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ARAŞTIRMA YAZISI / RESEARCH ARTICLE

COVİD-19 SÜRECİNDE CERRAHİ HEMŞİRELERİNİN MENTAL SAĞLIĞI VE UYKU KALİTESİ

MENTAL HEALTH AND SLEEP QUALITY OF SURGICAL NURSES DURING THE COVID-19 PROCESS

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ÖZET

AMAÇ: Yeni Korona virus (COVID-19) salgının ortaya çıkışı, her yaştan bireyler olmak üzere cerrahi hemşirelerinin mental sağlığını oldukça etkilemiştir. Bu çalışma COVID-19 salgını sırasında Türk cerrahi hemşirelerinin öz bildirimlerine dayalı olarak mental sağlık ve uyku kalitelerini araştırmayı amaçlamıştır.

GEREÇ VE YÖNTEM: Çalışma verileri, 10 Mayıs - 10 Haziran 2020 tarihleri arasında 453 cerrahi hemşiresinin katılımıyla web tabanlı çevrimiçi kartopu yöntemiyle toplanmıştır. Verilerin toplanmasında Hemşire Bilgi Formu, Yaygın Anksiyete Bozukluğu-7 (GAD-7) ölçeği, CES-Depresyon Ölçeği (CES-D) ve Pittsburg Uyku Kalitesi İndeksi (PSQI) ile kullanılmıştır.

BULGULAR: Cerrahi hemşirelerin %77,3'ünün COVID-19'lu hastaya bakım verdiği ve %2'sinin COVID-19 hastalığını geçirdikleri saptanmıştır. Cerrahi hemşirelerin %76,2'si pandemi sürecinden olumsuz etkilendiğini ve %56,2'si kendisine virüs bulaşmasından korktuğunu ifade etmiştir. Cerrahi hemşirelerinin, CES-D puan ortalaması 27,8±12,5, GAD-7 puan ortalaması 8,7±5,1 ve *PSQI* puan ortalamasının 10,4±3,5 olduğu belirlenmiştir. *PSQI* ile CES-D ve GAD-7 düzeyleri arasında pozitif yönde ve orta büyüklükte bir ilişki olduğu bulunmuştur (sırasıyla; r=0,558; r=0,554; p<0,001).

SONUÇ: Hemşirelerin depresyon belirtileri gösterdiği, hafif düzeyde anksiyete yaşadıkları ve kötü uyku kalitesine sahip olduğu belirlenmiştir. Hemşirelerin kötü uyku kalitesinin anksiyete ve depresyon belirtileri ile ilişkili olduğu bulunmuştur.

ANAHTAR KELİMELER: Mental sağlık, Anksiyete, Stres, Depresyon, COVID-19

ABSTRACT

OBJECTIVE: The outbreak of new coronavirus disease (COVID-19) has affected the mental well-being of individuals of all ages, especially surgical nurses. This study aimed to explore the association between self-reported mental health and subjective sleep quality of the Turkish surgical nurses during the COVID-19 pandemic.

MATERIAL AND METHODS: Data were collected from N = 453 surgical nurses using online snowball sampling through social media between May 10 and June 10, 2020, during the COVID-19 pandemic. The data were collected using the Nurse Information Form, the Generalized Anxiety Disorder-7 Scale (GAD-7), and the Center for Epidemiologic Studies Depression Scale (CES-D), and The Pittsburgh Sleep Quality Index (PSQI).

RESULTS: While 77.3% of them were determined to provide care to patients with COVID-19, and 2.0% of them had a positive COVID-19 test. A total of 76.2% of surgical nurses were stated to be negatively affected by the pandemic process and 56.2% of them were scared of infecting someone else with the virus. Surgical nurses had a mean GAD-7score of 8.7±5.1, a mean CES-D score of 27.8±12.5, and a mean PSQI score of 10.4±3.5. A positive and moderate level of relationship was found between PSQI and CES-D and GAD-7 levels (r=0.558; r=0.554; p<0.001, respectively).

CONCLUSIONS: The surgical nurses were found to show signs of depression, had mild anxiety and had poor sleep quality. The poor sleep quality of the surgical nurses was found to be associated with anxiety and depression symptoms.

KEYWORDS: Mental health, Anxiety, Stress, Depression, COVID-19.

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INTRODUCTION

Coronavirus disease (COVID-19), discovered first in Wuhan, China at the end of 2019, is an infectious disease caused by a coronavirus (1) and in Turkey, the first case was reported to be seen on March 10, 2020 (2). As of 18 February 2021, While The World Health Organization (WHO) reported 109,594,835 confirmed cases and 2,424,060 deaths worldwide (1), the Ministry of Health in Turkey reported a total of 2,609,359 confirmed cases with 27,738 deaths and it is projected that COVID-19 cases will continue in the coming years (2, 3). Out of more than 1.1 million healthcare professionals in our country, those who tested positive for COVID-19 passed the 120 thousand and the total number of deaths from these cases was reported to be 216 (3). To meet the intensive care needs associated with COVID 19 in Turkey, all the second tertiary care hospitals with adult intensive care beds were converted to a "pandemic hospital". During the pandemic period in Turkey, elective surgeries were suspended in hospitals, and even the operating rooms and surgical ICUs were converted into COVID-19 ICUs. Operating room or surgical nurses, working in different areas, also were assigned to provide care for patients receiving treatment in COVID-19 inpatient units and ICUs and in need of respiratory support (4). Surgical nurses, especially used to providing bedside nursing care to their patients, had to follow their patients in distance from outside the room during the pandemic process. This situation is known to challenge surgical nurses by creating “feelings of inadequacy” (4, 5).

During the COVID-19 pandemic process, nurses worked in pandemic wards and ICUs in 16 and 24-hour day and night shifts for at least two months. In the first two months of the pandemic, nurses used two weeks of leave after the two-week work period. Nurses and other healthcare professionals were not only exposed to the stress of the pandemic at the highest level and but also had to cope with the psychological consequences for a long time. Facing the COVID-19 virus, a novel infectious disease infecting millions of people worldwide and without any known cure, is causing stress to individuals, especially healthcare professionals. This increased stress can cause high levels of anxiety and ultimately affect the sleep quality and problem-solving skills of nurses negatively, and cause deterioration in their quality of life (6). Psychological distress, disruptions in sleep quality, can be significant for nurses and other healthcare professionals who provide direct care to patients with COVID-19. It is important to best support nurses, identify the psychological. This study aimed to examine the anxiety, depression levels, and sleep quality of the surgical nurses during the COVID-19 pandemic, their relations with each other, and the factors affecting them.

MATERIALS AND METHODS

Study Design and Participants

For this descriptive and cross-sectional study, an online questionnaire using a snowball sampling method and send via social media was used. The population of this study consisted of surgical nurses working in either public or private health institutions in the 15 largest cities of Turkey. While calculating the number in the sample of the study, similar studies (100-294 participate) conducted were taken as a reference (3, 7, 8).

The study included 453 surgical nurses who accepted to participate in the study without performing a sample selection, over the age of 18, working in surgical wards. The online questionnaire opened on 10 May 2020 for the participants and closed on 10 June 2020. The nurses who, during the COVID-19 pandemic process, were on leave, on sick leave, or retired were asked not to participate in the questionnaire.

Instruments

1. The Nurse Information Form, prepared by the researchers consists of 18 questions about surgical nurses' socio-demographic features (age, gender, marital, education, etc.), institutional information (health institution, working year, unit of work, etc.) and information on the COVID-19 process (9).

2. The Center for Epidemiologic Studies Depression Scale (CES-D) is a brief self-report scale developed by the American National Institute of Mental Health to assess depressive symptoms. The CES-D consists of 20 items, 4-point Likert type, and each item is scored from 0 (never-ra-

rely) to 3 (mostly-all the time). The total score can range from 0 to 60, and higher scores indicate depression. A score of 16 and above is considered a clinical sign of depression according to American standards. The Cronbach alpha value of the scale is 0.88 (10). The validity and reliability of the CES-D scale in Turkish was performed by Tatar and Saltukoğlu (2010). The Cronbach alpha coefficient was found to be 0.89. Therefore, a score of 16 points or above is a sign of depression according to Turkey norms (11). The Cronbach's alpha internal consistency of CES-D was found to be 0.748. The Cronbach alpha coefficient for this study was found to be 0.921.

3. The Generalized Anxiety Disorder-7 Scale (GAD-7), developed by Spitzer et al. (2006), consists of 7 items with a 4-point Likert type. It is a brief self-report questionnaire that evaluates generalized anxiety disorder. It is a scale that evaluates experiences in the last 2 weeks (0 = not at all, 1 = several days, 2 = more than half of the days, 3 = nearly every day). Points of 5, 10, and 15 total scores that can be obtained from the scale are the cut-off points for mild, moderate, and severe anxiety, respectively. The GAD diagnosis of patients with a total score of 10 or more should be investigated and confirmed by other methods (12). The Turkish validity and reliability study was performed by Konkan et al. (2013). The Cronbach Alpha coefficient of the Turkish version of the scale was found to be 0.852 (13). The Cronbach's alpha internal consistency of GAD-7 was found to be 0.797. The Cronbach alpha coefficient for this study was found to be 0.920.

4. The Pittsburgh Sleep Quality Index (PSQI), developed by Buysse et al. in 1989, is a self-report scale measuring sleep quality to define good and poor sleep in one month. A PSQI score greater than 5 was determined to have a sensitivity of 89.6% and a specificity of 86.5% in distinguishing between good and bad sleepers (14). The scale consists of a total of 24 questions, 19 of which are self-assessment questions, and 5 of which have answers of the bed partner or roommate of the individual. These five questions are not considered during the calculation of the index score (7). PSQI contains seven components. Each item is scored from 0 to 3. The sum of the seven component scores gives the total index score which ranges from 0 to 21. Higher total scores indicate poor sleep quality (15).

The Turkish validity and reliability study of the PSQI was performed by Ağargün et al. (1996). The Cronbach's alpha internal consistency of PSQI was found to be 0.726. The cutoff value indicating poor sleep quality in Turkish society is ≥ 5 (16). The Cronbach alpha coefficient for this study was found to be 0.725.

Procedure

The online questionnaire forms were shared with the surgical nurses online on the web due to the pandemic conditions. For four weeks, the questionnaire forms were shared via social media such as WhatsApp, Instagram, Facebook, and nurses were invited to participate (https://docs.google.com/forms/d/e/1faıpqlscx5zz-bpvw2skkotaldk0lfwcoxa8c61rfjqft_ylxtxıwqa/viewform?vc=0&c=0&w=1). The data of the study were obtained based on the self-report of the nurses. Standardizations were made while creating the online form for the surgical nurses participating to answer the questionnaire only once. Online data was checked daily. The time to complete the online questionnaire was about 15 minutes. A total of 51 questionnaires that were either not fully completed or were spent more than 30 minutes to complete were excluded from the study.

Ethical Committe

Written permission (12-32-51 numbered and 05.11.2020 dated) was obtained from the Health Ministry, COVID-19 Scientific Research Evaluation Commission, and ethical permission (2020/05- E.23370) from Afyon Kocatepe University Social and Human Sciences Scientific Publication Ethics Committee. The participants in the study approved the consent form by clicking the " I accept " statement to proceed with the online questionnaire.

Statistical Analysis

IBM SPSS Statistics 22 (IBM SPSS, Turkey) program was used in the data analysis. In the evaluation of the data, The Kolmogorov-Smirnov test for the normal distribution of the variables, descriptive statistics (mean, standard deviation, frequency, and percentage), Independent two-sample t-test, One-way analysis of variance, Logistic regression, and Pearson's correlation coefficient was used. The statistically significant alpha level was accepted as $p<0.05$.

RESULTS

Sociodemographic Characteristics of Surgical Nurses and Their Status Related to COVID-19

The mean age of the surgical nurses was 32.67 ± 8.09 years, 84.1% of them were women, 52.1% were married and 74.4% had undergraduate degrees. It was found that 45% of the nurses had more than 10 years of working experience, 44.6% were working in the intensive care unit and 65.5% were working in the day-night shift. A total of 80.8% of the surgical nurses were found to have four or more night shifts per month, 77.3% provided care to patients with COVID-19, 70.2% received training about COVID-19, and 2.0% tested positive for COVID-19. A total of 76.2% of nurses stated to be negatively affected by the pandemic process and 56.2% of them were scared of infecting someone else with the virus **(Table 1)**.

Table 1: Distribution according to surgical nurses' some individual characteristics (n=453)

	Group	n	%
Gender	Female	381	84.1
	Male	72	15.9
Marital Status	Single	217	47.9
	Married	236	52.1
Education	Collage	43	9.5
	University	337	74.4
	Master	73	16.1
Hospital	State	348	76.8
	University	64	14.1
	Private	41	9.1
Unit	Surgical Ward and Operating Room	157	27.4
	Intensive Care Unit	202	44.6
	Emergency Unit	94	20.8
Working Years	< 5 years	147	32.5
	5-10 years	102	22.5
	>10 years	204	45.0
Shift Types	Day (08.00-16.00)	105	23.2
	Night (16.00-08.00)	51	11.3
	Day and night	297	65.5
Night Shift	No	50	11.0
	1-3 times	37	8.2
	≥ 4 times	366	80.8
COVID-19	Yes	350	77.3
	No	100	22.1
COVID 19' Training	Next month	3	0.7
	Yes	318	70.2
COVID-19 Test	No	135	29.8
	Yes, COVID 19 (+)	9	2.0
	Yes, COVID 19 (-)	295	65.1
	No test	149	32.9
Negatively affect the Pandemic	Yes	345	76.2
	No	16	3.5
	Partly	92	20.3
Causes of Fear about Pandemic	Risk of contamination	93	20.5
	Stay away from my family	73	16.1
	Not being able to see my kids	20	4.4
	Risk of transmission	254	56.2
	Other	13	2.8
	Total	453	100.0
	Age (Mean ±SD)	32.67 ± 8.09	

Surgical nurses had mean score of 8.7±5.1 (min=0, max= 21) from the GAD-7, 27.8±12.5 (min=0, max=57) from the CES-D and 10.4 ± 3.5 (min=1, max= 21) from the PSQI (Table 2). The nurses were observed to experience sleep onset latency the most (3.4 ± 1.3; min = 0 - max = 3). A total of 83.7% of the nurses were determined to have a depressive mood along with somatic symptoms of depression. Furthermore, 38.0% of them were found to have anxiety symptoms **(Table 2**).

Table 2: Descriptive statistics of the GAD-7, CES-D and PSQI Scales (n=453)

Scale	Subscales and Groups	Min-Max cut-off points	¥Mean± SD ψn (%)
GAD-7	Total GAD-7	0-21	8.7±5.1¥
	No anxiety	< 10	281 (62.0)ψ
	Anxiety	≥ 10	172 (38.0)ψ
CES-D	Total CES-D	0-57	27.8±12.5¥
	No symptoms	< 16	74 (16.3)ψ
	Symptoms	≥ 16	379 (83.7)ψ
PSQI	C1; Subjective sleep quality	2-4	2.8±0.6¥
	C2; Sleep latency	1-6	3.4±1.3¥
	C3; Sleep duration	0-3	1.2±1.1¥
	C4; Habitual sleep efficiency	0-3	0.1±0.5¥
	C5; Sleep disturbances	0-3	2.4±0.7¥
	C6; Use of sleep-promoting medications	0-3	0.2±0.7¥
	C7; Daytime dysfunction	1-3	0.2±0.7¥
	Total PSQI	2-21	10.4±3.5¥
	Good sleep PSQI	< 5	15 (3.3)ψ
	Bad sleep	> 5	438 (96.7)ψ

GAD-7: Generalized Anxiety Disorder-7; CES-D: Center for Epidemiologic Studies Depression; PSQI: Pittsburgh Sleep Quality Index; SD: Standard Deviation

Relations of Sociodemographic Characteristics With Mental Health and Sleep Quality

There was a statistically significant difference in terms of GAD-7, CES-D and PSQI mean scores of women compared to men ($p<0.05$). Women had higher GAD-7, CES-D and PSQI mean scores than men. The married surgical nurses had higher PSQI mean scores compared to unmarried surgical nurses and this difference was statistically significant ($t = 2.037$, $p = 0.042$). Between another variables (age, educational status, years of experience) and GAD-7, CES-D, and PSQI mean scores were not found statistically significant difference. There was a statistically significant difference between the CES-D and PSQI mean scores according to the type of shift the surgical nurses had ($p <0.05$) and the surgical nurses working in the day shift had higher mean scores.

There was a statistically significant difference between those who had in-service training on COVID-19 and those who did not, in terms of GAD-7, CES-D and PSQI mean scores ($p <0.05$). Those who do not have in-service training had higher GAD-7, CES-D and PSQI mean scores. The relations of potential impact factors with GAD-7, CES-D, and PSQI are being a woman was a risk factor associated with anxiety (OR = 3.01, % 95 CI: 1.58-5.75) and depression (OR = 2.75, % 95 CI: 1.43–5.28) levels. Working at Not having night shift was a risk factor associated with depression (OR = 0.37, % 95 CI: 0.16–0.84) in-service training on COVID-19 was a risk factor for anxiety (OR = 0.51, % 95 CI: 0.33-0.80) levels **(Table 3)**.

Table 3: Comparison according to individual characteristics of anxiety, depression levels and sleep quality of surgical nurses (n=453)

	Variables	GAD-7 Mean ±SD	CES-D Mean ±SD	PSQI Mean ±SD
Age	≤ 30	8.4±4.9	27.8±12.6	10.5±3.6
	> 30	8.9±5.2	27.8±12.3	10.3±3.3
		p=0.308	p=0.999	p=0.528
Gender	Female	9.0±5.0 (3.01ψ)	29.0±12.1(2.75ψ)	10.6±3.5
	Male	6.7±4.8	21.7±12.7	9.3±3.1
		p<0.001*	p<0.001*	p=0.003*
Marital Status	Single	8.6±5.0	28.5±12.6	10.8±3.5
	Married	8.7±5.2	27.1±12.3	10.1±3.4
		p=0.747	p=0.221	p=0.042*
Education	Collage	8.6±5.4	26.5±12.4	10.7±3.9
	University	8.6±5.0	27.9±12.3	10.3±3.4
	Master	9.0±5.1	27.9±13.4	10.8±3.6
		p=0.880	p=0.785	p=0.411
Hospital	State	8.7±5.2	28.1±12.9	10.4±3.5
	University	9.0±5.0	27.5±10.7	10.6±3.1
	Private	8.2±4.5	25.9±11.6	10.3±3.9
		p=0.723	p=0.577	p=0.856
Unit	Surgical ward and operating room	9.0±4.8	28.9±11.9	10.4±3.6
	Intensive care unit	8.5±5.0	27.2±12.7	10.5±3.3
	Emergency unit	8.5±5.1	27.4±12.9	10.2±3.6
		p=0.623	p=0.423	p=0.757
Working years	< 5 years	8.1±4.4	27.1±11.8	10.4±3.5
	5-10 years	8.7±5.4	28.1±13.4	10.4±3.5
	>10 years	9.0±5.3	28.2±12.5	10.4±3.5
		p=0.286	p=0.718	p=0.996
Shift types	Day (08.00-16.00)	8.7±5.2	26.3±11.4	10.0±3.4
	Night (16.00-08.00)	7.6±4.5	24.9±11.5	9.0±3.0
	Day and Night	8.9±5.1	28.8±12.9	10.8±3.5
		p=0.293	p=0.044*	p=0.002*
Night shift (in months)	No	8.2±5.3	27.2±12.5	10.0±3.3
	1-3 times	9.4±4.9	25.0±9.7	10.1±3.5
	≥ 4 times	8.7±5.1	28.2±12.7	10.5±3.5
		p=0.553	p=0.307	p=0.550
COVID-19 clinic	Yes	8.9±5.2	28.2±12.9	10.5±3.4
	No	8.0±4.7	26.8±11.1	10.1±3.7
	Next month	8.0±3.4	20.0±8.1	10.0±3.6
		p=0.361	p=0.337	p=0.603
In-service training with COVID-19	Yes	8.2±4.8 (0.51ψψ)	26.5±12.0	10.2±3.4
	No	9.8±5.6	31.0±12.9	11.0±3.5
		p=0.005*	p<0.001*	p=0.020*

GAD-7; Generalized Anxiety Disorder-7; CES-D: Center for Epidemiologic Studies Depression; PSQI: Pittsburgh Sleep Quality Index; *P <0.05; ψ Logistic regression OR result for women with respect to men; ψ ψ Logistic regression OR result of training objectives regarding COVID-19 compared to those who could not

The Relationship of Depression and Anxiety With Sleep Quality

Pearson's correlation coefficient was used to determine the relationship of anxiety and depression levels in participants with sleep quality. It was observed that there was a moderate positive relationship between the sleep quality of the surgical nurses and both their depression levels (r =0.558, p<0.001) and anxiety levels (r= 0.554, p<0.001). A moderate positive relationship was determined to be between the anxiety and depression levels of the nurse (r=0.554, p<0.001) **(Table 4)**.

Table 4: Relationships between anxiety, depression levels and sleep quality of surgical nurses

	GAD-7		CES-D		PSQI	
	r	p	r	p	r	p
GAD-7	1		0.745	<0.001	0.554	<0.001
CES-D	0.745	<0.001	1		0.558	<0.001
PSQI	0.554	<0.001	0.558	<0.001	1	

GAD-7; Generalized Anxiety Disorder-7; CES-D: Center for Epidemiologic Studies Depression; PSQI: Pittsburgh Sleep Quality Index; r:Pearson correlation coefficient

DISCUSSION

The results showed anxiety, a prevalence of depression, and deterioration in sleep quality among surgical nurses who provided care to suspicious or confirmed COVID-19 patients in this study. Among the surgical nurses in this study, mild anxiety was prevalent (38%) and worrying depression (83.7%), and deteriorated sleep quality (96.7%). The scores obtained from GAD-7, CES-D, and PSQI were all correlated with each other, emphasizing that anxiety and depression have a major impact on sleep disorders and the effect on positive or negative sleep quality when perceived levels of anxiety and depression increase or decrease.

More than half of the nurses participating in the this study provided care to patients diagnosed with COVID-19, and 2.0% of them were infected with COVID-19. It has been reported in the literature that the rate of transmission of infection among healthcare professionals in the world is between 3.8-29% (17).

In this present study, the anxiety level was determined to be moderate among surgical nurses during the pandemic process. The moderate level of anxiety prevalence among nurses in our study sample was significant (33.23%), but not higher than in studies with nurses in general (7, 18). The fact that high levels of depression symptoms were observed among the nurses participating in the study was worrying. As a result of the studies conducted with different scales with validity in the pandemic process, nurses were observed to experience depression symptoms at a higher level, anxiety at a mild/ moderate level and very severe symptoms were less common among the participants (19 - 21). Similar to the results of these studies, we can state that the anxiety and depression disorders observed in nurses are related to the COVID-19. Having compared the study findings with national and international studies conducted before the pandemic, the mean score and prevalence of depression among nurses before the pandemic was seen to be quite low, while the mean scores of anxiety were at a low level (22, 23). Healthcare professionals can be expressed to feel uneasy and anxious especially when they were unable to explain or control the increasingly suspected or diagnosed cases that had an impact on their psychology. Besides, in process of the COVID-19 pandemic, nurses had to isolate themselves from their loved ones after shifts. A study conducted in Australia identified social distance due to restrictions as an extra element of stress to the work-related challenges caused by the pandemic (24). However, surgical nurses

are known to experience a variety of difficulties due to their experience and skills during the pandemic process, as well as differences in patient care and work environment. Working with a constantly changing team, formed by different doctors, nurses, etc. every month, leads to difficulties in team communication, harmony, and cooperation (4). The limited experience of surgical and operating room nurses in the care of COVID-19 patients is thought to cause them to have difficulties and their stress levels to increase.

The PSQI mean score of surgical nurses in this study was 10.4 and the reported prevalence of poor sleep quality was (96.7%), and the mean PSQI value was found to be higher compared to the mean values of front-line nurses in other studies (7, 18, 19). The possible reason for the high prevalence of sleep disorder among nurses in our study might be related to the fact that this study happened a lot of uncertainties about COVID-19 in the first three months.

In this present study, the gender variable, potentially, was determined to be a predictive factor of depression, anxiety, and sleep quality among surgical nurses. In this study, the prevalence rate of anxiety and depression was found to be higher in female nurses, probably reflecting the already established gender variable for anxiety and depressive symptoms. This finding is coherent with similar studies (19 - 21). Overall, these findings showed that during the pandemic women were more vulnerable to symptoms of anxiety, depression and sleep disorders than men, as noted in earlier studies (21, 25) and therefore they experience more sadness and anxiety (20). However, there are also studies with results different from these results (6, 8, 15).

As a result of the sub-analysis for the present study, depression, anxiety, and sleep quality were seen to be negatively affected among surgical nurses who worked in the COVID-19 ward and did not receive COVID-19 preventive training, as another potential predictive factor. In the different studies, nurses working in COVID-19 wards and the lack of training about COVID-19 to was highlighted stated to be a factor in the deteriorating psychological health of nurses (26 -28). In similarly with recent studies conducted with healthcare workers during the COVID-19 pandemic (18, 29, 30), this present study was found a positive association between sleep difficulties and symptoms of anxiety and depression among surgical nurses. In this study, a moderate relationship of anxiety and depression levels in participants with sleep quality was found, and in this sense, it was observed that anxiety and depression were the parameters that showed the highest correlation with sleep quality. The number of infected people is increasing day by day, and at the time of this study, the bed occupancy rate of pandemic hospitals was 70% and the occupancy rate has been increasing. So, during the pandemic nurses and physicians were continuously working long hours and have to do more night shifts which may have disrupted their circadian rhythm and led to break-out sleep qualities (30). In addition, nurses' insomnia and sleep difficulties during the COVID-19 pandemic are important because of their negative effect on cognition, patients monitoring, caring performance, and communication inter health workers team (30). The present study had some limitations. The first limitation was that the presence of any psychological issues of the participants was not questioned, and participants with psychological problems, albeit at a small rate, we're likely to be involved in the study. Second, the data presented here and related analyses were derived from a cross-sectional study design, it is difficult to make causal inferences. Third, it was difficult to apply a more stringent sampling method during the pandemic, therefore the snowball sampling method was used to include the participants in the study. Forth, the possibility of a selection bias could be considered due to people being unable or unwilling to participate in the online questionnaire even though they received the questionnaire link. The reliability of the study findings was limited to the responses given by surgical nurses.

The surgical nurses were determined to show symptoms of depression during the COVID-19 pandemic process, experience moderate levels of anxiety and have poor sleep quality in the present study. The anxiety and depression symptoms of the surgical nurses were found to be

associated with poor sleep quality. Hereby, this study has presented an overall picture of the psychological state of surgical nurses in Turkey and these data have the potential to contribute to future research. Detecting the psychological issues of surgical and operating room nurses during periods of pandemics, applying supportive therapies for those problems, and improving working conditions can better the quality of health services.

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