Arrival Date: 01.03.2024 | **Published Date:** 28.02.2025 | **Vol:** 10, **Issue:** 1 | **pp:** 82-92 | **Doi Number:** http://doi.org/10.5281/zenodo.14994935

THE ANXIETY, STRESS, DEPRESSION, AND INSOMNIA STATUS OF HEALTHCARE PROFESSIONALS DURING THE COVID-19 PANDEMIC

COVID-19 PANDEMİSİ SIRASINDA SAĞLIK ÇALIŞANLARININ ANKSİYETE, STRES, DEPRESYON VE UYKUSUZLUK DURUMU

Aylin SEYLAM KÜŞÜMLER [1], Mügem KUZAY [1], Aslıhan İNANIR [1], Naz SARAÇOĞLU [1]

[1] Istanbul Okan University, Faculty of Health Sciences, Istanbul, Türkiye

ABSTRACT

Objective: The coronavirus pandemic has caused differences in the general health status of all individuals, especially healthcare workers. The most important affected parameters are nutrition, sleep, and mental situations, which are integral factors of the immune system and thus health. The purpose of the study; is to determine how healthcare professionals' insomnia, and mental health conditions are affected during the COVID-19 process.

Methods: A questionnaire including 109 questions related to the demographic properties of participants and also, insomnia severity, depression, anxiety, and stress scales, applies to 363 volunteer healthcare workers aged between 18 and 65 in the province of Istanbul.

Results: While 55.1% of the participants were women, 44.9% of them were men. According to the Insomnia Severity Index (ISI) scores, it was reported that 52.9% of them had an insomnia sub-threshold and moderate and severe insomnia. It was determined that females' ISI scores were higher than males' ($p<0.05$). According to the Depression Anxiety and Stress Scale (DASS-21) scores, 39.9% of the participants had moderate, severe, and very severe depression and 56.5% had moderate, severe, and very severe anxiety, whereas 82.4% had normal stress levels. There was a statistically significant, positive, and moderate correlation between ISI scores and DASS-21 scores ($p<0.05$). Also, a negative and moderate correlation has been found between DASS-21, ISI, and the degree of feeling healthy.

Conclusion: The findings are limited because the COVID-19 pandemic process is variable and, most of the participants are non-frontline healthcare workers. More research is required on healthcare workers to determine the relationship between their nutrition, insomnia, depression, anxiety, and stress levels.

Keywords: Anxiety, Depression, Healthcare Workers, Insomnia, Stress

ÖZET

Amaç: Koronavirüs pandemisi, başta sağlık çalışanları olmak üzere tüm bireylerin genel sağlık durumunda farklılıklara neden olmuştur. Etkilenen en önemli parametreler ise bağışıklık sisteminin ve dolayısıyla sağlığın ayrılmaz faktörleri olan beslenme, uyku ve ruhsal durumlardır. Çalışmanın amacı; COVID-19 sürecinde sağlık çalışanlarının uykusuzluk ve ruh sağlığı durumlarının nasıl etkilendiğini belirlemektir.

Gereç ve Yöntem: Katılımcıların demografik özellikleri ile ilgili 109 soru ve ayrıca uykusuzluk şiddeti, depresyon, anksiyete ve stres ölçeklerini içeren bir anket, İstanbul ilinde yaşları 18 ile 65 arasında değişen 363 gönüllü sağlık çalışanına uygulanmıştır.

Bulgular: Katılımcıların %55,1'i kadın iken, %44,9'u erkektir. Uykusuzluk Şiddet İndeksi (ISI) puanlarına göre %52,9'unun eşik altı, orta ve şiddetli uykusuzluk yaşadığı bildirilmiştir. Kadınların ISI puanlarının erkeklerden daha yüksek olduğu belirlenmiştir ($p<0,05$). Depresyon Anksiyete ve Stres Ölçeği (DASS-21) puanlarına göre katılımcıların %39,9'unun orta, şiddetli ve çok şiddetli depresyon, %56,5'inin orta, şiddetli ve çok şiddetli anksiyete yaşadığı, %82,4'ünün ise normal stres düzeyine sahip olduğu görülmüştür. ISI puanları ile DASS-21 puanları arasında istatistiksel olarak anlamlı, pozitif ve orta düzeyde bir korelasyon bulunmuştur ($p<0,05$). Ayrıca, DASS-21, ISI ve sağlıklı hissetme derecesi arasında negatif ve orta düzeyde bir korelasyon bulunmuştur.

Sonuç: Bulgular, COVID-19 pandemi sürecinin değişken olması ve katılımcıların çoğunun ön saflarda yer almayan sağlık çalışanları olması nedeniyle sınırlıdır. Beslenme, uykusuzluk, depresyon, anksiyete ve stres düzeyleri arasındaki ilişkiyi belirlemek için sağlık çalışanları üzerinde daha fazla araştırma yapılması gerekmektedir.

Anahtar Kelimeler: Anksiyete, Depresyon, Sağlık Çalışanları, Stres, Uykusuzluk

Sorumlu Yazar / Corresponding Author: Aylin SEYLAM KÜŞÜMLER, Asst. Prof., Istanbul Okan University, Faculty of Health Sciences, Istanbul, Turkey. ***E-mail:***aylin.seylam@gmail.com

Bu makaleye atıf yapmak için / Cite this article: Seylam Küşümler, A., Kuzey, M., İnanır, A., & Saraçoğlu, N. (2025). The Anxiety, Stress, Depression, and Insomnia Status of Healthcare Professionals During The Covid-19 Pandemic. *Gevher Nesibe Journal of Medical & Health Sciences,* 10(1), 82-92. http://doi.org/10.5281/zenodo.14994935

INTRODUCTION

A society's high health level is only possible if healthcare workers are in complete physical, mental, and social well-being. For this reason, first of all, determining healthcare workers general health status, providing recommendations, and improving them can make great contributions to society and the field of health science (Keskin ve Tamam, 2018).

Insomnia, Immune System and Circadian Rhythm

Sleep is a different state of consciousness that covers about a third of the day. Contrary to thought in the past, sleep is a highly regulated function in which active, complex, different groups of neurons are affected and is necessary for the human body's homeostasis (Keskin ve Tamam, 2018). At the same time, sleep provides principal support for our body by helping the immune system to protect the energy and other resources it needs to defend against possible attacks. For this reason, it is necessary to get sufficient and high-quality sleep for a strong, natural, and balanced immune system. The capacity to fall asleep within the recommended time frame of 15 to 20 minutes, the ability to stay asleep by only waking up once per night, and the amount of time spent sleeping in bed as opposed to being awake are all indicators of good sleep quality (Besedovsky et al., 2012). Individuals who cannot sleep adequately and with quality are exposed to impaired circadian rhythms. The circadian rhythm, on the other hand, is responsible for synchronizing various biochemical and physiological behaviors and body functions, including the tendency of living things to sleep or be awake, resulting from the 24-hour cycle of the earth around its axis. Disruption of the circadian rhythm leads to many health problems such as metabolic syndrome, obesity, changes in body weight and lipid levels, type 2 diabetes, and cardiovascular diseases. The reason for this circadian and sleep-related processes have a regulatory effect on inflammatory states. In the last decade, it had been proven that sleep disorders contribute to the development of both infectious and inflammatory diseases and increase the risk of death accordingly (Besedovsky et al., 2012). Sleep disorders can be seen as a disease on their own, or as a symptom of a physical or mental illness. For example, Coronavirus (COVID-19), a viral infection, is believed to have many negative effects on the immune system as well as affect sleep quality (Besedovsky et al., 2012). Besides, sleep duration and intensity may increase after a long period of insomnia. However, exhibiting sleep behavior for more than 10 hours a day may disrupt the circadian rhythm due to insufficient sunlight. Because the relationship between immunity and sleep is too strong to ignore. Therefore, especially the intensive work, low sleep quality, and physical activity insufficiencies brought about by the COVID-19 pandemic process may affect the health status of healthcare workers. However, a healthcare professional's good sleep quality is very important to the decision-making mechanisms of patients in the treatment process (Besedovsky et.al, 2012).

Mental Health

In addition to being free from illness and disability, the WHO defines health as a state of total well-being from a physical, spiritual, and social perspective (WHO, 2023). For this reason, in addition to healthy nutrition, regular physical activity, sleep, and mental well-being are individually linked to each other and are also essential components of health as a whole. At the same time, mental health refers to an individual's harmony and balance with other people (DSÖ, 2020). On the other hand, mental health is essential for the well-being and effective functioning of society (HASUDER, 2020). Mental health can change, or deteriorate depending on the conditions or it can improve when conditions get better. Mental deterioration can be effective in; the emergence of psychological problems, digestive disorders, sleep disorders, energy losses and many other serious health problems. As a result of COVID-19, the difficult process we are in has affected the whole world mentally. The healthcare workers are at the top of them. Among the reasons for this is a high risk for exposure and experience of the pathogen/agent (SARS-CoV-2), therefore being constantly vigilant, alienation, home/business requirements of the conflict itself, and the relatives a state of constant worry about the spread of disease, long working hours, lack of protective equipment, or cause discomfort, feelings of helplessness, fatigue, occupational burnout and with discrimination and stigmatization conditions also be regarded as physical and psychological violence (HASUDER, 2020). For these reasons, this psychological burden and psycho-social pressure can increase the predisposition to mental disorders in healthcare workers. At the beginning of the complaints seen in most mental disorders, changes in the quantity and nature of sleep ocur (Keskin ve Tamam, 2018).

The purpose of the study was to determine how and in which direction variables such as healthcare professionals' insomnia, and mental health conditions are affected during the COVID-19 process. Determining the healthcare workers' general health status, providing recommendations, and improving them can make great contributions to both society and the field of health science.

MATERIALS AND METHODS

Healthcare workers who are actively involved in the COVID-19 pandemic process in Istanbul, Turkey, constitute the universe of the study. As of the end of 2020, depending on the Turkish Republic Ministry of Health, according to the information obtained from the Health Personnel Tracking System (SPTS); the number of healthcare workers working in Istanbul province is 137,0005. At least 384 individuals were targeted to participate in the research with a regular distribution of 95% confidence level with a 5% margin of error. For this purpose, questionnaires were distributed online via Google Forms to healthcare workers working in Istanbul, who volunteered to participate in the study, and 401 participants were asked to fill in the questionnaire. When the erroneous and incomplete questionnaires were excluded from the scope of the research, the net number of people was evaluated as 363.

The study was found ethically appropriate by the the Istanbul Okan University Ethics Committee (Date: 27.01.2021, number: 132) a "Consent Form" was obtained from those who wanted to participate in the survey.

A survey form consisting of a total of 40 questions and 4 main parts was prepared by using the literature and internationally valid and reliable scales applied to healthcare workers. In the first part, the socio-demographic characteristics of the participants and a few situations that are suitable for the research subject were examined; in the second part, nutritional habits and food consumption frequencies were examined; in the third part, sleep states were assessed using the "Insomnia Severity Index (ISI)"; in the fourth part, the mental health of the participants was questioned using the "Depression-Anxiety-Stress Scale (DASS-21)". The DASS-21 Short Form, whose validity and reliability were completed in Turkey, was applied to the participants after obtaining permission from Yılmaz et.al. (2017) and for the ISI scale from Boysan (2010) (Yılmaz ve ark., 2017; Boyan, 2010).

ISI scale items consisting of seven questions are scored between 0-4 and the scores that can be obtained from the scale vary between 0 and 28. A score of 0-7 indicates clinically insignificant insomnia, a score of 8-14 represents the lower threshold for insomnia, a score of 15–21 indicates moderate insomnia, and a score of 22-28 indicates severe insomnia (Henry et al., 2005).

The DASS-21 was used to assess the participants' depression, anxiety, and stress symptoms. The depression, anxiety, and stress subscales are the three subscales that make up this self-reported instrument, which has 21 items total. Seven items make up each subscale, and each one is graded from 0 to 3 on the Likert scale. The sum of the individual item scores is multiplied by two to produce the cumulative score for each subscale. A higher score denotes symptoms that are more severe. The case finding cutoffs are 9 for depression, 7 for anxiety, and 14 for stress. Aside from that, the scores for different levels of depression severity are as follows: mild depression = 10–13, moderate depression = 14–20, severe depression = 21–27, and extremely severe depression = 28–42. According to the intensity of anxiety, the scores fall into four categories: mild anxiety (8–9), moderate anxiety (10–14), severe anxiety (15–19), and extremely severe anxiety (20–42). The ratings for different levels of stress are as follows: mild stress = 15–18, moderate stress = 19–25, severe stress = 26–33, and extremely severe stress = 34–42 (Lovibond and Lovibond, 1995).

The height and body weight of the healthcare workers were calculated in kg/m² from the formula of body mass index (BMI) by referring to the statements of the participants. The results of BMI of the healthcare workers were classified according to their BMI as underweight (18.49 kg/m² and below), normal weight (18.5-24.99 kg/m²), overweight (25-29.99 kg/m²) and obese (30 kg/m² and above) categories (WHO, 2022).

Statistical Analysis

All data collected were analyzed with the SPSS 22.0 program (a statistical package for social sciences). To decide on the normality of the distribution, Shapiro-Wilk and Kolmogorov-Smirnov, the histogram graph with Kurtosis and Skew values, were used. In a comparison of two independent groups, the T-test (independent sample t-test); in a comparison of two or more unrelated independent groups, the Bonferroni test from post hoc tests was used to analyze one-way variance and determine

the source of the difference. The Chi-square and Fisher's exact tests were used to assess the link between categorical variables, while the Pearson correlation coefficient was used to analyze the association between numerical variables. The significance level of 0.05 was used as a criterion in interpreting whether the obtained values were significant or not.

RESULTS

A total of 363 healthcare workers were included in the study. In Table 1, the distribution of individuals according to their demographic values and COVID-19 status are given. While 55.10% (n:200) of the participants were women; 44.90% (n:163) consists of men. 30.58% of individuals (n:111) among 35-44 age group, 24.79% (n:90) 25-34 age group, 18.46% (n:67) 45-54 age group, 15.15% (n:55) are over 55 years old and 11.02% (n:40) were in the 19-24 age group. Most of the respondents (62.26%, n:226) were married. Accordingly, 50.41% (n: 183) of the participants were normal weight, 35.54% (n:129) were overweight, 11.29% (n:41) were obese, and 2.75% (n:10) were determined as weak.

Table 1. The distribution of individuals according to their demographic values and COVID-19 status

Variables	Number (n)	Percentages (%)
Gender		
Female	200	55.10
Male	163	44.90
Age (years)		
19-24	40	11.02
25-34	90	24.79
35-44	111	30.58
45-54	67	18.46
55+	55	15.15
Marital Status		
Single	10	37.74
Married	226	62.26
BMI		
Underweight	10	2.75
Normal	183	50.41
Overweight	129	35.54
Obese	41	11.29
Educational Status		
Associate's degree	29	7.99
Undergraduate	104	28.65
Postgraduate	230	63.36
Occupation		
Doctor	180	49.59
Nurse	63	17.36
Dietitian	45	12.40
Others*	75	20.66
Working Order		
In shift	77	21.21
Shiftless	286	78.79
Working Hours Affected During the Coronavirus Process		
Increased	71	19.56
Decreased	87	23.97
Not affected	205	56.47
Covid Status		
No	289	79.61
Yes	74	20.39
Habits		
None	232	63.91
Smoke	61	16.80
Smoke, Alcohol	38	10.47
Alcohol	30	8.26
Others (Puro)	1	0.28

Degree of Feeling Healthy		
1	3	0.83
2	7	1.93
3	89	24.52
4	186	51.24
5	78	21.49

*: medical secretary, health officer, patient consultant, physician assistant, ambulance and emergency care technician, physical therapy technician, physiotherapist, midwife, audiologist, audiometry technician, and microbiologist

The majority of the participants (63.36%, n:230) have a postgraduate education level. 49.59% (n: 180) of the respondents were doctors, 17.36% (n: 63) were nurses, 12.40% (n: 45) were dietitians, and 20.66% (n: 75) were other occupational groups (medical secretary, health officer, patient consultant, physician assistant, ambulance and emergency care technician, physical therapy technician, physiotherapist, midwife, audiologist, audiometry technician, and microbiologist). Most healthcare workers (78.8%, n:286) who participated in the study worked in the non-shift system. During the COVID-19 pandemic, 56.47% of healthcare workers (n:205) reported that their working hours were not affected, 23.97% (n:87) reported that their working hours decreased, and 19.56% (n:71) reported that their working hours increased.

Most of the healthcare workers (79.61%, (n:289)) did not have COVID-19 disease. While the majority of the respondents (63.91%, n:239) stated that they did not smoke; 16.8% (n:61) smoked, 10.47% (n:38) both smoked and used alcohol, 8.26% (n:30) consumed alcohol, and 0.28% 2 (n:1) reported having other (cigar) habits. When the participants were asked to rate their state of feeling healthy over 5 points; 21.49% (n: 78) 5 points, 51.24% (n:186) 4 points, 24.52% (n:89) 3 points, 1.93% (n):7) expressed 2 points, and 0.83% (n:3) as 1 point.

In healthcare workers participating in our study, 47.1% (n:171) had clinically insignificant insomnia (0-7 points), 41.6% (n:151) had insomnia sub-threshold (8-14 points), 11.02% (n:42) reported moderate insomnia (15-21) and 0.28% (n:1) severe insomnia.

According to the DASS-21 scale, most healthcare workers have normal (37.1% (n: 135)) and moderate (31.1% (n: 113)) anxiety, a very low stress value, but rather mild to moderate depression (25.07% (n:91) to 29.75% (n:108) had moderate depression). Approximately 25% have severe and extremely severe anxiety and 10% have severe and extremely severe depression.

In Table 2, the statistical relationship between DASS-21, ISI scale scores, BMI and degree of healthy feeling is given. There is a statistically significant negative and moderate correlation between feeling healthy scores, and ISI and DASS-21 scales of depression, anxiety, and stress scores (r:-0,43 r:-0,51 r:-0,42 r:-0,40 $p<0,05$). Also, there is a statistically significant, positive and moderate correlation between the ISI and DASS-21 scales (r:0,49 r:0,52 r:0,47 $p<0.05$, respectively). There is not a statistically significant relationship between BMI scores and depression, anxiety, stress, and ISI scores ($p>0.05$).

Table 2. The statistical relationship between DASS-21 and its subscales, ISI scale, BMI and degree of feeling healthy scores

DASS-21 subscales and ISI (total score)		**BMI**	**Degree of Feeling Healthy**	**ISI Total score**
Depression	r	-0.01	**-0.43***	**0.49***
Anxiety	r	-0.01	**-0.51***	**0.52***
Stress	r	-0.08	**-0.42***	**0.47***
ISI (total score)	r	0.09	**-0.40***	-

ISI: Insomnia Severity Index, DASS-21; Depression Anxiety and Stress Scale, BMI: Body Mass Index, *: $p<0.05$

Table 3 gives the statistical comparison of ISI and DASS-21 scale scores by gender, marital status, working order, and COVID-19 status, age and education. Depression, anxiety, stress and ISI levels differ statistically according to the gender of the individuals ($p<0.05$). It has been determined that for all of these scales, the scores of women were higher than those of men when looking at average values. The marital status of the healthcare workers also affected the depression, anxiety, and

stress scores (p<0.05). The scores for all of them were higher in singles than in married people when looking at average values.

Table 3. The comparison of ISI and DASS-21 scale scores by gender, marital status, working order, and COVID-19 diseases status

		Group	$\bar{X}$±SD	t	p
Gender	Depression	Male	4.90±3.66	-4.97	**0.01***
		Female	6.70±3.22		
	Anxiety	Male	4.15±3.60	-5.55	**0.01***
		Female	6.30±3.71		
	Stress	Male	3.67±2.97	-6.07	**0.01***
		Female	5.64±3.15		
	ISI	Male	7.45±4.69	-2.91	**0.01***
		Female	8.92±4.85		
Marital Status	Depression	Single	6.55±3.32	2.79	**0.01***
		Married	5.49±3.60		
	Anxiety	Single	6.01±3.70	2.63	**0.01***
		Married	4.93±3.83		
	Stress	Single	5.38±2.95	2.90	**0.01***
		Married	4.38±3.32		
	ISI	Single	8.61±4.69	1.10	0.2
		Married	8.04±4.90		
Working Order	Depression	In shift	7.16±3.85	3.74	**0.01***
		Shiftless	5.52±3.35		
	Anxiety	In shift	6.72±4.03	3.76	**0.01***
		Shiftless	4.94±3.66		
	Stress	In shift	5.91±3.62	3.73	**0.01***
		Shiftless	4.43±3.02		
	ISI	In shift	10.36±5.37	4.57	**0.01***
		Shiftless	7.65±4.49		
Covid-19 Disease Status	Depression	Yes	6.63±4.05	2.01	**0.04***
		No	5.70±3.37		
	Anxiety	Yes	5.67±3.87	0.84	0.4
		No	5.25±3.80		
	Stress	Yes	4.84±3.33	0.23	0.8
		No	4.74±3.19		
	ISI	Yes	8.29±4.84	0.06	0.9
		No	8.25±4.83		

*p<0.05, ISI: Insomnia Severity Index, DASS-21; Depression Anxiety and Stress Scale

ISI and DASS-21 scores were statistically significant according to the working orders of the people (p<0.05). It has been determined that the depression, anxiety and stress levels of shift workers were higher than those of shiftless workers when looking at average values. Also, ISI scores of shift workers (10.36±5.37) were higher than those of shiftless workers (7.65±4.49). Depression levels differ statistically according to people's COVID-19 disease status (p< 0.05). It has been determined that the depression levels of those who have had the COVID-19 disease (6.63±4.05) were higher than those who did not have the COVID-19 disease (5.70±3.37).

The statistical comparison of ISI and DASS-21 scale scores by age and educational status showed that depression levels significantly differed statistically according to the ages of the people (p<0.05), Table 4). The depression levels of people aged 19-24 were significantly higher than the older ones. Anxiety and stress levels of people aged 19-24 and 25-34 were significantly higher than those aged 35-44, 45-54, 55, and over. Depression levels were found to be statistically different according to the educational status of the people (p<0.05). The depression and anxiety levels of people with an associate's degree and an undergraduate degree were significantly higher than those with a postgraduate education level. Stress levels and ISI scores of people with an undergraduate degree were significantly higher than those with a postgraduate education level. ISI scores were significantly different according to the educational status of the people (p<0.05).

Table 4. The comparison of ISI and DASS-21 scale scores by age and education

Scales	Age/ Educational status	$\bar{X}$±SD	F	p	Difference
Depression	19-24[1]	8.03±3.59	8.06	**0.01***	1>3, 4, 5 2>5
	25-34[2]	6.59±3.51			
	35-44[3]	5.59±3.16			
	45-54[4]	5.37±3.83			
	55+[5]	4.42±2.97			
Anxiety	19-24[1]	7.05±4.31	9.43	**0.01***	1,2>3, 4, 5
	25-34[2]	6.62±3.97			
	35-44[3]	4.92±3.37			
	45-54[4]	4.84±3.88			
	55+[5]	3.44±2.69			
Stress	19-24[1]	6.00±3.51	10.04	**0.01***	1>4,5 2>3, 4 ,5
	25-34[2]	6.01±3.56			
	35-44[3]	4.53±2.82			
	45-54[4]	3.94±2.88			
	55+[5]	3.25±2.53			
ISI	19-24[1]	9.28±4.44	1.93	**0.10**	
	25-34[2]	8.88±5.34			
	35-44[3]	8.37±4.82			
	45-54[4]	7.22±4.89			
	55+[5]	7.53±3.88			
Depression	Associate's degree [1]	8.31±3.25	13.46	**0.01***	1,2>3
	Undergraduate [2]	6.61±3.33			
	Postgraduate [3]	5.26±3.47			
Anxiety	Associate's degree [1]	7.41±4.12	18.80	**0.01***	1,2>3
	Undergraduate [2]	6.70±3.75			
	Postgraduate [3]	4.46±3.52			
Stress	Associate's degree [1]	5.52±3.78	13.52	**0.01***	2>3
	Undergraduate [2]	5.96±3.12			
	Postgraduate [3]	4.12±3.01			
ISI	Associate's degree [1]	9.62±4.72	8.10	**0.01***	2>3
	Undergraduate [2]	9.56±5.11			
	Postgraduate [3]	7.50±4.56			

***p<0.05,** ISI: Insomnia Severity Index, DASS-21; Depression Anxiety and Stress Scale

DISCUSSION

The aim of this study was to determine the anxiety, stress, depression, and insomnia status of healthcare professionals during the COVID-19 pandemic.

Within the research conducted in Turkey with 525 participants, considering the mean depression and anxiety levels of healthcare workers before the COVID-19 pandemic and during the COVID-19 pandemic period, it was seen that there were significant increases. Meanwhile, the participants' energy, positive well-being, and general well-being levels significantly decreased. A different study by Guo et al. was conducted with 11,118 healthcare workers in China. According to the results of this study, 6348 (57.10%) of the participants reported that they often felt anxious or panicked, but 1541 (13.86%) reported that they had never experienced anxiety. On the other hand, about 5% of respondents reported experiencing moderate to high levels of anxiety, while 13.47% reported experiencing moderate to high levels of depression (Guo et al., 2021).

Symptoms of sadness, anxiety, insomnia, and distress were reported by participants in a cross-sectional research of 1257 healthcare professionals who treated COVID-19-exposed patients in several locations of China (including Wuhan) by Lai et al., 2020 (Lai et al., 2020).

To assess the psychological effects of COVID-19, Zhu et al. conducted a survey of 5062 healthcare professionals. When the authors measured respondents' levels of stress, depression, and anxiety, they found that stress was reported by 29.8% of them, anxiety by 24.1%, and depression by 13.5%.

In 4679 Chinese healthcare workers, Liu et al. (2020) assessed distress, anxiety, and depressive symptoms. According to the findings, anxiety and distress were rather common (around 16% each), and depressive symptoms were reported by 34.6% of respondents. The researchers discovered a higher incidence of anxiety, depression, and psychological illnesses in healthcare personnel in the frontline departments most affected by COVID-19 (such as the emergency department, critical care unit, and infection disease) (Lu and Lin, 2020).

According to studies done in China, healthcare personnel encounter work overload, isolation, and prejudice, which causes them to feel exhausted, afraid, and suffer from affective disorders and sleep issues (Li et al., 2020). In a study with 1563 healthcare professionals, more than 50.7% of the employees reported having symptoms of depression, 44.7% of anxiety, and 36.1% of sleep disorders (Liu et al., 2020). Healthcare professionals were shown to have depression, stress, anxiety, and posttraumatic stress disorder in a study of a similar nature done in Singapore (Tan et al., 2020). According to a study done with 1257 healthcare professionals in China from, a sizable percentage of participants had signs of depression (50.4%), anxiety (44.6%), insomnia (34.0%) and distress (71.5%).

According to a systematic review of 29 articles, the prevalence of depression, anxiety, and stress was found to be 24.3% (18% CI 18.2-31.6%), 25.8% (95% CI 20.5-31.9%), and 45% (95% CI 24.3-67.5%) among hospital staff members who provided care for COVID-19 patients.(Salari et al, 2020). The findings of this meta-regression analysis showed that the prevalence of depression and anxiety decreased with increasing sample size, and this was statistically significant ($p<0.05$). Although the prevalence of stress did rise with sample size ($p=0.829$), this was not statistically significant. The findings of this study unequivocally show that front-line healthcare professionals caring for COVID-19 patients frequently experience stress, anxiety, and despair. Policymakers should therefore take action to reduce and prevent mental illnesses among hospital staff (Salari et al., 2020).

Using the DASS-21 scale, researchers found that the prevalence rates of stress, anxiety, and depression among 399 healthcare workers from two university hospitals in Malaysia were 21.8%, 31.6%, and 29.1%, respectively (Woon et al. (2020). The proportion of participants experiencing moderate to extremely severe depression, anxiety, and stress was 13.3%, 25.8%, and 8.1%, respectively. Furthermore, according to Zhang et al. (2020), there was a 50.7%, 44.7%, and 73.4% prevalence of depression, anxiety, and stress-related symptoms among medical workers.

In our study, 56.5% of the healthcare workers were found to have moderate, severe and extremely severe anxiety (respectively 31.1% (n:113), 11.5% (n:42), 13.7% (n:50)), and 56.5% have moderate, severe and extremely severe depression (respectively 29.7% (n:108), 7.7% (n:28), 2.4% (n:9)). However, only 8.2% of participants had moderate, severe, and extremely severe stress levels (respectively 6.34% (n:23), 1.65% (n:6), 0.28% (n:1)). Among healthcare workers, mostly the younger group has higher depression, stress and anxiety, also education was a factor that affected the degree of anxiety, depression and stress of the healthcare workers. The one that has undergraduate-level education has higher depression, stress and anxiety scores ($p<0.05$). The reason for this might be due to the lack of information about COVID-19 and this makes people more worried and depressed.

Healthcare workers frequently work shifts, have unpredictable work schedules, and deal with illness, suffering, and death, all of which can have a negative effect on their ability to sleep. Stress and a lack of decent sleep are prevalent during the COVID-19 crisis. According to Jahrami et al. (2020), 60% of both frontline and non-frontline healthcare personnel experience poor sleep quality and moderate to severe stress (Jahrami et al., 2021).

Huang and Zhao evaluated 2250 healthcare professionals' sleep, anxiety, and depression symptoms (Huang and Zhao, 2020). The researchers contrasted the outcomes of healthcare workers with those of people in the general population. The findings indicated that healthcare professionals were more prone to have restless nights and psychological problems. In their survey of 1306 (801 frontline) healthcare workers in China, Qi et al. (2020) evaluated sleep as well. In comparison to non-frontline healthcare professionals, frontline healthcare employees exhibited more severe cases of anxiety, sadness, and sleep problems (Qi et al., 2020). When compared to non-frontline healthcare professionals, the researchers discovered that frontline healthcare employees experienced more severe cases of anxiety, sadness, and sleep disruptions. The prevalence of sleep disruptions was also found to be higher among female frontline healthcare employees than male frontline healthcare workers (Qi et al., 2020).

In China, a study conducted by healthcare workers during the COVID-19 epidemic measured the insomnia and psychological states of actively working healthcare workers (Zhang et al., 2019). According to the results of the study, 36.1% of the 1,563 participants reported insomnia symptoms. Insomnia risk factors include a low level of education, working in an isolated unit, becoming a physician, a lack of support, high levels of uncertainty and infection anxiety.
It was found that 52.9% of the participants had an insomnia threshold, moderate and severe insomnia (respectively 41.6% (n:151), 11.02% (n:42), 0.28% (n:1)) in our study. The insomnia severity index was found to be high in cases such as being female, single, working in shifts, and being at the undergraduate level.

According to a recent review, factors including age, gender, occupation, specialization, longer night shifts, type of work done, and closeness to COVID-19 patients all had an impact on how stressed out and sleep deprived people felt (Bohlken et al., 2020). Future studies should take these variables into consideration as possible confounding variables. Additionally, our study revealed a strong association between the DASS-21 and ISI scores, indicating a clear link between the degree of insomnia and stress, anxiety, and depression.

CONCLUSION

Long hours of working cause insomnia problem for healthcare workers, so shift hours should be planned in such a way that they can find enough time to sleep. In addition, weakness, and a lack of concentration are also necessary to provide appropriate resting areas and time to address the problems caused by insomnia during the call. On the other hand, the majority of healthcare workers who participated in our study work without shifts. However, the insomnia severity index scores of the shift workers were found to be significantly higher than those of the non-shift workers. Having a shift job or having a high level of insomnia adversely affects nutrition, mental health, and many biological processes, especially the circadian rhythm. As a result of our research, it was found that there was a positive relationship between insomnia severity scores and depression, anxiety, and stress scores. However, many studies conducted during both previous outbreaks and the SARS outbreak have reported a positive association between insomnia and mood disorders. In this sense, the fact that most of the healthcare workers participating in our study were not on the frontlines and did not have very high levels of insomnia severity, depression, anxiety, or stress conditions may be important reasons for the difference in our results. Despite this, providing psychosocial support and intervention to healthcare workers by health institutions may have an effect that increases productivity and the health status of people.

Conflict of interest
None.

Author Contributions
Plan and design: ASK, MK, Aİ, NS; **Data collection:** MK, Aİ, NS; **Analysis and comments:** ASK, MK, Aİ, NS; **Review and check:** ASK, MK, Aİ, NS; **Writing:** ASK, MK, Aİ, NS.

Funding
This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

REFERENCES

Besedovsky L, Lange T, Born J. (2012). Sleep And Immune Function. Pflugers Arch, 463(1),121-137, doi:10.1007/s00424-011-1044-0. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3256323/

Bohlken J, Schömig F, Lemke MR, Pumberger M, Riedel-Heller SG. (2020). COVID-19 Pandemic: Stress Experience Of Healthcare Workers - A Short Current Review. Psychiatr Prax, 47(4):190–197. https://doi.org/10.1055/a-1159-5551.

Boysan M. (2010). Uykusuzluk Şiddeti İndeksinin Türk Örneklemindeki Psikometrik Özellikleri, Alpha Psychiatry, 11:248-252. https://toad.halileksi.net/sites/default/files/pdf/uykusuzluk-siddeti-indeksi-toad.pdf

Çankaya M. (2020). COVID-19 Pandemisi ve Sağlık Çalışanlarının İyilik Hali Değişimi, Çankaya M. COVID-19 Pandemisi ve Sağlık Çalışanlarının İyilik Hali Değişimi. In: Nagy H, Huseynov R, editors. Atlas International Congress On Social Sciences 7. Hungary: ISPEC Publications, p. 446–60.

Dünya Sağlık Örgütü (DSÖ). (2020). "Ruh Sağlığını Güçlendirme: Kavramlar, Kanıtlar, Uygulamalar", Çeviri Editörleri Taycan O, Coşkun B, Türkiye Psikiyatri Derneği Yayınları (Çeviri), Ankara,2020

Guo J, Liao L, Wang B, et al. (2021). Psychological Effects Of COVID-19 On Hospital Staff: A National Cross-Sectional Survey In Mainland China, Vascular Investigation and Therapy, 4(1):6. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3550050.

HASUDER, (2020). İş Sağlığı Çalışma Grubu "COVID-19 Hastalığı ile Mücadelede Sağlık Çalışanlarının Sağlığı", Halk Sağlığı Uzmanları Derneği, https://korona.hasuder.org.tr/covid-19-hastaligi-ile-mucadelede-saglik-calisanlarinin-sagligi/

Henry J. D., and Crawford J. R. (2005). The Short-Form Version Of The Depression Anxiety Stress Scales (DASS-21): Construct Validity And Normative Data In A Large Non-Clinical Sample. Br J Clin Psychol, 44(2), 227- 239.

Huang Y and Zhao N. (2020). Generalized Anxiety Disorder, Depressive Symptoms And Sleep Quality During COVID-19 Outbreak In China: A Web-Based Cross-Sectional Survey. Psychiatry Res. 288:112954.

Jahrami H, BaHammam AS, AlGahtani H, et al. (2021). The examination of sleep quality for frontline healthcare workers during the outbreak of COVID-19, Sleep Breath, 25(1):503-511. https://doi.org/10.1007/s11325-020-02135-9, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7319604/

Keskin N, Tamam L. (2018). Uyku Bozuklukları: Sınıflama ve Tedavi. Arşiv Kaynak Tarama Dergisi,;27(2), 241-260. doi:10.17827. https://dergipark.org.tr/tr/download/article-file/443905

Lai J, Ma S, WangY, Cai Z, Hu J, Wei N, Wu J, Du H, Chen T, Li R, Tan H, Kang L, Yao L, Huang M, Wang H, Wang G, Liu Z, Hu S. (2020). Factors Associated With Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019. JAMA Network Open, 3(3):e203976. https:// 10.1016/j.eclinm.2020.100443.

Li, W., Yang, Y., Liu, Z. H., Zhao, Y. J., Zhang, Q., Zhang, L., Cheung, T., & Xiang, Y. T. (2020). Progression Of Mental Health Services During The COVID-19 Outbreak in China. International Journal of Biological Sciences, 16(10), 1732–1738. https://doi.org/ 10.7150/ijbs.45120.

Liu Z, Han B, Jiang R, et al. (2020). Mental Health Status Of Doctors And Nurses During COVID-19 Epidemic In China. SSRN Electronic Journal, https://doi.org/10.2139/ssrn.3551329.

Liu, S., Yang, L., Zhang, C., Xiang, Y. T., Liu, Z., Hu, S., & Zhang, B. (2020). Online Mental Health Services In China During The COVID-19 Outbreak. The Lancet Psychiatry, 7(4), e17. https://doi.org/10.1016/S2215-0366(20)30077-8.

Lovibond, S.H.; Lovibond, P.F. (1995). Manual For The Depression Anxiety Stress Scales; Psychology Foundation of Australia: Sydney, NSW, Australia.

Lu W, Wang H, Lin Y, et al. (2020). Psychological Status Of Medical Workforce During The COVID-19 Pandemic: A Cross-Sectional Study. Psychiatry Res, 288:112936.

Qi J, Xu J, Li B, et al. (2020). The Evaluation Of Sleep Disturbances For Chinese Frontline Medical Workers Under The Outbreak Of COVID-19. Sleep Med, Aug;72:1-4. https://doi.org/10.1016/j.sleep.2020.05.023. Epub 2020 May 23.

Ruan Q, Yang K, Wang W, et al. (2020). Clinical Predictors Of Mortality Due To COVID-19 Based On An Analysis Of Data Of 150 Patients From Wuhan, China, Intensive Care Med, 46(5):846-848. doi:10.1007/s00134-020-05991-x, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7080116/

Salari Nader, Khazaie Habibolah, Hosseinian-Far Amin, Khaledi-Paveh Behnam, Kazeminia Mohsen, Mohammadi Masoud, Shohaimi Shamarina, Daneshkhah Alireza and Eskandari Soudabeh. (2020). 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, 18:100, https://doi.org/10.1186/s12960-020-00544-1.

Tan, B. Y. Q., Chew, N. W. S., Lee, G. K. H., Jing, M., Goh, Y., Yeo, L. L. L., Zhang, K., Chin, H.-K., Ahmad, A., Khan, F. A., Shanmugam, G. N., Chan, B. P. L., Sunny, S., Chandra, B., Ong, J. J. Y., Paliwal, P. R., Wong, L. Y. H., Sagayanathan, R., Chen, J. T., . . .(2020). Sharma, V. K. Psychological İmpact Of The COVID-19 Pandemic On Health Care Workers In Singapore. Annals of Internal Medicine, 173(4), 317–313. https://doi.org/10.7326/M20-1083.

WHO/Europe | Nutrition - Body mass index - BMI [Internet]. [cited 2022 Apr 18]. Available from: https://www.euro.who.int/en/health-topics/disease-prevention/nutrition/a-healthy-lifestyle/body-mass-index-bmi

Woon Luke Sy-Cherng, Sidi Hatta, Jaafar Nik Ruzyanei Nik, and Abdullah Mohammad Farris Iman Leong Bin. (2020). Mental Health Status Of University Healthcare Workers During The COVID-19 Pandemic: A Post–Movement Lockdown Assessment, Int. J. Environ. Res. Public Health, 17, 9155; https://doi.org/10.3390/ijerph17249155.

World Health Organization (2023, March 20), What Is The WHO Definition Of Health?. https://www.who.int/about/frequently-asked-questions

Yılmaz Ö., Boz H., Arslan A. (2017). Depresyon Anksiyete Stres Ölçeğinin (DASS 21) Türkçe Kısa Formunun Geçerlilik-Güvenilirlik Çalışması, Finans Ekonomi ve Sosyal Araştırmalar Dergisi, 2 (2) : 78-91. https://www.researchgate.net/publication/320660797_Depresyon_Anksiyete_Stres_Olceginin_DASS_21_Turkce_Kisa_Formunun_Gecerlilik-Guvenilirlik_Calismasi.

Zhang C, Yang L, et al. (2020). "Survey of Insomnia and Related Social Psychological Factors Among Medical Staff Involved in the 2019 Novel Coronavirus Disease Outbreak", Frontiers in Psychiatry, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7171048/.

Zhu Z, Xu S, Wang H, et al. (2020). COVID-19 In Wuhan: İmmediate Psychological Impact On Health Workers. EClinicalMedicine, 24:100443. https://doi.org/10.1016/j.eclinm.2020.100443.