

Research Article

Comparison of Frontline Healthcare Professionals and Other Healthcare Professionals in terms of Depression, Anxiety, Stress, Obsessive-Compulsive Symptoms and Quality of Life in the COVID-19 Pandemic

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Abstract

Objectives: In this study, we aimed to compare the healthcare workers (frontline) and other health care workers in terms of depression, anxiety, stress symptoms, obsessive-compulsive symptoms, sleep quality and quality of life.

Methods: Among the doctors, nurses, assistant health personnel and medical secretaries working in Bilecik Training and Research Hospital and involved in the follow-up and treatment of COVID 19 patients. Those who accepted the study included Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), Pittsburg Sleep Quality Index (PSQI), DSM 5 Posttraumatic Stress Symptoms Symptom Checklist (PCL-5), Maudsley Obsessive-Compulsive Symptom Inventory (MOCI) and World Health Organization Quality of Life Scale, Short Form (WHOQOL-BREF-TR) was given.

Results: A total of 53 people were included in the study, 24 of which were in the frontline and 29 in the secondline. The number of days they worked with patients who were suspected or infected with COVID 19 and the number of those who needed mental support was significantly higher than the others. The BAI and MOCI scale scores of the frontline group were significantly higher, and the WHOQOL-BREF-TR scores were lower.

Conclusion: The risk of developing psychopathology increases in all healthcare professionals, especially frontline healthcare professionals, during the pandemic period, so mental support should be provided.

Keywords: COVID 19, healthcare professionals, anxiety, depression, obsessive-compulsive symptoms

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In December 2019, a highly contagious acute respiratory syndrome caused by a novel coronavirus (SARS-CoV-2) emerged in Wuhan^[1] and was declared a pandemic by the World Health Organization (WHO) in March 2020.^[2] In

addition to the treatment of patients, healthcare workers faced many problems such as inadequate personnel equipment, physical fatigue, inadequate hospital unit, isolation, and the fear of infecting their relatives with the effect of

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this epidemic. It is known that the burden on healthcare workers since the beginning of the pandemic still continues. In a review study, it was reported that the prevalence of depression, anxiety and insomnia in healthcare workers was high in the COVID 19 pandemic.^[3] In a study in which the anxiety levels of healthcare workers were evaluated in Wuhan, it was reported that the anxiety levels of healthcare workers who had direct contact with COVID 19 patients, who worked in risky areas and who had suspicious cases, were higher.^[4] In a study conducted in Italy on the mental health status of frontline and second-line healthcare workers, being a young woman and working in the frontline was associated with greater symptom severity.^[5] In a study evaluating sleep quality in healthcare workers, it was reported that more than half of them had sleep problems.^[6] It was reported that healthcare professionals have more sleep disorders than other occupational groups, and the anxiety levels of healthcare professionals who are younger and work more per day are higher.^[7] In another study conducted in China, it was reported that doctors and nurses had higher levels of anxiety, depression, insomnia, somatization and obsessive-compulsive symptoms compared to other healthcare professionals.^[8]

Posttraumatic Stress Disorder (PTSD) is a disorder in which intrusive thoughts, persistence of the traumatic event, avoidance of related stimuli, emotional numbness, and physiological overstimulation follow traumatic events outside of common human experience such as severe physical assaults, torture, accidents, rape or natural disasters. The prevalence of PTSD was found to be 7% in the most affected regions during the COVID-19 pandemic, and it was reported that the rates in women were higher than in men, and the symptoms in the subgroups of re-experiencing, negative changes in cognition and mood, and hyperarousal were higher.^[9] It has been reported that during the previous pandemic periods, health workers had symptoms of anxiety, depression, burnout and post-traumatic stress that continued during their professional activities during and after the pandemic.^[10, 11] Healthcare workers, especially those who have direct contact with COVID-19 infected patients, are at risk for PTSD, because an increase in PTSD can be expected due to reasons such as the presence of patients in the critical life-critical period, unpredictable course of the disease, and high mortality rates due to lack of adequate treatment.

Obsessive-Compulsive Disorder (OCD) is a specific disorder with symptoms such as fear of contamination and illness, avoidance of places and situations at risk for possible contamination, and repetitive hand-washing behavior.^[12] Measures such as complying with physical distance and frequent hand washing, which entered our daily lives with the

pandemic, and intense concern about the risk of possible contamination are sources of stress for OCD. As a matter of fact, in a study examining OCD symptoms in university students during the COVID-19 period in China, it was reported that OCD symptoms increased during the COVID-19 period, and that the pandemic and anxiety and/or fear had an effect on this increase.^[13] Along with the pandemic, a series of measures such as frequent hand washing, being at a certain physical distance, wearing a mask were recommended in order to prevent the spread of the virus and public health. These measures are protective in line with their purpose, but there are similar safety behaviors, especially in contamination-focused OCD. These behaviors should be evaluated in favor of OCD when they are not purposeful, take time to affect daily functioning, and cause significant distress.^[14] It can be expected that healthcare workers, especially those who are in more contact with COVID-19 patients, have a higher fear of virus-related transmission and related safety behaviors, and therefore be more risky in terms of OCD. In addition, the COVID-19-related COVID stress syndrome has been described, including fear of being infected with COVID-19, fear of contact with COVID-contaminated areas, fear of the socioeconomic consequences of the pandemic, compulsive checking and safety behavior related to possible threats to COVID-19, and post-traumatic stress symptoms and the first two symptoms were determined as the central symptoms and were defined as an adjustment disorder due to COVID-19.^[15]

Due to the high risk of transmission in the hospital environment, it is expected that all healthcare workers will have more anxiety, obsessive-compulsive symptoms, depressive and stress symptoms related to COVID-19. In terms of the organs affected by COVID-19, some parts are more exposed and the symptoms of these people are expected to be more than other healthcare workers. In this study, it was aimed to compare the frontline healthcare workers and other healthcare professionals in terms of depression, anxiety, traumatic stress symptoms, obsessive-compulsive symptoms, sleep quality and quality of life in the COVID-19 pandemic.

Methods

A total of 53 healthcare professionals between the ages of 18-65, at least primary school graduates, who were exposed to patients with a diagnosis or suspected COVID-19 working at Bilecik Training and Research Hospital (T.R.H) between February and April 2020 were included in this study. In the study, people working in the emergency department, intensive care, isolation service, internal medicine, infectious diseases and pulmonary diseases departments were determined as the frontline and other health

care workers were determined as the secondline. 24 people were included in the frontline group and 29 people were included in the other health workers group. Exclusion criteria were the presence of a physical or mental disability that prevented the completion of the scale, and a history of psychiatric treatment. After obtaining the consent of the individuals, Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), Pittsburg Sleep Quality Index (PSQI), Maudsley Obsessive Compulsive Questionnaire (MOCQ), Posttraumatic Stress Disorder Symptom Checklist (PCL-5), World Health Organization The Quality of Life Scale-Short Form (WHOQOL-BREF-TR) was given and they were asked to fill it out. Self-report scales were used to prevent overexposure due to the pandemic.

Sociodemographic and Clinical Data Form

The sociodemographic data form was prepared as a semi-structured form in line with the information in the literature and the aims of the study. This form includes sociodemographic information such as age, gender, occupation, marital status, education, place of residence, and clinical information.

Beck Depression Inventory

It is a self-report scale used to measure the severity of depression in adults. It was developed by Beck et al. in 1961,^[16] and a Turkish validity and reliability study was conducted.^[17] It is a 21-item Likert-type scale. As the score increases, the severity of depression increases. 0-9 according to the score obtained: none/minimum; 10-18: mild depression; 19-29: moderate depression; 30-63: severe depression.

Beck Anxiety Inventory

The scale was developed by Beck et al.,^[18] the Turkish validity and reliability study was conducted.^[19] It is a Likert-type (0-3) self-report scale consisting of 21 items. 0-7: minimal anxiety level; 8-15: mild anxiety level; 16-25: moderate anxiety level; 26-63: severe anxiety level.

Posttraumatic Stress Symptoms Checklist for DSM 5 (PCL-5)

It is a 20-item Likert-type (0-4) self-report scale that measures early post-traumatic stress symptoms (20). The cut-off point was determined as 33. A Turkish validity and reliability study was conducted.^[21]

Pittsburg Sleep Quality Index (PSQI)

The scale was developed by Buysse et al.^[22], the Turkish validity and reliability study of was conducted by Ağargün et al.^[23] PSQI is a 19-item self-report scale that assesses sleep quality and disturbance in the past month. Each item of the test is scored equally between 0-3. The scale consists of 7

subscales that assess subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disorders, use of sleep medication, and loss of daytime functionality. By summing up the subscales, a total PSQI score ranging from 0 to 21 is obtained. A total PSQI score greater than five indicates poor sleep quality and indicates severe impairment in at least two of the above-mentioned domains or moderate impairment in three domains.

Maudsley Obsessive-Compulsive Symptoms Inventory (MOCI)

It is a self-report scale developed by Hodgson and Rachman,^[24] used to measure the type and prevalence of obsessive and compulsive symptoms in clinical or undiagnosed groups. While the original of the scale had sub-dimensions of controlling, cleanliness, slowness and doubt, Erol ve Savaşır rumination sub-dimension was added to the Turkish version. The scale consists of 37 questions to be answered as true or false. A score between 0-37 can be obtained from MOCI, and as the score increases, the incidence of obsessive-compulsive symptoms increases.

World Health Organization Quality of Life Scale-Short Form (WHOQOL-BREF-TR)

The scale was developed by WHO (World Health Organization) to evaluate subjective quality of life,^[25] the Turkish validity study was conducted (26), and consists of 27 items. The scores of the questions in the physical, psychological, social, environmental and national context are calculated. The scale has no cut-off points, higher scores indicate better quality of life. In this study, the total score was evaluated.

Statistical Analysis

The descriptive data of both groups were revealed by frequency analysis and descriptive statistics were obtained. Whether the continuous numerical data is normally distributed or not was tested with Kolmogorov Smirnov. Student's t test was used for normally distributed continuous variables and Mann-Whitney test was used for non-normally distributed continuous variables for both groups. Pearson correlation analysis was used to determine whether there was a correlation between BDI, BAI, PCL-5, PSQI, WHOQOL-BREF-TR. All statistical analyzes were performed with SPSS 22.0 analysis.

Results

In Bilecik T.R.H., a total of 53 employees participated in the study. Of these people, 24 people were in the frontline and 29 people were in the secondline. The mean age of frontline workers was 33.1±2.5, while that of other healthcare workers was 36.6±1.9. While there were 21 women and 3

men in the frontline group, there were 21 women and 8 men in the group of other healthcare workers. There was no significant difference between the two groups in terms of age and gender. While the frontline group worked with patients diagnosed with COVID-19 for an average of 10.8 ± 0.3 months, others worked for 7.1 ± 1.9 months. While there was no difference between the two groups in terms of months worked in patients with a diagnosis of COVID-19 in total ($Z: .62, p=0.54$), the number of days worked per week ($Z: 2.68, p=0.007$) and the number of shifts per month ($Z: 3.26, p=0.001$).), a significant difference was found in terms of frontline group working more days a week and keeping more shifts per month. In the frontline group, the number of people who had COVID-19 was higher than the number of people who needed psychiatric support (Table 1). BDI, BAI, PSQI, PCL-5, MOCI and WHOQOL-BREF-TR mean scores of the groups are given in Table 2. While there was no difference between the two groups in terms of BDI, PSQI, and PCL-5; BAI and MOCI scores of frontline workers were statistically significantly higher, WHOQOL-BREF-TR scores were lower. The mean BDI score of frontline health workers was mild depression; the mean BAI score was consistent with mild anxiety; the mean PCL-5 and PSQI scores were higher than the cut-off score. In the frontline group, a negative correlation was found between the average number of days

worked per week and PCL-5, MOCI and WHOQOL-BREF-TR scores. There was a negative correlation between WHOQOL-BREF-TR score and BDI, PCL-5 and MOCI scores (Table 3). In other healthcare workers group, there was a positive difference between the average number of days worked per week and BDI, BAI, PCL-5 scores; there was a negative correlation between the WHOQOL-BREF-TR score. There was a negative correlation between WHOQOL-BREF-TR scores and BDI, BAI, PSQI, PCL-5 and MOCI scores (Table 4).

Discussion

In this study, the anxiety levels and obsessive-compulsive symptoms of frontline health workers were higher than others; their quality of life was lower. Compared to other healthcare workers, those who were infected with COVID-19 and needed psychological support were found to be more in frontline workers. A positive correlation was found between the average number of days worked per week and post-traumatic stress symptoms, obsessive-compulsive symptoms, and a negative relationship with quality of life. In a study conducted with 1416 healthcare workers in different countries, women, nurses, those who report that they do not have enough information about COVID-19, those who do not have adequate protective equipment, those who do not have sufficient access to dis-

Table 1. Comparison of the Groups in terms of Sociodemographic and Clinical Characteristics

	Frontline	Other Healthcare Professionals	F/X2	p
Age	33.1±2.5	36.6±1.9	.043	.12
Gender (Women)	%87.5 (%12.5)	%72.4 (%27.6)	1.81	.30
Job	6 doctor (%25) 17 nurse (%70.8) 1 AHS (%4.2)	4 doctor (%13.8) 11 nurse (%37.9) 6 AHS (%20.7) 8 MS (%27.6)	13.90	.005*
Total time worked with patients diagnosed with COVID (months)	10.8±0.3	7.1±1.9	Z: .61	.54
Number of days worked with COVID patients per week	2.8±0.3	1.4±0.5	Z:2.7	.007*
Number of duties per month worked with patients with a diagnosis of COVID	7.5±0.7	4.6±1.5	z.3.3	.001*
Those who live away from home during the pandemic period	10 (%41.7)	4 (%13.8)	5.24	.03
Number of people living with at least one healthcare worker	4 (%16.7)	4 (%13.8)	.085	.53
Number of people with chronic illness at home	2 (%8.3)	4 (13.8)	1.65	.37
Number of people over 65 years old living in the house they live in	2 (%8.3)	2 (%6.9)	.04	.62
Number of people with medical illness	7 (%29.2)	8 (%27.6)	.02	.57
Total number of PCR tests taken	24 (%100)	25(%86.2)	3.58	.08
Number of people diagnosed with COVID	13 (%54.2)	6 (%20.7)	6.39	.01*
Number of people who have at least one family member diagnosed with COVID	13 (%54.2)	10 (%34.5)	2.07	.12
Number of people who died with at least one family member diagnosed with COVID	0 (%0)	4 (%13.8)	3.58	.08
Number of people who need psychiatric support	14 (%58.3)	9 (%34.6)	7.82	.03*
Number of people who think they are not adequately protected	13 (%54.2)	12 (%41.4)	.86	.28

*P<0.05 AHS :Asistance Healthy Staff MS: Medical Secretary.

Table 2. Comparison of the Groups in terms of BDI, BAI, PSQI, PCL-5, MOCI, WHOQOL-BREF-TR Total Scores

	Frontline	Other Healthcare Professionals	F/X2	p
BDI	12.9±2.6	7.1±1.4	Z:1.39	.16
BAI	12.2±3.0	5.0±1.8	Z:2.10	.03*
PSQI	5.8±0.6	4.8±0.6	Z:1.13	.26
PCL-5	33.1±5.1	18.9±4.6	1.61	.17
MOCI	15.5±1.7	10.5±1.8	.34	.006*
WHOQOL-BREF-TR	92.8±3.5	104.8±3.0	2.16	.03*

*p<0.05 BDI: Beck Depression Inventory; BAI: Beck Anxiety Inventory, PSQI: Pittsburg Sleep Quality Index, PCL-5: Posttraumatic Stres Disorder Symptom Checklist for DSM-5, MOCI: Maudsley Obsessive Compulsive Inventory, WHOQOL-BREF-TR: World Health Organization Quality of Life Scale-Short Form.

infectants, those who are young, those who live in places where people infected with COVID-19 are more common, Anxiety levels were found to be significantly higher in those with chronic illness and mental illness.^[27] In another study, people who had direct contact with infected patients, worked in more affected areas, and people with suspected COVID-19 were found to have higher anxiety levels.^[4] The anxiety levels of frontline health workers may have been found to be higher in our study due to the fact that front-line workers have longer contact and contact times with infected patients, there is no effective treatment method in the treatment process of the patients, and the mortality risk of the disease is higher than other health care workers. As a matter of fact, the duration of working with infected patients is significantly longer for frontline healthcare pro-

Table 3. Correlation Analysis in the Frontline Group

	Number of days worked with COVID patients per week	BDI	BAI	PSQI	PCL-5	MOCI	WHQOOL-BREF-TR
Number of days worked with COVID patients per week							
PK	1	-,309	-,142	-,218	-,471*	-,428*	,408*
Sig		,141	,509	,306	,020	,037	,048
N	24	24	24	24	24	24	24
BDI							
PK		1	,405*	,612**	,565**	,481*	-,750**
Sig			,049	,001	,004	,017	,000
N		24	24	24	24	24	24
BAI							
PK			1	,481*	,457*	,274	-,240
Sig				,017	,025	,195	,259
N			24	24	24	24	24
PSQI							
PK				1	,363	,093	-,351
Sig					,081	,664	,092
N				24	24	24	24
PCL-5							
PK					1	,422*	-,554**
Sig						,040	,005
N					24	24	24
MOCI							
PK						1	-,623**
Sig							,001
N						24	24
WHOOQOL-BREF-TR							
PK							1
Sig							
N							24

BDI: Beck Depression Inventory; BAI: Beck Anxiety Inventory, PSQI: Pittsburg Sleep Quality Index, PCL-5: Posttraumatic Stres Disorder Symptom Checklist for DSM-5, MOCI: Maudsley Obsessive Compulsive Inventory, WHOQOL-BREF-TR: World Health Organization Quality of Life Scale-Short Form.

Table 4. Correlation Analysis in Other Healthcare Professionals

	Number of days worked with COVID patients per week	BDI	BAI	PSQI	PCL-5	MOCI	WHQOOL-BREF-TR
Number of days worked with COVID patients per week							
PK	1	,432*	,435*	,289	,423*	,318	-,375*
Sig		,019	,018	,128	,022	,093	,045
N	29	29	29	29	29	29	29
BDI		1	,716**	,749**	,741**	,655**	-,656**
			,000	,000	,000	,000	,000
		29	29	29	29	29	29
BAI			1	,663**	,616**	,486**	-,484**
				,000	,000	,007	,008
			29	29	29	29	29
PSQI				1	,672**	,371*	-,735**
					,000	,047	,000
				29	29	29	29
PCL-5					1	,515**	-,384*
						,004	,040
					29	29	29
MOCI						1	-,381*
							,041
						29	29
WHOOQOL-BREF-TR							1
							29

*P<0.05 **p<0.001 BDI: Beck Depression Inventory; BAI: Beck Anxiety Inventory, PSQI: Pittsburg Sleep Quality Index, PCL-5: Posttraumatic Stress Disorder Symptom Checklist for DSM-5, MOCI: Maudsley Obsessive Compulsive Inventory, WHOQOL-BREF-TR: World Health Organization Quality of Life Scale-Short Form.

professionals. In our study, obsessive-compulsive symptoms of the frontline group were found to be higher than those of other healthcare professionals. When the subscales of the scale were evaluated, no difference was found in terms of the cleanliness subscale, while the scores of the frontline group were found to be significantly higher in terms of control, suspicion, slowness and rumination subscales. It has been reported that obsessive-compulsive symptoms increase in both patients with OCD and the general population, especially in the early stages of the pandemic.^[28] During the pandemic, in addition to fear of COVID-19, OCD has been associated with psychosocial factors such as poor coping skills, suicidal ideation, situational factors related to COVID-19 (losing a job, getting sick or being a healthcare worker, etc.).^[29] Although there are studies showing that OCD symptoms have a worse prognosis in those with contamination symptoms,^[30] there are studies showing that obsessive-compulsive symptoms increase in areas other than contamination.^[31] This supports that COVID-19 is a wide source of stress for obsessive-compulsive symptoms, regardless of symptom content. It has been shown that there is a relationship between the position of health work-

ers and compulsions, fear of contagion and all OCD severity. COVID-19 is a major source of stress for the occurrence of OCD symptoms, especially in terms of contamination symptoms, so it is predicted to increase. OCD symptoms related to the fact that frontline health workers are in more contact with patients, having to use protective equipment for a longer time, and staying in quarantine in cases of being infected with COVID-19 may have been observed more. In our study, no difference was found between the front and secondline groups in terms of the total score of PSQI, PCL-5 and BDI, but it is remarkable that the mean scores of the frontline group were above the cut-off score. In a web-based study in China that evaluated generalized anxiety symptoms, depressive symptoms, and sleep quality, it was reported that the sleep quality of healthcare professionals was lower than that of other occupational groups.^[32] In a review study evaluating the prevalence of depression, anxiety and insomnia in healthcare workers during the COVID-19 pandemic, the prevalence of depression was reported as 22.8% and the prevalence of insomnia as 38.9%.^[3] In a study conducted with healthcare professionals in Turkey, a negative correlation was found between

anxiety and sleep quality, and it was reported that nurses had higher PSQI scores and lower WHOQOL-BREF-TR scores compared to other healthcare professionals.^[33] In a review study examining stress, anxiety, and depressive symptoms during the pandemic period, it was reported that health care workers had higher levels of stress, depression, anxiety, and insomnia symptoms compared to other groups.^[34] It has been previously reported that the prevalence of PTSD is higher among healthcare professionals working in intensive care units.^[35] There are studies in the literature showing that PTSD scores are higher in frontline healthcare workers.^[36] It is consistent with the findings in our study.

In our study, the quality of life scores of frontline healthcare workers evaluated by WHOQOL-BREF-TR were found to be significantly lower than other healthcare professionals. The quality of life of all healthcare workers included in the study decreases with the increase in psychiatric symptoms. In the COVID-19 pandemic, the correlation between low quality of life scores in healthcare workers and anxiety and depression has been shown more prominently.^[37] Considering the unpredictable course of the disease, the protective measures taken to prevent transmission, the concerns about infecting the relatives and the related precautions and working conditions, it is seen that the quality of life is affected more than other healthcare professionals. For this reason, preventive measures should be taken quickly in order to prevent the development of mental disorders in all health workers, especially frontline health workers.

Limitations

Only healthcare professionals working in Bilecik RTH were included in our study, so it cannot be generalized to all healthcare professionals. It was planned to include approximately 300 personnel working at a single center in the study, but limited number of personnel could be included due to exclusion criteria and refusal to work, results should be carefully evaluated due to the small sample size and non-response bias. The study is a cross-sectional study, it should be supported by longitudinal studies. People without a previous psychiatric diagnosis were included in the study, but it is not known whether there were symptoms in terms of mental disorders before the study. The findings also need to be tested with a larger sample group. Another limitation is that the scales used in the study are self-report scales.

Conclusion

In the COVID-19 pandemic period, similar to the pandemic/epidemic periods in previous years, depression, anxiety, post-traumatic stress symptoms and obsessive-compulsive symptoms of especially frontline healthcare workers are higher and affect their quality of life. For this reason, it

is important to take precautions and determine supportive methods in terms of current and future mental disorders, especially in frontline health workers.

Disclosures

Ethics Committee Approval: Bilecik Şeyh Edebali University Non-interventional clinical research ethics committee (31.12.2021 - E-10333602-050.01.04-67183).

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References

1. Paules CI, Marston HD, Fauci AS. Coronavirus infections-more than just the common cold. *JAMA* 2020;323:707–8. [\[CrossRef\]](#)
2. 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:e203976.
3. Pappa S, Ntella V, Giannakas T, Giannakoulis VG, Papoutsis E, Katsaounou P. Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: A systematic review and meta-analysis. *Brain Behav Immun* 2020;88:901–7. [\[CrossRef\]](#)
4. Liu CY, Yang YZ, Zhang XM, Xu X, Dou QL, Zhang WW, et al. The prevalence and influencing factors in anxiety in medical workers fighting COVID-19 in China: a cross-sectional survey. *Epidemiol Infect* 2020;148:e98. [\[CrossRef\]](#)
5. Rossi R, Soggi V, Pacitti F, Di Lorenzo G, Di Marco A, Siracusano A, et al. Mental health outcomes among frontline and second-line health care workers during the coronavirus disease 2019 (COVID-19) pandemic in Italy. *JAMA Netw Open* 2020;3:e2010185. [\[CrossRef\]](#)
6. Qi J, Xu J, Li BZ, Huang JS, Yang Y, Zhang ZT, et al. The evaluation of sleep disturbances for Chinese frontline medical workers under the outbreak of COVID-19. *Sleep Med* 2020;72:1–4.
7. Huang J, Liu F, Teng Z, Chen J, Zhao J, Wang X, et al. Care for the psychological status of frontline medical staff fighting against coronavirus disease 2019 (COVID-19). *Clin Infect Dis* 2020;71:3268–9. [\[CrossRef\]](#)
8. 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;89:242–50. [\[CrossRef\]](#)
9. Liu N, Zhang F, Wei C, Jia Y, Shang Z, Sun L, et al. Prevalence and predictors of PTSS during COVID-19 outbreak in China hardest-hit areas: Gender differences matter. *Psychiatry Res*

- 2020;287:112921. [CrossRef]
10. Lancee WJ, Maunder RG, Goldbloom DS; Coauthors for the Impact of SARS Study. Prevalence of psychiatric disorders among Toronto hospital workers one to two years after the SARS outbreak. *Psychiatr Serv* 2008;59:91–5. [CrossRef]
 11. Park JS, Lee EH, Park NR, Choi YH. Mental health of nurses working at a government-designated hospital during a MERS-CoV outbreak: A Cross-sectional study. *Arch Psychiatr Nurs* 2018;32:2–6. [CrossRef]
 12. Bloch MH, Landeros-Weisenberger A, Rosario MC, Pittenger C, Leckman JF. Meta-analysis of the symptom structure of obsessive-compulsive disorder. *Am J Psychiatry* 2008;165:1532–42.
 13. Ji G, Wei W, Yue KC, Li H, Shi LJ, Ma JD, et al. Effects of the COVID-19 pandemic on obsessive-compulsive symptoms among university students: prospective cohort survey study. *J Med Internet Res* 2020;22:e21915. [CrossRef]
 14. Knowles KA, Olatunji BO. Anxiety and safety behavior usage during the COVID-19 pandemic: The prospective role of contamination fear. *J Anxiety Disord* 2021;77:102323. [CrossRef]
 15. Taylor S, Landry CA, Paluszek MM, Fergus TA, McKay D, Asmundson GJG. Development and initial validation of the COVID Stress Scales. *J Anxiety Disord* 2020;72:102232. [CrossRef]
 16. Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J. An inventory for measuring depression. *Arch Gen Psychiatry* 1961;4:561–71. [CrossRef]
 17. Beck depresyon envanteri'nin HN. Üniversite öğrencileri için geçerliliği, güvenilirliği. *Psi-koloji Dergisi* 1989;7:3–13.
 18. Beck AT, Epstein N, Brown G, Steer RA. An inventory for measuring clinical anxiety: psychometric properties. *J Consult Clin Psychol* 1988;56:893. [CrossRef]
 19. Ulusoy M, Sahin NH, Erkmen H. Turkish version of the Beck Anxiety Inventory: psychometric properties. *Journal of Cognitive Psychotherapy* 1998;12:163.
 20. Weathers F, Blake D, Schnurr P, Kaloupek D, Marx B, Keane T. The DSM-5 (LEC-5). Available at: https://www.ptsd.va.gov/professional/assessment/te-measures/life_events_checklist.asp. Accessed Apr 21, 2016.
 21. Boysan M, Guzel Ozdemir P, Ozdemir O, Selvi Y, Yilmaz E, Kaya N. Psychometric properties of the Turkish version of the PTSD Checklist for Diagnostic and Statistical Manual of Mental Disorders, (PCL-5). *Psychiatry and Clinical Psychopharmacology* 2017;27:300–10.
 22. Buysse DJ, Reynolds CF 3rd, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. *Psychiatry Res* 1989;28:193–213.
 23. Agargun M. Pittsburgh uyku kalitesi indeksinin geçerliliği ve güvenilirliği. *Türk Psikiyatri Dergisi* 1996;7:107–15.
 24. Hodgson RJ, Rachman S. Obsessional-compulsive complaints. *Behav Res Ther* 1977;15:389–95. [CrossRef]
 25. Group W. Development of the WHOQOL: Rationale and current status. *Int J Ment Health* 1994;23:24–56.
 26. Eser E, Fidaner H, Fidaner C, Eser SY, Elbi H, Göker E. WHO-QOL-100 ve WHOQOL-BREF'in psikometrik özellikleri. *3P Dergisi* 1999;7:23–40.
 27. Cag Y, Erdem H, Gormez A, Ankarali H, Hargreaves S, Ferreira-Coimbra J, et al. Anxiety among front-line health-care workers supporting patients with COVID-19: A global survey. *Gen Hosp Psychiatry* 2021;68:90–6. [CrossRef]
 28. Mrklas K, Shalaby R, Hrabok M, Gusnowski A, Vuong W, Surood S, et al. Prevalence of perceived stress, anxiety, depression, and obsessive-compulsive symptoms in health care workers and other workers in Alberta during the COVID-19 pandemic: Cross-sectional survey. *JMIR Ment Health* 2020;7:e22408.
 29. Guzick AG, Candelari A, Wiese AD, Schneider SC, Goodman WK, Storch EA. Obsessive-compulsive disorder during the COVID-19 pandemic: a systematic review. *Curr Psychiatry Rep* 2021;23:71. [CrossRef]
 30. Tanir Y, Karayagmurlu A, Kaya İ, Kaynar TB, Türkmen G, Dambaran BN, et al. Exacerbation of obsessive compulsive disorder symptoms in children and adolescents during COVID-19 pandemic. *Psychiatry Res* 2020;293:113363. [CrossRef]
 31. Khosravani V, Aardema F, Samimi Ardestani SM, Sharifi Bastan F. The impact of the coronavirus pandemic on specific symptom dimensions and severity in OCD: A comparison before and during COVID-19 in the context of stress responses. *J Obsessive Compuls Relat Disord* 2021;29:100626. [CrossRef]
 32. Huang JZ, Han MF, Luo TD, Ren AK, Zhou XP. Mental health survey of medical staff in a tertiary infectious disease hospital for COVID-19. *Zhonghua Lao Dong Wei Sheng Zhi Ye Bing Za Zhi* 2020;38:192–5.
 33. Korkmaz S, Kazgan A, Çekiç S, Tartar AS, Balci HN, Atmaca M. The anxiety levels, quality of sleep and life and problem-solving skills in healthcare workers employed in COVID-19 services. *J Clin Neurosci* 2020;80:131–6. [CrossRef]
 34. Salari N, Khazaie H, Hosseinian-Far A, Khaledi-Paveh B, Kazemian M, Mohammadi M, et al. The prevalence of stress, anxiety and depression within front-line healthcare workers caring for COVID-19 patients: a systematic review and meta-regression. *Hum Resour Health* 2020;18:100.
 35. Karanikola M, Giannakopoulou M, Mpouzika M, Kaita CP, Tsiaousis GZ, Papatheanassoglou ED. Dysfunctional psychological responses among Intensive Care Unit nurses: a systematic review of the literature. *Rev Esc Enferm USP* 2015;49:847–57.
 36. Jung H, Jung SY, Lee MH, Kim MS. Assessing the presence of post-traumatic stress and turnover intention among nurses post-middle east respiratory syndrome outbreak: the importance of supervisor support. *Workplace Health Saf* 2020;68:337–45. [CrossRef]
 37. Suryavanshi N, Kadam A, Dhupal G, Nimkar S, Mave V, Gupta A, et al. Mental health and quality of life among healthcare professionals during the COVID-19 pandemic in India. *Brain Behav* 2020;10:e01837.