Kadir Celik[1]
Senay Kocakoglu[1]

[1] Department of Family Medicine, Faculty of Medicine, Harran University, Sanliurfa, Türkiye

Corresponding Author:
Senay Kocakoglu
mail: senaykocakoglu@yahoo.com

Anxiety and Sleep Quality in Healthcare Professionals During the Covid-19 Pandemic Process

ABSTRACT

Objective: The aim of this study is to evaluate the effects of the Covid-19 pandemic on anxiety and sleep quality in a tertiary hospital healthcare workers.

Method: The design of this study was cross-sectional and prospective and it was carried out between February- April 2021 in a tertiary hospital. By online survey method Pittsburg Sleep Quality Index (PSQI), Coronavirus Anxiety Scale (CAS) and a questionnaire created by the researchers were used for collecting the data.

Results: A total of 291 healthcare professionals, participated in the study. The mean PSQI score of patients who were detected to have coronavirus anxiety was found to be significantly higher than patients without coronavirus anxiety (p=0,005). Men's average sleep duration was found to be higher than women's (p=0,002). The mean sleep latency score was found to be higher in singles than in married people (p<0,001), and in those who did not have children (p<0,001). The sleep disorder sub-score was higher in thoose who had active night duty (p=0.028).

Conclusion: This study discovered that there is a significant relationship between sleep quality and anxiety as a result of the Covid-19 pandemic, and that healthcare workers' sleep quality suffered during this time. In order to be prepared for similar challenging conditions, health workers' physical and mental health must be protected. It is suggested that strategies for improving adverse conditions be advanced.

Keywords: Covid-19, Pandemic, Coronavirus Anxiety Scale, Pittsburg Sleep Quality Scale, Health Workers.

Covid-19 Pandemi Sürecinde Sağlık Çalışanlarında Anksiyete ve Uyku Kalitesi

ÖZET

Amaç: Bu çalışmada üçüncü basamak sağlık çalışanlarında Covid-19 pandemisinin anksiyete ve uyku kalitesi üzerine etkileri araştırılmıştır.

Gereç ve Yöntem: Araştırma prospektif ve kesitsel tipte olup, bir fakülte hastanesinde çalışanların katılımı ile Şubat-Nisan 2021 tarihleri arasında yürütülmüştür. Veriler, çevrim içi anket yöntemi ile, sosyodemografik veri değerlendirme formu, Pittsburg Uyku Kalite İndeksi (PUKİ) ve Koronavirüs Anksiyete Ölçeği (KAÖ) kullanılarak toplanmıştır.

Bulgular: Araştırmaya toplam 291 sağlık çalışanı katılmıştır. Koronavirüs anksiyetesi olduğu tespit edilen hastaların PUKİ toplam puan ortalaması, anksiyetesi olmayan hastalara göre anlamlı seviyede yüksek bulunmuştur (p=0,005). Erkeklerin ortalama uyku süresi kadınlara göre (p=0,002) anlamlı şekilde fazladır. Uyku latansı puan ortalaması ile bekâr olma (p<0,001) ve çocuk sahibi olmama durumu arasında (p<0,001) anlamlı ilişki vardır. Aktif nöbet tutmak kötü uyku kalitesi ile ilişkili bulunmuştur (p=0,028).

Sonuç: Bu çalışma, Covid-19 pandemisine bağlı anksiyetenin sağlık çalışanlarının uyku kalitelerini olumsuz yönde etkilediğini ortaya koymuştur. Tekrarlaması muhtemel zorlayıcı koşullara hazırlıklı olmak ve sağlık çalışanlarının ruh ve beden sağlığını korumak için tespit edilen risk faktörlerine yönelik iyileştirici düzenlemelere ihtiyaç vardır.

Anahtar Kelimeler: Covid-19, Pandemi, Koronavirüs Anksiyete Ölçeği, Pittsburg Uyku Kalitesi Ölçeği, Sağlık Çalışanları.

INTRODUCTION

Many variables, particularly human health, were adversely affected by the terrible effects of the Coronavirus Disease 2019 (Covid-19) pandemic. Healthcare workers have taken on a lot of responsibility during the pandemic. Prolonged and difficult working conditions have resulted in physical and mental health issues, as well as poor sleep quality, in healthcare workers who have come into direct contact with the deadly virus (1, 2).

Sleep is not a waste of time outside of daily life; rather, it is a necessity in which the body renews itself and provides the basis for a long and healthy life (3). In terms of sleep disorders, health workers, particularly doctors and nurses, were affected more than the general population during the Covid-19 pandemic. Their professional performance is likely to decrease since their health worsens as a result of anxiety and sleep disorders (4,5,6). Advance planning of therapeutic approaches for high-risk groups can significantly contribute to healthcare workers' wellbeing and readiness for difficult conditions to challenging conditions. Unlike most other studies that used general scales, a coronavirus-specific anxiety scale was used to evaluate the relationship between Covid-19 anxiety and sleep quality in healthcare workers during the Covid-19 pandemic.

MATERIAL AND METHODS

This cross-sectional, descriptive and prospective study was conducted on healthcare workers working in hospital between February-April 2021 in a tertiary hospital.

The inclusion criteria were; to be18 years age or older and to be employee at HarranUniversity Hospital. ''Being under the age of 18, not being an employee at Harran University Hospital, being diagnosed with a psychiatric illness such as anxiety or depression and currently using medication related to it and being diagnosed with a sleep disorder and currently using medication related to it''were defined as exclusion criteria. A total of 319 active employees were reached. Out of 319 individuals who gave consent to participate in the study, 28 of them with regular drug use due to psychiatric illness and/or sleep disorder were excluded, and 291 participants were evaluated.

The data were obtained by asking the questions of Pittsburg Sleep Quality Index (PSQI), Coronavirus Anxiety Scale (CAS) and the sociodemographic data evaluation form created by the researchers. Participants answered the questions through the online survey method. The universe of the research consisted of doctors, nurses, health officers and other health personnel working at Harran Medical Faculty hospital. Convenience Sampling Technique was used for sample selection.

The study was started after the ethics committee approval was obtained from Harran University Clinical Research Ethics Committee on 18.01.2021.

Coronavirus Anxiety Scale (CAS): CAS was created to describe the anxiety symptoms caused by the Covid-19 pandemic process in individuals. The Turkish reliability and validity study of the scale was performed by Evren et al. (7).

There are five questions in the scale. The questions are scored in a Likert format, ranging from never (0) to almost every day (4) in the last two weeks. If the total score is less than 9, it shows that there is no anxiety about Covid-19. Dependent variables to be used in linear regression; questions asked in PSQI and CAS. The independent variables are age, gender, marital status, presence and number of children, occupation, and use of caffeine (tea, coffee) before sleep.

Pittsburg Sleep Quality Index (PSQI): This scale was developed by Buysse et al. in 1989. It evaluates sleep quality as good or bad. There are 24 questions in the scale (8). 0- 21 points can be obtained from the scale. The total score of the seven sub-components were scored between 0-3. If the total score from PSQI is less than 5, it indicates that the sleep quality is good. The Turkish reliability and validity study of the scale was performed by Ağargün et al. in 1996 and it was shown that it is a valid, standard and reliable method for measuring whether sleep quality is good or bad (9).

Data Analysis Method: Normality assumptions of the variables were examined with Skewness and Kurtosis coefficients, Kolmogorov Smirnov and Histogram tests. The Mann–Whitney test was used to compare non-normally distributed continuous variables between two groups, and the Kruskal-Wallis test was used to compare three or more groups. If a significant difference was obtained as a result of the Kruskal-Wallis test, the Mann-Whitney test with Bonferroni correction was used to determine from which groups the difference originated. In cases where the assumption of normality was met, Independent Samples T Test was used in comparisons between two groups, and one-way analysis of variance (ANOVA) was used in groups of three or more. If a significant difference was found in the ANOVA analysis, Post-Hoc analysis was applied.

IBM SPSS.23 program was used in all analyzes and $p < 0.05$ value was accepted as the level of significance.

RESULTS

A total of 291 healthcare professionals included in the study. 56.7% (n=165) of them were male and 43% (n=126) were female. The age of the participants ranged from 18 to 54. Of them 54.6% (n=159) were married and 58.4% (n=170) had no children. According to the most common occupational group distribution, 38.5% (n=112) of the participants were working as research assistants and 28.9% (n=84) as nurses and midwives.

38.8% (n=13) of the participants are those who have been working in the profession for 1-4 years. The rate of those working in internal sciences was 54.6% (n=159), and the rate of those working actively in the pandemic service was 62.5% (n=182). 70.4% (n=205) of the employees were on active duty.

The sociodemographic characteristics of the participants included in the study are shown in Table 1.

Table 1. Distribution of some sociodemographic characteristics and working status of the participants

Parameter	n	%
Gender		
male	165	56.70
female	126	43.30
Marital status		
Single/divorced	132	45.36
Married	159	54.64
Child		
yes	121	41.58
no	170	58.42
Profession		
general practitioner	11	3.78
health technician	14	4.81
research assistant	112	38.48
lecturer	17	5.84
security guard	17	5.84
cleaning staff	15	5.15
nurse/midwife	84	28.86
information technology staff	12	4.12
physiotherapist	9	3.09
Working time in the profession(year)		
<1	42	14.43
1-4	113	38.83
5-9	79	27.14
10-14	34	11.68
≥15	23	7,90
Department		
emergency	39	13.40
surgical sciences	52	17.86
internal sciences	159	54.63
Administrative/technical units	10	3.43
Intensive care	31	10.65
Active working in the pandemic service or polyclinic		
Yes	182	62.54
No	109	37.46
Previous diagnosis of sleep disorder?		
Yes	20	6.88
No	271	93.12
Active night duty		
yes	205	70.44
no	86	29.56
Number of night duty per month		
1-3	38	13.05
4-6	42	14.43
7-10	96	32.98
11-15	37	12.71
≥15	12	4.12
Consumption of caffeinated beverages (coffee, etc.) and tea 30-60 minutes before bedtime?		
yes	113	38.83
no	178	61.17

As shown in Table 2, CAS scores differ significantly according to the occupational group (p=0.045) and according to the department (p=0.003). It has been shown that the average CAS score of the personnel working in administrative and technical sciences is significantly higher than those working in surgical sciences (p=0.003). Participants who had previously been diagnosed with a sleep disorder had significantly higher CAS scores than those who had not (p=0.002).

Table 2. Comparison of coronavirus anxiety score with some sociodemographic characteristics and working status

	n	mean ± SD	median (min-max)	p
Gender				0.797*
male	165	1.85 ±3.05	1 (0 - 18)	
female	126	2.21 ± 3.5	0 (0 - 15)	
Marital status				0.891*
Single,divorced	132	2.02 ± 3.39	0 (0 - 15)	
married	159	1.99 ± 3.14	1 (0 - 18)	
Child				0.225*
yes	121	2.16 ± 3.21	1 (0 - 18)	
no	170	1.89 ± 3.28	0 (0 - 15)	
Profession				0.045**
general practitioner	11	1.55 ± 2.46	1 (0 - 8)	
health technician	14	1.5 ± 3.03	0 (0 - 11)	
research assistant	112	1.77 ± 2.81	0 (0 - 11)	
lecturer	17	0.76 ± 0.97	0 (0 - 2)	
security guard	17	2.88 ± 2.91	3 (0 - 10)	
cleaning staff	15	3.4 ± 3.78	2 (0 - 12)	
nurse/midwife	84	2.45 ± 4.23	1 (0 - 18)	
information technology staff	12	0.42 ± 0.67	0 (0 - 2)	
physiotherapist	9	2.56 ± 2.24	2 (0 - 6)	
Working time in the profession(year)				0.387**
<1	42	1.71 ± .76	0 (0 - 12)	
1-4	113	1.88 ± 3.25	0 (0 - 15)	
5-9	79	2.49 ± 3.51	1 (0 - 15)	
10-14	34	2.29 ± 3.96	0,5 (0 - 18)	
≥15	23	1.04 ± 1.4	0 (0 - 5)	
Department				0.003**
emergency	39	2.36 ± 3.44	1 (0 - 12)	
surgical sciences	52	0.81 ± 1.91	0 (0 - 10)	
internal sciences	159	2.11 ± 3.19	1 (0 - 15)	
administrative/ technical units	10	2.9 ± 3.03	2,5 (0 - 10)	
intensive care	31	2.74 ± 4.62	1 (0 - 18)	
Active working in the pandemic service or polyclinic				0.738*
yes	182	1.92 ± 3.12	0 (0 - 15)	
no	109	2.14 ± 3.47	1 (0 - 18)	
Previous diagnosis of sleep disorder?				0.002*
yes	20	4.65 ± 5.5	2 (0 - 15)	
no	271	1.81 ± 2.95	0 (0 - 18)	
Active night duty				0.402*
yes	205	2.18 ± .46	0 (0 - 18)	
no	86	1.59 ± 2.65	0,5 (0 - 11)	
Number of night duty per month				0.754**
1-3	38	2.32 ± 2.75	1.5 (0 - 10)	
4-6	42	2.07 ± 3.37	0.5 (0 - 14)	
7-10	96	1.91 ± 3.02	0 (0 - 15)	
11-15	37	2.43 ± 3.78	1 (0 - 15)	
≥15	12	3.17 ± 6.32	0 (0 - 18)	
Consumption of caffeinated beverages (coffee, etc.) and tea 30-60 minutes before bedtime				0.867**
yes	113	2.05 ± 3.49	0 (0 - 15)	
no	178	1.97 ± 3.10	1 (0 - 18)	

*Mann Whitney U test; **Kruskal-Wallis Test.

Comparison of the participants' total PSQI scores according to their sociodemographic characteristics is shown in Table 3. PSQI total scores differ according to the occupation group (p=0.002) and the working time in the profession (p=0.016). The mean score of the health technicians and research assistants is significantly higher than the security guards (p=0.014, p=0.003 respectively). The mean score of health personnel working between 5-9 years is significantly higher than those working for 15 years or more (p=0.022). The mean total score of healthcare workers with a

previous diagnosis of sleep disorder was significantly higher than those without (p=0.001). A correlation was found between the number of night duties and the total PSQI score (p=0.016). The mean PSQI total score of patients with coronavirus anxiety was significantly higher than of thoose without coronavirus anxiety (p=0.005).

Table 3. The corelation of sleep quality scores with some sociodemographic characteristics and coronavirus anxiety scores

	n	mean ± SD	Median (Min - Max.)	p
Gender				*0.130
male	165	7.26 ± 3.39	6.00 (1.00-17.00)	
female	126	6.69 ± 3.00	6.50 (1.00-17.00)	
Marital status				*0.081
Single/divorced	132	7.38 ± 3,31	7.00 (1.00-17.00)	
married	159	6.71 ± 3.15	6.00 (1.00-17.00)	
Child				*0.616
yes	121	6.90 ± 3.35	6.00 (1.00-17.00)	
no	170	7.09 ± 3.16	7.00 (1.00-17.00)	
Profession				**0.002
general practitioner	11	5.82 ± 1.94	6.00 (3.00-8.00)	
health technician	14	8.29 ± 2.79	9.00 (2.00-11.00)	
research assistant	112	7.12 ± 3.20	6.00 (1.00-17.00)	
lecturer	17	5.76 ± 2.11	5.00 (3.00-10.00)	
security guard	17	4.82 ± 1.78	5.00 (2.00-9.00)	
cleaning staff	15	6.60 ± 2.95	7.00 (1.00-11.00)	
nurse/midwife	84	7.90 ± 3.71	7.50 (2.00-17.00)	
information technology staff	12	5.75 ± 2.60	7.00 (1.00-9.00)	
physiotherapist	9	5.67 ± 2.18	6.00 (2.00-8.00)	
Working time in the profession(year)				**0.016
<1	42	6.24 ± 3.26	6.00 (1.00-15.00)	
1-4	113	7.11 ± 2.93	7.00 (2.00-17.00)	
5-9	79	7.77 ± 3.57	7.00 (3.00-17.00)	
10-14	34	6.94 ± 3.29	6.50 (1.00-14.00)	
≥15	23	5.48 ± 2.66	5.00 (1.00-13.00)	
Department				**0.391
emergency	39	6.92 ± 2.97	7.00 (1.00-13.00)	
surgical sciences	52	6.38 ± 2.71	6.00 (2.00-12.00)	
internal sciences	159	7.11 ± 3.24	6.00 (1.00-17.00)	
administrative/ technical units	10	8.40 ± 3.50	8.00 (2.00-15.00)	
Intensive care	31	7.23 ± 4.14	7.00 (2.00-17.00)	
Active working in the pandemic service or polyclinic				*0.513
yes	182	7.11 ± 3.40	6.00 (1.00-17.00)	
no	109	6.85 ± 2.93	7.00 (2.00-15.00)	
Previous diagnosis of sleep disorder?				*0.001
yes	20	10.60 ± 4.16	10.50 (3.00-17.00)	
no	271	6.75 ± 3.00	6.00 (1.00-17.00)	
Active night duty?				*0.100
yes	205	7.20 ± 3.45	6.00 (1.00-17.00)	
no	86	6.58 ± 2.62	7.00 (1.00-15.00)	
Number of night duty per month				**0.016
1-3	38	6.45 ± 3.21	6.50 (2.00-14.00)	
4-6	42	6.07 ± 2.87	5.00 (1.00-13.00)	
7-10	96	7.44 ± 3.21	7.00 (1.00-16.00)	
11-15	37	8.30 ± 3.78	8.00 (3.00-17.00)	
≥15	12	8.08 ± 3.96	8.00 (3.00-17.00)	
Consumption of caffeinated beverages (coffee, etc.) and tea 30-60 minutes before bedtime				*0.408
yes	113	7.22 ± 3.68	6.00 (2.00-17.00)	
no	178	6.88 ± 2.92	7.00 (1.00-16.00)	
coronavirus anxiety score				*0.005
no (≤9 points)	272	6.88 ± 3.17	6.00 (1.00-17.00)	
yes (≥9)	19	9.00 ± 3.48	9.00 (3.00-17.00)	

DISCUSSION

Sleep quality is an important component for physical strength and health protection. The delivery of health-care services is also a necessity that must be performed on a continuous and high-quality basis. The mental health and sleep quality of healthcare personnel should be prioritized in challenging conditions like the Covid-19 Pandemic. If this strategically important group has health issues, it is impossible to expect them to provide the necessary level of service quality. In this study 6.53% of the participants had coronavirus anxiety, and their sleep quality was worse than that of the non-anxious group.

According to a systematic review performed by Pappa et al., 23.2% of over 30,000 healthcare workers experienced anxiety during the pandemic. In their study, the rate of insomnia was reported to be 38.9% (10). The lower anxiety rates in our study could be due to participants' adaptation to pandemic conditions over time. Although our research was conducted towards the end of the pandemic sleep quality was found to be worse in those determined to have coronavirus anxiety. In China, before the pandemic, the prevalence of sleep disorders in healthcare workers was found to be 39.2% (11). Again in China, it has been shown that 78.4% of healthcare workers under the Covid-19 pandemic, had poor sleep quality and 51.7% of them experienced insomnia (12). According to the literature, sleep disorders are seen especially in female physicians and those who have long-term interactions with Covid 19 patients (13). The high prevalence of sleep disorders among healthcare professionals should be taken seriously, as sleep disorders affect not only their health but also their occupational performance.

In this study, men's average sleep duration was discovered to be significantly longer than women's. Sleep disorders were found to be more common in women during epidemic and quarantine conditions. Women's hormonal profiles, which change from puberty to the reproductive period and post-menopausal years, may play an important role in the development of sleep disorders, which can lead to psychological problems (14). However, Tu et al.'s (15) research did not find a relationship between marital status and sleep quality, married health workers had lower average sleep latency scores than single ones in our study. At the same time, it was discovered that this problem was more prevalent among those who did not have children. Badellino et al., on the other hand, discovered that living with family/partner increases the risk of psychological distress (16). Being married is also a risk factor for anxiety in anesthesiologists in the pandemic (17). Married people are generally less likely to experience mental health issues, but they might have experienced unforeseen family crises during the pandemic. Duran et al. found that single people had lower sleep quality than married people,

which is consistent with our findings. Singles may have experienced quite lonely during the period of social isolation, which may have impacted their sleep quality (18).

In this study, it was discovered that those with fewer working years in the profession had significantly higher sleep latency sub-dimension scores. This can be explained by the fact that those with more professional experience have more crisis management experience. Studies showed that during the SARS epidemic among nurses, younger age was associated with mood disorder and insomnia, and higher incidence of insomnia was determined in those directly involved in the treatment or care of Covid-19 patients (19, 20). Adequate training and support can reduce the negative effect of this group's lack of knowledge and experience (21).

In this study, the occupational group had an impact on the delay in falling asleep, and health technicians' duration of falling asleep was noticeably longer than lecturers'. According to San Martin et al., during the Covid-19 pandemic, healthcare personnel who were actively involved in the diagnosis, treatment, or care of patients had experienced sleeplessness more than non-healthcare employees (22). Working in an intensive care unit and working more hours per week were linked to poor sleep quality in another study (23). Moreover, studies have shown increased anxiety and decreased sleep quality among emergency service workers during the pandemic (24, 25). It can be said that the more frequent and close contact of the employees with the patients containing deadly virüs increases their anxiety.

Zhou et al. found that the sleep quality of nurses was lower than that of doctors and medical technicians (26). This can be explained by the increased possibility of disruption in circadian rhythms due to the fact that nurses work all night with frequent night shifts (27). In a study from Italy showed that during the pandemic restrictions, the majority of participants (55.32%) reported being disturbed, and there was a strong correlation between an irregular sleep schedule and poor sleep quality. (28). The frequency of monthly night shifts was found to have a significant effect on the subjective sleep quality in our study. It was found that those who had 11–15 night duties every month had the lowest score for subjective sleep quality.

It has been reported that the increasing workload severely affects the sleep patterns of healthcare personnel, and that quality sleep requires a steady work schedule, in addition to the stress brought on by the lethal Covid-19. During the pandemic, however, medical personnel had to work nonstop to save people's lives (27). Ali Eyüpoğlu et al. found that the sleep quality of residents with fewer night duties was better (29). Ghalichi et al. also reported that shift workers had poorer sleep quality (30). In our study, like in the studies

mentioned above, it was discovered that health workers who work 11 to 15 shifts per month had poorer subjective sleep quality, longer times to fall asleep, and more dysfunction during the day. In their study examining adults' sleep quality before and during the Covid-19 pandemic, Targa et al. also discovered that participants' sleep was adversely affected by the pandemic. (31). Since our study was not a cohort study, the participants' prior sleep quality could not be assessed; however, it was found that 43.2% of the participants had poor sleep during the pandemic period.

CONCLUSION

This is one of the first studies which was performed by using CAS in Turkey. This study found that Covid- 19 is an anxiety risk factor. Anxiety related to the Covid-19 negatively impacts sleep and worsens daytime dysfunction in healthcare professionals. The Covid-19 pandemic was neither the first nor seems to be the last and new pandemics are likely to emerge. In order to be prepared for similar difficult conditions, health workers' mental health must be protected. It would be appropriate to schedule regular interviews to assess healthcare professionals' mental health and sleep quality. Personnel who are observed to have anxiety and sleep problems should be treated professionally before their clinical picture worsens.

LIMITATIONS

This study was conducted through an online questionnaire to reduce the risk of contact during the pandemic. In fact, face-to-face evaluations are always preferable, although this was not possible due to the special circumstances of the pandemic. Stronger evidence could be obtained if a multicentric study could be planned.

Situations such as 'fear of being infected', 'carrying infection to home and 'death of family members, friends and work mate due to Covid-19 ' should also be asked to participants, because these factors can cause negative feelings and can increase the anxiety and sleep disturbances". It will be kept in mind for our further studies. Despite the limitations, we believe that the results of this study can contribute to future studies.

REFERENCES

1. OECD Policy Responses to Coronavirus (COVID-19). The territorial impact of COVID-19: Managing the crisis across levels of government.Updated 10 November 2020 [Internet]. [Cited 2022 October 15]. Available from https://www.oecd.org/coronavirus/policy-responses/theterritorial-impact-of-covid-19-managing-the-crisis-across-levels-ofgovernment-d3e314e1/

2. Jahrami H, BaHammam AS, AlGahtani H, Ebrahim A, Faris M, AlEid K, et al S. The examination of sleep quality for frontline healthcare workers during the outbreak of Covid-19. Sleep Breath. 2021; 25 (1) :503-11. https://doi.org/10.1007/s11325-020-02135-9.

3. Jansen E. Why sleep is so important to your health. University of Michigan. School of public health. March 2, 2020 [Internet]. [Cited 2022 October 15]. Available from https://sph.umich.edu/pursuit/2020posts/why-sleep-is-so-important-to-your-health.html.

4. Badahdah AM, Khamis F, Al Mahyijari N. Sleep quality among health care workers during the COVID-19 pandemic. Journal of Clinical Sleep Medicine. 2020; 16(9): 1635

5. Labrague LJ, De los Santos JAA COVID-19 anxiety among front-line nurses: Predictive role of organisational support, personal resilience and social support. Journal of nursing management. 2020; 28(7): 1653-61.

6. Simonetti V, Durante A, Ambrosca R, Arcadi P, Graziano G, Pucciarelli G et al. Anxiety, sleep disorders and self-efficacy among nurses during COVID-19 pandemic: A large cross-sectional study. Journal of clinical nursing. 2021; 30(9-10): 1360-71.

7. Evren C, Evren B, Dalbudak E, Topcu M, Kutlu N. Measuring anxiety related to COVID-19: A Turkish validation study of the Coronavirus Anxiety Scale. Death Stud. 2022; 46(5): 1052-8. https://doi.org/10.1080/07481187.2020.1774969

8. Buysse DJ, Reynolds III CF, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. Psychiatry research. 1989; 28(2): 193-213.

9. Ağargün MY, Kara H, Anlar Ö. Pittsburgh Uyku Kalitesi İndeksi'nin geçerliliği ve güvenirliliği. Türk Psikiyatri Dergisi. 1996; 7(2): 107-15.

10. Pappa S, Ntella V, Giannakas T, Giannakoulis VG, Papoutsi E, Katsaounou P. Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: A systematic review and meta-analysis. Brain, behavior, and immunity.2020; 88:901-7.

11. Qiu D, Yu Y, Li RQ, Li YL, Xiao SY. Prevalence of sleep disturbances in Chinese healthcare professionals: a systematic review and meta-analysis. Sleep Medicine. 2020; 67:258-66.

12. Yue L, Zhao, R., Xiao, Q., Zhuo, Y., Yu, J., & Meng, X. The effect of mental health on sleep quality of front-line medical staff during the Covid-19 outbreak in China: A cross-sectional study. PloS one, 2021; 16(6): 2537-53.

13. Abdulah, D. M., & Musa, D. H. Insomnia and stress of physicians during Covıd-19 outbreak. Sleep Medicine: X, 2020; 2: 1000-17.

14. Zhang B, Wing YK. Sex differences in insomnia: a meta-analysis. Sleep. 2006; 29(1): 85-93. https://doi.org/10.1093/sleep/29.1.85

15. Tu ZH, He JW, Zhou N. Sleep quality and mood symptoms in conscripted frontline nurse in Wuhan, China during COVID-19 outbreak: A cross-sectional study. Medicine. 2020; 99 (26): e22948. PMID: 32590755

16. Badellino H, Gobbo ME, Torres E, Aschieri ME. Early indicators and risk factors associated with mental health problems during COVID-19 quarantine: Is there a relationship with the number of confirmed cases and deaths?. The International Journal of Social Psychiatry. 2021; 67(5): 567-75. https://doi.org/10.1177/0020764020966020

17. Jain A, Singariya G, Kamal M, Kumar M, Jain A, Solanki RK. COVID-19 pandemic: Psychological impact on anaesthesiologists. Indian journal of anaesthesia. 2020; 64(9), 774.

18. Duran S, Erkin Ö. Psychologic distress and sleep quality among adults in Turkey during the COVID-19 pandemic. Prog Neuropsychopharmacol Biol Psychiatry. 2021 Apr 20; 107:110254. doi: 10.1016/j.pnpbp.2021.110254. Epub 2021 Jan 22. PMID: 33485962; PMCID: PMC7825837.

19. Phua DH, Tang HK, Tham KY. Coping responses of emergency physicians and nurses to the 2003 severe acute respiratory syndrome outbreak. Academic emergency medicine. 2005;12(4):322-8

20. Su TP, Lien TC, Yang CY, Su YL, Wang JH, Tsai SL et al. Prevalence of psychiatric morbidity and psychological adaptation of the nurses in a structured SARS caring unit during outbreak: a prospective and periodic assessment study in Taiwan. Journal of psychiatric research. 2007;41(1-2):119-30.

21. Yigitoglu, GT, Yilmaz, A, Yilmaz H. The effect of Covid-19 on sleep quality, anxiety and depression on healthcare staff at a tertiary hospital in Turkey. Archives of Psychiatric Nursing. 2021;35(5):504-510.22

22. San Martin, AH, Serrano JP, Cambriles TD, Arias EMA, Méndez JM, del Yerro Álvarez, MJ, Sánchez MG. Sleep characteristics in health workers exposed to the Covid-19 pandemic. Sleep medicine, 2020;75:388-94

23. Haznedaroğlu Dİ, Tunçel ÖK, Hepdurgun C, Pirildar Ş, Başoğlu ÖK. COVID-19 Pandemisinin Göğüs Hastalıkları Hekimlerinin Uyku Kalitesine ve Ruhsal Durumlarına Etkisi. Arch Neuropsychiatry. 2022;59:315−20.

24. Ekinci İ, Ekinci E. Covid-19 Pandemi Döneminde Sağlık Çalışanlarında Anksiyete, Depresyon, Duygu Düzenleme Güçlüğü ve Uyku Kalitesinin İncelenmesi. İstanbul Kanuni Sultan Süleyman Tıp Dergisi (IKSST). 2021; 13(2):61-8.

25. Sayik D, Acikgoz A, Kaya S. Anxiety and Sleep Quality Levels of Emergency Medical Personnel and Factors Affecting Them During the Coronavirus Disease-2019 Pandemic/COVID-19 Pandemisinde Acil Servis Calisanlarinin Anksiyete ve Uyku Kalitesi Duzeyleri ve Etkileyen Faktorlerin Belirlenmesi. Journal of Turkish Sleep Medicine. 2022; 9(1), 27-37.

26. Zhou Y, Yang Y, Shi T, Song Y, Zhou Y, Zhang Z et al. Prevalence and demographic correlates of poor sleep quality among frontline health professionals in Liaoning Province, China during the Covid-19 outbreak. Frontiers in psychiatry. 2020;11:520-1.

27. Jehan S, Zizi F, Pandi-Perumal SR, Myers AK, Auguste E, Jean-Louis G, et al. Shift Work and Sleep: Medical Implications and Management. Sleep Med Disord. 2017;1(2):00008.

28. Franceschini C, Musetti A, Zenesini C, Palagini L, Scarpelli S, Quattropani MC, et al. Poor sleep quality and its consequences on mental health during the Covid-19 lockdown in Italy. Frontiers in psychology. 2020;11:3072-3.

29. Eyüpoğlu A, Ünlüoğlu İ, Bilgin M, Bilge U. Eskişehir Osmangazi Üniversitesi Tıp Fakültesi Araştırma Görevlisi Hekimlerin Uyku Kalitelerinin ve Uyku Kalitelerine Etki Edebilecek Faktörlerin Değerlendirilmesi. Osmangazi Tıp Dergisi. 2018;41(4):304-14.

30. Ghalichi L, Pournik O, Ghaffari M, Vingard E. Sleep Quality among Health Care Workers. Archives of Iranian Medicine. 2013;16(2):100-3.

31. Targa ADS, Benítez ID, Moncusí-Moix A, Arguimbau M, de Batlle J, Dalmases M, et al. Decrease in sleep quality during COVID-19 outbreak. Sleep Breath. 2021;25:1055–61.