ($p<0.001$); the highest feelings of hopelessness about the future during the COVID-19 pandemic ($p<0.001$); the highest increase in level of anxiety ($p<0.001$), and the highest experience of recent sleep disturbances ($p<0.001$). Women had a statistically significantly higher mean TSSS score and mean TSSS score of participants with doctors or medical specialization was lower than participants with other levels of education ($p<0.001$).

Conclusion: Although the rate of PTSD was significantly higher in nurses in our study, PTSD was also seen in the other two groups. Indeed, it was much higher in people working in environments at high risk for COVID-19 than in the other groups. This may be the consequence of nurses' having greater exposure to COVID19-infected patients. This situation may be related to long working hours, inadequate rest and burnout. We recommend that healthcare workers work in the shift.

Keywords: COVID-19, post-traumatic stress disorder, healthcare workers

Introduction

The severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) associated pneumonia that emerged in Wuhan, China in December 2019 and was later declared by the World Health Organization (WHO) to be a pandemic has been called coronavirus disease-2019 (COVID-19) (1). Respiratory droplets are the main ways in which COVID-19 spreads. This can make healthcare workers a high-risk population at the beginning of the pandemic. Healthcare personnel are forced to perform their jobs under challenging conditions. Moreover, COVID-19 spreads, they are under enormous psychological pressure. Not only do they generally experience traumatic events, they frequently witness patient deaths.

Previous studies have shown that post-traumatic stress disorder (PTSD) develops in healthcare personnel in such epidemics as SARS and middle east respiratory syndrome (MERS) (2). Reasons for such trauma are to living in isolation, work in high-risk environments and to being in contact for treatment of infected patients (3). Healthcare workers encountering traumatic events begin seeing their environment negatively and to lose a sense of security. Consequently, they may become increasingly isolated as they try avoiding situations that remind them of the traumatic events they have experienced (4). Given that the psychosocial effects of the pandemic on people are so immense, healthcare workers will come up against similar difficulties even more intensely. A study conducted in Italy in the COVID-19 situation there showed that physicians and nurses had greater levels of stress and anxiety than the non-health care worker population (5). Ourstudy aims to determine PTSD symptoms levels and psychiatric symptoms of healthcare workers working at pandemic hospital during the COVID-19 pandemic.

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Method

This study was conducted between March 2020-June 2020 with 973 consenting participants working at the pandemic hospital. All participants studied in the pandemic services. For study we used an online questionnaire, which consisted of three parts: an online-informed consent, basic sociodemographic information and a set of online questions. This questionnaire was sent to all hospital workers (total number of 2703) with the permission of the head physician and the participants were doctors, nurses and the other healthcare workers. A total of 973 (36.0%) people completed all survey. These data were collected by the researchers. All procedures were approved by University of Health Sciences Turkey, İstanbul Training and Research Hospital's Ethics Committee (approval number: 2276, date: 08.05.2020). Approval was also obtained from Scientific Committee.

The sociodemographic data form was created considering the participants' position, sex, age, educational level, marital status, number of children, psychiatric illness status, use of psychiatric medications, alcohol-tobacco use, occupational status and working conditions at the hospital.

The second part of the questionnaire asked the participants to assess the COVID-19 risk in their workplace. It also asked if an elderly person lived in their home, as well as if they had received a diagnosis of COVID-19. The participants were asked to indicate the degree to which they had been psychologically affected by the pandemic and the extent to which they were afraid of transmitting COVID to other people and relatives. They were also asked how long they thought the current situation will last. Through these questions, healthcare workers' behavior vis-à-vis the COVID-19 situation and the differences between them in terms of stress and anxiety was analyzed. To uncover the worries and fears of participants about COVID-19, the following statement was used: "I am very concerned about COVID-19" (COVID-19 anxiety).

Traumatic Stress Symptom scale: This self-report scale was developed by Başoglu et al. (6) to determine the possibility of PTSD and depression accompanying PTSD over the course of the previous month. Ton this 23-point scale, there are 17 traumatic stress symptom-related statements and six depression symptom-related statements (6).

Statistical Analysis

Statistical analyses were performed using SPSS version 17.0. To determine the extent to which the variables were normally distributed, histogram graphs and the Kolmogorov-Smirnov test were used. Descriptive analyses were performed using means, median and standard deviations. Categorical variables were compared using Pearson chi-square test. When assessing non-parametric (non-normally distributed) variables, the Mann-Whitney U test was used for 2 categories and the Kruskal-Wallis test for more than 2 categories. When analyzing ordinal data, the Spearman correlation test was used. Results containing a value less than 0.05 were considered statistically meaningful.

Results

A total of 973 persons 352 men and 621 women participated in the study. The sociodemographic characteristics of the participants who completed the questionnaire are shown in Table 1.

Table 2 contains the responses of nurses, doctors and other personnel to items that make up the Traumatic Stress Symptom scale (TSSS). The TSSS scores of nurses were significantly higher than those of doctors and other participants. Based on these results, of the three groups, it can be said that nurses constitute the group most traumatized by the perception of severity of the COVID-19 situation. Infact, the fear of doctors about transmitting COVID-19 to people at home was less than this fear in the other two groups ($p<0.001$). Among the three groups, nurses also had the highest fear of dying during the COVID-19 pandemic ($p<0.001$); the highest feelings of hopelessness about the future during the COVID-19 pandemic ($p<0.001$); the highest increase in the level of anxiety ($p<0.001$), and the highest experience of recent sleep disturbances ($p<0.001$). Women had a statistically significantly higher mean TSSS score and mean TSSS score of participants with doctors or medical specialization was lower than participants with other levels of education ($p<0.001$) (Table 3). Mean TSSS score of those working in high COVID-19 risk environments was higher than of those working in moderate COVID-19 risk environments ($p<0.001$).

The finding of low COVID positivity (8.4%) among the healthcare workers participating in our study may be attributable to the quarantine measures that were in place at the time. However, 785 (80.7%) of them had had a relative or colleague test positive for COVID-19. Fear of transmitting COVID-19 to people at home, fear of dying, feelings of hopelessness about the future, increasing anxiety levels, and experiencing recent

Table 1. Sociodemographic variables

		n	%
Sex	Male	352	36.2%
	Female	621	63.8%
Education	Primary school	11	1.1%
	High school	93	9.6%
	Two-year college	151	15.5%
	Four-year college	410	42.1%
	PhD or medical specialization	308	31.7%
Marital status	Single	478	49.1%
	Married	495	50.9%
Position	Doctor	343	35.3%
	Nurse	338	34.7%
	Other	292	30.0%
Do you have children?	Yes	409	42.0%
	No	564	57.1%
Is there an elderly person living at home?	Yes	155	15.9%
	No	818	84.1%
Do you smoke?	Yes	252	25.9%
	No	721	74.1%
Do you drink alcohol?	Yes	158	16.2%
	No	815	83.8%
Do you have a history of psychiatric illness or treatment?	Yes	71	7.3%
	No	902	92.7%
Age		36±8.3	-

Table 2. Differences between the items of Traumatic Symptom Scales among doctors, nurses, and others

	Doctor		Nurse		Other		p
	n	%	n	%	n	%	
When you encounter situations that remind you of events, do you get physical reactions such as trembling and heart palpitations?	60	17.5	101	29.9	59	20.2	**<0.001**
Have you avoided or unwanted to go to places reminiscent of the COVID-19 pandemic?	170	49.6	232	68.6	201	68.8	**<0.001**
Do you have unpleasant dreams about the COVID-19 pandemic?	59	17.2	92	27.2	43	14.7	**<0.001**
Do you ever have unwanted thoughts that aren't related to the COVID-19 pandemic?	116	33.8	157	46.4	94	32.2	**<0.001**
Do you feel distant or cut off from the people around you?	206	60.1	244	72.2	204	69.9	**0.002**
Do you feel every morning as if the COVID-19 pandemic is happening over again?	91	26.5	167	49.4	121	41.4	**<0.001**
Do you have difficulty experiencing emotions like love or happiness?	146	42.6	182	53.9	132	45.2	**0.009**
Do you feel at the edge with what's going on around you even though there is no clear reason?	177	51.6	220	65.1	172	58.1	**0.002**
Have you experienced difficulty in focusing or concentrating on your work?	178	51.1	190	56.2	129	44.2	**0.010**
Have you got extremely impatient or angry during this period?	172	50.2	230	68.1	165	56.5	**<0.001**
Do you feel distressed when you encounter things that remind you of the COVID-19 pandemic?	167	48.7	228	67.5	159	54.5	**<0.001**
Do you get unwanted disturbing thoughts about the COVID-19 pandemic?	116	33.8	157	46.5	94	32.4	**<0.001**
Have you tried to not think about the COVID-19 when it's entered your mind?	173	50.2	190	56.2	130	44.2	**0.010**

Mann-Whitney U test- Spearman correlation test, COVID-19: Coronavirus disease-2019

sleep disturbances were all higher in women than in men (p<0.001). More men predicted that the COVID-19 pandemic would last 6 months, whereas more women said that it would last one or more years (Table 4). The participants who were working in a department at high risk of COVID-19 was 54.3%. More persons working in such departments reported feelings of hopelessness about the future and increased anxiety during the pandemic than those working in departments at moderate risk of COVID-19 (p<0.001). Likewise, more reported having recently experienced sleep disturbances than those working in environments at low and moderate risk of COVID-19 (p<0.001). Previous psychiatric treatment history was reported less among persons working in departments at moderate risk of COVID-19 (p<0.001). The number of people working in environments at high risk of COVID-19 stating that it would last more than one year was higher than people working in other risk environments (p<0.001).

Discussion

Our aim in this study was to analyze the post-traumatic stress symptoms of healthcare workers. It is crucial that healthcare institutions provide psychosocial support and intervention to their healthcare employees. Concern about infection, fatigue, burnout at the workplace and PTSD may be seen in healthcare workers (7). A study reported that PTSD was seen in 25% of healthcare workers during the SARS and Ebola epidemics (8). Our study found that the mean PTSD score in women was significantly higher than in men. Similarly, the mean TSSS score of nurses was higher than that of doctors and other healthcare workers. The reason for this may be that nurses constitute a group of healthcare workers having the greatest contact with patients. Nurses report a higher degree of physical reactions such as heart palpitations, trembling and sweating-when confronting environments reminding them of previous events than doctors and other healthcare workers do (p<0.001) (29.9%). Additionally, nurses report a higher degree (68.6%) of avoidance behavior than do doctors and other healthcare workers.

The loss of a sense of security is closely related to PTSD. An earlier study reported that one of the greatest fears healthcare workers had during the SARS and MERS epidemics was that they would transmit infection to family and friends (4). The rapidity and ease at which COVID-19 spreads have also been a major stressor negatively affecting the mental health of healthcare workers. This stressful situation has been reported to be a critical risk factor for PTSD in healthcare workers (9). In our study, the fear of transmitting COVID-19 to others at home was less in doctors (83.7%) than in nurses (89.1%) and the other groups (91.4%). However, the difference between the groups was not statistically significant (p=0.008). The fear of transmitting the disease was quite high in all three groups. The fear of death, hopelessness about the future, an increase in anxiety levels, and recently having experienced sleep disturbances during the COVID-19 pandemic was higher in nurses than in doctors and the other groups. The virus is a cause of illness and death and involves uncertainty, which may produce unrealistic fear and panic (10). The greatest psychological impact of the COVID-19 pandemic on the mental health of society can be seen in the rise of extreme stress or anxiety in individuals (WHO, 2020). Sleep disturbances may explain the high rate of PTSD in nurses. In addition to having severe negative impacts on physical health, COVID-19 may cause mental health problems such as stress, insomnia, high anxiety and chronic depression (11).

While there is no monitoring system systematically tracking COVID-19-related deaths of healthcare workers in the world, according to statistics compiled by Amnesty International, more than 3,000 healthcare workers

Table 3. PTSD scores between groups

		Median ± SD	p
Sex	Male	16.8±13.8	**<0.001**
	Female	23.1±12.1	
Education	Primary school	25.1±18.4	**<0.001**
	High school	21.2±13.1	
	Two-year college	23.5±13.3	
	University	21.7±13.3	
	PhD or medical specialization	18.1±13.8	
Marital status	Single	21.1±13.7	0.455
	Married	20.6±13.5	
Position held	Doctor	17.1±13.6	**<0.001**
	Nurse	24.2±13.4	
	Other	20.4±12.1	
Do you have children?	Yes	20.6±13.7	0.551
	No	20.1±13.6	
Is there an elderly person living at home?	Yes	22.1±13.5	**0.035**
	No	20.4±13.6	
Do you smoke?	Yes	22.5±14.1	**0.025**
	No	20.2±13.4	
Do you drink alcohol?	Yes	22.1±14.1	**0.031**
	No	20.4±13.5	
Do you have a history of psychiatric illness or treatment?	Yes	26.1±14.1	**0.001**
	No	20.4±13.5	
Do you work at a center where COVID-19 patients are being actively treated?	Yes	21.1±13.7	0.194
	No	19.3±12.8	
Please assess the risk of being exposed to COVID-19 risk in the department where you work	Low	20.3±14.8	**0.001**
	Moderate	18.9±12.5	
	High	22.3±14.1	
To what extent have you been psychologically affected by this pandemic?	Not at all	6.1±9.3	**<0.001**
	Somewhat	16.7±11.9	
	Excessively	29.8±11.2	
Before the COVID-19 pandemic, to what extent were you anxious?	Not at all	18.3±13.2	**<0.001**
	Somewhat	21.2±13.3	
	Excessively	29.6±13.3	
Have you received a COVID-19 diagnosis?	Yes	23.4±14.8	0.078
	No	20.6±13.5	
Has a relative or a colleague been diagnosed with COVID-19?	Yes	21.7±13.5	**<0.001**
	No	17.4±13.7	

Mann-Whitney U test-Spearman correlation test, PTSD: Post-traumatic stress disorder, COVID-19: Coronavirus disease-2019

in 79 countries have died from COVID-19 (12). This situation increases the fear of death among healthcare workers. In our study, the fear of death was greater than the fear of transmitting COVID-19 to others at home. It was also greater in people who had children.

Although the rate of PTSD was significantly higher in nurses in our study, PTSD was also seen in the other two groups. Indeed, it was much higher in people working in environments at high risk for COVID-19 than in the other groups. A systematic study of the mental health of the general population showed that individuals experience the following mental health issues at the rates indicated: anxiety (6.3-50.9%), depression (14.6-48.3%), PTSD (7-53.4%), and stress (8.1%-81.9%) (12). In our study, the rate of anxiety among healthcare workers, which has increased, was 71.2%. They experienced feelings of hopelessness at a rate of 62.8% and PTSD at a rate of 75%. The difficulties that health care workers have in feeling safe at work may be due to the psychological distress that health care workers experience. The virus not being fully understood, the lack of

Table 4. Differences questionnaire items between groups

n		Doctor		Nurse		Other		p
		%	n	%	n	%		
Are you afraid of transmitting COVID-19 to people who live in your home?	Yes	287	83.7	301	89.0	267	91.4	**0.008**
	No	56	16.3	37	10.1	25	8.6	
Have you experienced a fear of death during the COVID-19 pandemic?	Yes	144	41.98	171	50.59	112	38.4	**0.006**
	No	199	58.0	167	49.4	180	61.6	
Have you experienced hopelessness about the future during the COVID-19 pandemic?	Yes	211	61.5	232	68.6	168	57.5	**0.013**
	No	132	38.5	106	31.4	124	42.5	
Has your anxiety level increased during the COVID-19 pandemic?	Yes	235	68.5	264	78.1	194	66.4	**0.002**
	No	108	31.5	74	21.9	98	33.6	
Have you experienced sleep disturbances lately?	Yes	183	53.4	261	77.2	171	58.6	**<0.001**
	No	160	46.7	77	22.8	121	41.4	
How long do you think the COVID-19 pandemic will last?	3 months	11	3.21	18	5.33	14	4.8	0.305
	6 months	50	14.6	44	13.02	35	11.1	
	1 year	70	20.4	75	22.2	80	27.4	
	More than 1 year	212	61.8	201	59.5	163	55.8	
Have you received psychiatric treatment during the COVID-19 pandemic?	Yes	15	4.4	15	4.4	15	5.1	0.883
	No	328	95.6	323	95.6	277	94.9	

Mann-Whitney U test- Spearman correlation test, COVID-19: Coronavirus disease-2019

information on how to prevent and control it, long heavy workloads, the high risk of being exposed to COVID-19 patients, shortages of protective medical equipment, insufficient rest, and being exposed to critical life event like death may contribute to this feeling of being unsafe at work.

Study Limitations

Our study is not sustainable. We cannot predict what will happen one year later because most of the workers who participated in our research left our hospital. Also our study was conducted only one pandemic hospital. Future studies will be conducted different hospitals.

Conclusion

PTSD has occurred in all healthcare workers during the COVID-19 pandemic, which claimed many lives of healthcare workers in Turkey since February 2021. It occurs more in nurses than in doctors and other healthcare workers. PTSD is also higher in women, who work in a risky setting or who have elderly people or children living at home. Anxiety levels in healthcare workers are high. This can be attributed to the length of work hours and insufficient rest, so it is recommended that healthcare workers should work on well-designed shifts and psychological support should be provided whenever it is necessary.

Ethics Committee Approval: All procedures were approved by University of Health Sciences Turkey, İstanbul Training and Research Hospital's Ethics Committee (approval number: 2276, date: 08.05.2020).

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