



Anxiety-Depression and Sleep Quality in Healthcare Workers Working in the Covid Service During the Covid-19 Pandemic Period

Covid-19 Pandemisi Döneminde Covid Servisinde Çalışan Sağlık Çalışanlarında Anksiyete-Depresyon ve Uyku Kalitesi

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ABSTRACT

AIM: Covid-19, which mainly causes respiratory tract infections, threatens the physical health of individuals and negatively affects their mental health. In this study we aim to examine the mental health and sleep quality of healthcare professionals working in the covid service during the Covid-19 pandemic.

MATERIAL AND METHOD: A total of 222 healthcare workers in Adana City Hospital, between the ages of 20 and 65 years, working in COVID and non-COVID wards, without any previous diagnosis of anxiety-depression and sleep disorders were included in the study. The BDI (Beck Depression Index) , and BAI (Beck Anxiety Index) , and PSQI (Pittsburgh Sleep Quality Index) were applied to healthcare workers between February 15th, 2021 and March 15th, 2021. In addition, healthcare workers were divided into physicians, nurses, and allied health personnel (e.g. laboratory, technicians, cleaners) according to their profession. Those working in the COVID and non-COVID service were evaluated according to the PSQI, BDI , and BAI and compared with each other.

RESULTS: The depression scores of employees in the COVID service were observed to be higher (p=0.035). Although the total PSQI scores and Beck anxiety scores of employees working in the COVID service were higher than of those working in the non-COVID service, the difference was not statistically significant (p=0.19 and p=0.32, respectively).

CONCLUSION: This observational cross-sectional clinical study showed that working in the COVID service with patients with a high risk of infection caused psychological problems such as depression, anxiety, and sleep disorders in healthcare workers.

Key words: Mental health, SARS-COV2, sleep quality

ÖZET

AMAÇ: Ağırıklı olarak solunum yolu enfeksiyonlarına neden olan Covid-19, bireylerin fiziksel sağlığını tehdit etmekte kalmayıp ruh sağlığını da olumsuz etkilemektedir. Bu çalışmada amacımız, Covid-19 pandemisi döneminde covid servisinde çalışan sağlık çalışanlarının ruh sağlığı ve uyku kalitesini incelemektir.

GEREÇ YÖNTEM: Çalışmaya Adana Şehir Hastanesi' nde COVID ve COVID dışı servislerde çalışan 20-65 yaş arası, daha önce anksiyete, depresyon ve uyku bozukluğu tanısı olmayan toplam 222 sağlık çalışanı dahil edildi. Sağlık çalışanlarına 15 Şubat 2021 ile 15 Mart 2021 tarihleri arasında BDI (Beck Depresyon Indexi), BAI (Beck Anksiyete İndeksi) ve PSQI (Pittsburgh Uyku Kalitesi Indexi) uygulandı. Ayrıca sağlık çalışanları görevlerine göre hekim, hemşire ve yardımcı sağlık personeli (laboratuvar, teknisyen, temizlik görevlisi) olarak ayrıldı. COVID ve COVID dışı servislerde çalışanlar anksiyete, depresyon ve uyku kalitesi açısından değerlendirildi ve birbirleriyle karşılaştırıldı.

BULGULAR: COVID servisinde çalışanların depresyon puanlarının daha yüksek olduğu görüldü (p=0,035). COVID servisinde çalışanların toplam PSQI puanları ve Beck anksiyete puanları COVID dışı serviste çalışanlara göre daha yüksek olmasına rağmen aradaki fark istatistiksel olarak anlamlı değildi (sırasıyla p=0.19 ve p=0.32).

SONUÇ: Bu gözlemsel kesitsel klinik çalışma, COVID servisinde enfeksiyon riski yüksek hastalarla çalışmanın sağlık çalışanlarında depresyon, anksiyete ve uyku bozuklukları gibi psikolojik sorunlara neden olduğunu göstermiştir.

Anahtar kelimeler: Ruh sağlığı, SARS-COV2, uyku kalitesi

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Makale geliş tarihi / Submitted: Eylül 2021 / September 2021

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Makale kabul tarihi / Accepted: Ekim 2024 / October 2024

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INTRODUCTION

The virus that caused many unexplained pneumonia cases in December 2019 was named by WHO (World Health Organization) severe acute respiratory syndrome coronavirus 2 (SARS-COV2). The WHO declared a pandemic in March 2020 and stated that 1716 of the 44,672 infected cases were healthcare workers.¹ This virus, which mainly causes respiratory tract infections, threatens the physical health of individuals and negatively affects their mental health. Besides the general population and patients, health workers are also affected physically and mentally due to intense and risky working conditions.

During the H1N1 pandemic in 2009-2010, approximately 3 million healthcare workers (physicians, nurses, laboratory technicians, cleaning staff, medical waste handlers) were affected by this virus.² All healthcare workers were at risk of both infection and death in the COVID-19 pandemic.³ In previous pandemics, as with all the public, especially healthcare workers have experienced more stress and anxiety about being infected. In the early part of the COVID-19 pandemic, as in the SARS epidemic, various signs of anxiety were shown among healthcare workers.⁴ The negative effects on the mental health of healthcare workers, who are at the frontline of the pandemic, may prevent an effective fight against the pandemic. Few healthcare systems have drawn attention to the importance of mental health and sleep habits in effective pandemic management. Many studies have been conducted by researchers to effectively combat the virus. Studies on Covid-19 are usually related to the physical complaints caused by the disease. However, it is very important to deal with the mental health of both patients and healthcare professionals in order to intervene well with the pandemic.^{5,6} Due to the SARS-COV2 pandemic in our country, there are a limited number of studies examining the sleep quality and mental health of healthcare professionals working in the covid service.

In this study, we aimed to evaluate the mental health and sleep habits of healthcare professionals working in the covid service and to compare them with those working in non-covid services during the COVID-19 pandemic.

MATERIAL AND METHOD

A total of 222 healthcare workers in Adana City Hospital, between the ages of 20 and 65 years, working in COVID and non-COVID service, without any previous diagnosis of anxiety-depression and sleep disorders were included in the study. The BDI, BAI, and PSQI were applied to healthcare workers between February 15th, 2021 and March 15th, 2021. Those who did not meet the study criteria were excluded from the study. The study was approved by the local ethics committee (decision no. 1257, date 13.01.2021). Patients were informed about the research, it is explained that the information obtained will be kept confidential, and written or verbal consent was obtained from those who volunteered to participate in the study.

The patients were evaluated according to age, sex, educational status, work experience, marital status, number of children, smoking, household type and fear of contagion to family members. In addition, healthcare workers were divided into physicians, nurses, and allied health personnel (e.g. laboratory, technicians, cleaners) according to their profession. Those working in the COVID and non-COVID service were evaluated according to the PSQI, BDI, and BAI and compared with each other.

Pittsburgh Sleep Quality Index (PSQI): The Self-consistent and repeatable PSQI is used to assess each person's sleep quality over the past 1 month.⁷ The PSQI includes 19 questions and is used to evaluate the quality and quantity of sleep, the presence and severity of sleep disorders. It was completed by the same physician through one-to-one interviews with the patients. The PSQI consists of seven items that evaluate subjective sleep quality, sleep delay, sleep duration, sleep efficiency, sleep disturbance, use of sleeping pills, and deterioration in daytime work. The response of each is scored between 0-3 according to symptom frequency. Scoring is 0 if it has never happened during the past month, 1 if it is less than once a week, 2 if it is once or twice a week, and 3 if it is three or more times a week. The sleep quality assessment in the questionnaire is scored

as 0 very good, 1 very good, 2 very badly, and 3 very bad. The obtained global score ranges from 0 to 21, and high values indicate poor sleep quality and high levels of sleep disturbance. A global score of 6 or above indicates that the quality of sleep is clinically significantly worse. It has a diagnostic sensitivity of 89.6% and a specificity of 86.5%.^{7,8} Agargün et al. adapted the PSQI questionnaire to Turkish patients.⁹

Beck Depression Index (BDI): The BDI was developed to measure the risk of depression, the level of depressive symptoms, and the change in severity in adults (Beck 1961). The Turkish validity and reliability study was conducted by Hisli (1989). It measures the physical, emotional, and cognitive symptoms seen in depression. The scale includes 21 symptom categories with four options each. The individual is asked to mark the sentence that best expresses how they felt in the past week, including the day of practice. Each item is given a score between 0-3, and the depression score is calculated by summing the answers to all questions. A high total score indicates a high level of severity of depression. The total score obtained from the inventory indicates 0-9 normal, 10-18 mild, 19-29 moderate, 30 and above severe depression symptoms.¹⁰

Beck Anxiety Index (BAI): The BAI, by Beck et al. (1988), is a self-rating scale used to determine the frequency of anxiety symptoms experienced by individuals. The Turkish validity and reliability study was performed by Ulusoy et al. in 1998.¹¹ It evaluates the frequency of anxiety symptoms experienced by the individual. It is a self-assessment scale consisting of 21 items and scored between 0-3. The patient is questioned about how much the feeling of distress has bothered them in the last week. Higher scores indicate greater anxiety. The total score obtained from the inventory indicates 0-7 normal, 8-15 mild, 16-25 moderate, 26-63 severe anxiety symptoms.

Statistical analysis: The normality of the distribution of continuous variables was evaluated using the Shapiro-Wilk test. Analyses were performed using non-parametric methods because the data did not conform to normal distribution. The Mann-Whitney U test was used for comparisons of two independent groups, and the Kruskal-Wallis test was used for comparisons of more than two groups. The linear relationship between the two continuous variables was evaluated using the Spearman Rho correlation coefficient. In the analysis of categorical data, Chi-square and Fisher's exact tests were used. Data analysis was performed using the SPSS 21 program. The statistical significance level was taken as 0.05.

RESULTS

A total of 222 people, 93 people working in the COVID service and 129 people working in the non-COVID service, were included in the study. Age, sex, education level, work experience, marital status, number of children, smoking, fear of contagion to family members, household type, and the number of people living together showed homogeneous distribution ($p > 0.05$). Occupational distributions differed between those working in the COVID service and those working in the non-COVID service ($p < 0.001$).

Table 1: Demographic data of healthcare workers and characteristic features

	Covid service (n:93)		Non- Covid service (n:129)		Total (n:222)		P
	N	%	n	%	N	%	
Age							
20-30	22	23.7	13	10.1	35	15.8	0.055
30-40	38	40.9	65	50.4	103	46.4	
40-50	21	22.6	33	25.6	54	24.3	
50 ≤	12	12.9	18	14.0	30	13.5	
Sex							
Male	34	36.6	62	48.1	96	43.2	0.088
Female	59	63.4	67	51.9	126	56.8	
Work experience							
0-5 years	19	20.4	11	8.5	30	13.5	0.088
6-10 years	20	21.5	32	24.8	52	23.4	
11-15 years	23	24.7	37	28.7	60	27.0	
16 ≤ years	31	33.3	49	38.0	80	36.0	
Occupational							
Doctor	60	64.5	97	75.2	157	70.7	<0.001
Nurse	29	31.2 ^f	14	10.9	43	19.4	
Allied health care professional	4	4.3	18	14.0 ^f	22	9.9	
Fear of contagion to family members							
Yes	92	98.9	124	96.1	216	97.3	0.405*
No	1	1.1	5	3.9	6	2.7	

p: Chi-square test *Fisher Exact test ^fexpresses the higher ratio (compare column proportions with Z-score) (p<0.05)

Although there was no significant difference in PSQI and anxiety scores according to age groups, depression scores were different (p=0.034). Depression scores were higher in the 20-30 years' age group and those aged over 50 years (p<0.05). There was no significant difference in terms of PSQI and depression scores according to sex, but anxiety scores were higher in women (p<0.001). There was no significant difference in PSQI and anxiety scores according to work experience, but depression scores of employees for 11-15 years were lower (p=0.024), and higher in those who were employed for 0-5 years and 16 years and over (p<0.05). There was no significant difference in PSQI and depression scores according to occupational groups, but anxiety scores were lower among physicians (p=0.001), and higher among the others (p<0.05). There was no significant difference in PSQI scores according to the fear of contagion to family members, but depression and anxiety scores were higher in those with a fear of contagion to family members (p<0.05). PSQI, depression, and anxiety scores did not differ according to education level, marital status, number of children, smoking, and house type (p>0.05).

Table 2: The relationship of total PSQI, depression and anxiety score with age, sex, work experience, occupation, , fear of contagion to family members

	PSQI score		Depression score		Anxiety score	
	Mean±SD (min-max)	Median[IQ R]	Mean±SD (min-max)	Median[IQR]	Mean±SD (min-max)	Median[IQR]
Age						
20-30	8.09±5.79 (2-37)	7 [5-10]	15.69±7.9 (1-35)	15 [10-22]	12.83±11.18 (0-37)	13 [2-21]
30-40	6.63±3.22 (1-17)	6 [4-9]	12.44±9.97 (0-51)	11 [4-17] ^d	10.7±9.54 (0-50)	9 [3-16]
40-50	7.24±3.64 (2-17)	6 [4-10]	15.13±9.99 (0-38)	14.5 [6-23]	14.31±13.2 (0-52)	10 [3.75-23.5]
50 ≤	7.17±2.93 (1-13)	7 [5-10]	15.23±8.01 (1-34)	15 [9-22]	12.73±9.63 (0-39)	11.5 [5-18.3]
p^b	0.400		0.034		0.467	
Sex						
Male	6.92±4.26 (1-37)	6.5 [4-9]	12.75±9.34 (0-40)	11 [5.25-17]	9.18±8.74 (0-35)	7 [2-13]
Female	7.21±3.44 (1-17)	7 [4-9]	14.92±9.52 (0-51)	13.5 [8-21.25]	14.48±11.72 (0-52)	11.5 [5-21]
p^m	0.376		0.074		<0.001	
Work experience						
0-5 years	8.37±6.03 (3-37)	8 [5-10]	15.6±8.97 (0-35)	15 [9.25-24]	13.57±11.13 (0-37)	13 [2.5-21]
6-10 years	6.69±3.23 (1-15)	6 [4-9]	13.31±10.19 (0-51)	11 [6.5-18]	9.88±8.13 (0-33)	10 [2.25-14.75]
11-15 years	6.22±2.73 (2-15)	6 [4-8]	11.6±8.92 (1-40)	10.5 [4-16.75] ^h	10.53±10.34 (0-50)	8.5 [2.25-16.75]
16 ≤ years	7.5±3.68 (1-17)	7 [5-10]	15.6±9.36 (0-38)	15 [8.25-22.75]	14.41±12.22 (0-52)	11 [5-21.75]
p^b	0.093		0.024		0.131	
Occupational						
Doctor	6.96±3.87 (1-37)	7 [4-9]	13.46±10.26 (0-51)	11 [5-20.3]	10.59±10.23 (0-52)	8 [2-16]
Nurse	7.42±3.6 (2-16)	7 [4-9]	15.81±7.28 (2-35)	14 [11-22]	14.91±11.08 (0-43) ^h	13 [7-22]
Allied health care professional	7.27±3.92 (3-17)	6 [4-10]	14.09±7.05 (1-31)	15 [7.75-19]	18.32±11.79 (1-50) ^h	16 [11-26.25]
p^b	0.802		0.085		0.001	
Fear of contagion to family members						
yes	7.07±3.81 (1-37)	7 [4-9]	14.22±9.46 (0-51)	13 [7-20]	12.27±10.54 (0-52)	10 [4-19]
no	7.33±4.23 (4-15)	6 [4-10.5]	5.33±6.25 (0-14)	3.5 [0-11.75]	9.33±19.98 (0-50)	1 [0-15.5]
p^m	0.972		0.013		0.046	

^bpk: Kruskal Wallis test (more than two independent group comparisons) . ^mpm: Mann Whitney U test (two independent group comparisons)

Except for component 4, PSQI components were found to be high in covid service workers (p>0.05). Although the total PSQI scores and Beck anxiety scores of employees working in the COVID service were higher than those working in the non-COVID service, the difference was not statistically significant (p=0.19 and p=0.32, respectively). The depression scores of employees in the COVID service were observed to be higher (p=0.035)

Table 3: PSQI, Beck depression and Beck anxiety scores in the covid service and non-covid service

	Covid service		Non- Covid service		Total		P
	Mean±SD	Median[IQR]	Mean±SD	Median[IQR]	Mean±SD	Median[IQR]	
Component 1: sleep quality	1.43±0.73	1 [1-2]	1.32±0.79	1 [1-2]	1.36±0.77	1 [1-2]	0.294
Component 2: sleep latency	1.65±1.03	2 [1-2]	1.43±0.98	1 [1-2]	1.52±1.0	2 [1-2]	0.099
Component 3: sleep duration	0.72±0.84	1 [0-1]	0.56±0.70	0 [0-1]	0.63±0.80	0 [0-1]	0.099
Component 4: sleep efficiency	0.12±0.32	0 [0-0]	0.18±0.30	0 [0-0]	0.15±0.30	0 [0-0]	0.222
Component 5: Sleep disturbance	1.37±0.61	1 [1-2]	1.32±0.61	1 [1-2]	1.34±0.61	1 [1-2]	0.820
Component 6: Use of sleeping medication	0.24±0.71	0 [0-0]	0.18±0.60	0 [0-0]	0.20±0.68	0 [0-0]	0.309
Component 7: Daytime dysfunction	2.02±3.51	1 [0-3]	1.78±1.86	1 [0-3]	1.88±2.68	1 [0-3]	0.997
Global PSQI score	7.54±4.39	7 [5-9.5]	6.75±3.33	6 [4-9]	7.08±3.87	7 [4-9]	0.190
Beck anxiety score	12.57±10.29	11 [4-19]	11.91±11.52	9 [5-18]	12.19±10.84	10 [3-19]	0.322
Beck depression score	13.49±9.61	14 [9-20.5]	12.89±9.51	11 [5.5-19]	13.98±9.48	13 [6-19.25]	0.035

p: Mann Whitney U test (two independent group comparisons)

DISCUSSION

In our country, as in the whole world, Covid-19 has affected healthcare workers both physically and mentally, as well as the general public. Many health workers have had sleep disorders and mental health problems, and some even needed treatment. While studies on the disease and patients are being carried out during the pandemic period, studies on healthcare professionals are quite insufficient. In our study, we found that the symptoms of depression were significantly higher in those working in the COVID service compared with those working in the non-COVID service. We observed more depression symptoms in those with a fear of contagion to family members, in those aged 20-30 years and over 50 years, with less than 5 years of professional experience and more than 16 years. Moreover; we observed more anxiety symptoms in women, allied health personnel and those with fear of contagion to their family members.

Lai et al. found 50.4% depressive symptoms and 44.6% anxiety symptoms in 1257 healthcare workers during the COVID-19 pandemic.¹² They used the Patient Health Questionnaire-9 (PHQ-9) for dep-

ression, the Generalized Anxiety Disorder-7(GAD-7) questionnaire for anxiety, and the Insomnia Severity Index(ISI) questionnaire for sleep disorders. Liu et al. , on the other hand, found 50.7% depressive symptoms, 44.7% anxiety symptoms, and 36.1% sleep disturbances in 1563 healthcare workers during the COVID-19 pandemic .¹³ In their study, Liu et al. used the same questionnaires .However, Lai et al. accepted anxiety scores above 5 as significant, whereas Liu et al. accepted above 8 as significant. In our study, 61.7% of 222 healthcare workers had depression symptoms, 59% had anxiety symptoms, and 62.2% had sleep disorders. We used the , BDI ,BAI, PSQI scale. Differences between studies may be due to differences in lifestyles between countries and the use of different types of questionnaires to assess mental health and sleep quality.

During the COVID-19 pandemic, medical healthcare workers (physicians, nurses) showed a higher prevalence of insomnia, anxiety, depression and somatization disorder, compared with non-medical healthcare workers (secretaries, technicians).¹⁴ In contrast, a study was conducted in Singapore showing that non-medical healthcare workers have a higher prevalence of anxiety than others.¹⁵ Our study is not as health workers and non-medical health workers; we divided them into 2 groups as covid service and non covid service. We found the depression symptoms of all staff working in the COVID service to be significantly higher. In the treatment and care of patients with COVID-19, healthcare workers take very strict precautions to protect themselves from high virus exposure. Long-term use of protective equipment, difficulty in eating, dealing with patients and their relatives who do not comply with safety instructions causes physical and mental fatigue. This may cause depression, insomnia, and sleep rhythm disorder.¹⁶ These studies show that support mechanisms are needed for all healthcare workers during the COVID-19 pandemic, regardless of their job role and exposure to the virus.

In a study conducted during the COVID-19 pandemic in China, 50.4% of healthcare workers reported depression, 44.6% of anxiety, 34.0% of insomnia and 71.5% of distress symptoms. Nurses, women, frontline healthcare workers had more severe symptoms than other healthcare workers .¹² In our study similar to this study, anxiety and depression symptoms were more common in women, and women's sleep quality was found to be worse. Here, we think that sex hormones may be effective and may cause women to take more responsibility in family and child care. However, in our study, we found that anxiety symptoms were higher in allied health personnel, not nurses. This may be due to less medical information about the outbreak, lack of personal protective equipment, less education on infection control measures, and less access to psychological support .¹⁵

In a study conducted to evaluate the psychological responses of physicians and related factors during the COVID-19 epidemic, 64.7% of the participants showed depression, 51.6% anxiety, and 41.2% stress symptoms. Risk factors included being female, younger age, being single, having less work experience, and working on the frontlines .¹⁷ In our study, we examined all healthcare professionals, not just physicians, and we saw more depressive symptoms in those aged 20-30 years and over 50 years. The reason for this may be the lack of professional experience at a young age and the fear of death due to the virus, which increases with the accompanying comorbid diseases if aged over 50 years. In addition, depressive symptoms were more common in those with less than 5 years' professional experience and more than 16 years in our study. The reason for this difference between studies may be that pandemic management, working conditions, access to protective equipment, and support services vary from country to country.

Some studies have shown that medical personnel in China treating patients with COVID-19 had poor sleep quality and increased anxiety levels .¹⁸ Also, compared with other occupational groups (teachers, institution workers), healthcare workers had lower sleep quality during the COVID-19 pandemic .¹⁹ According to Leila and Wang, shift work and exposure to patients with COVID-19 were stated as the most important risk factors affecting sleep quality .^{1,20} In our study, we did not compare health care workers with other occupational groups, but we divided them into two as COVID service and non-COVID service workers. Many studies have used the PSQI total score, and we divided the PSQI questionnaire into seven components in our study .¹⁸⁻²¹ Subjective sleep quality, sleep latency, sleep duration, sleep disturbance, drug use and daytime function scores

were found to be higher and more sleep disturbances were observed in the COVID service employees. We concluded that working in the COVID service increased sleep disorders.

The COVID-19 outbreak has had a dramatic impact on healthcare workers around the world. For healthcare workers, COVID-19 has a high risk of infection and a high risk of death. In addition to fears about COVID-19 exposure, lack of personal protective equipment, heavy workload and working hours due to the rapid increase in the number of patients, and staying away from the family due to a high infection rate may cause psychological problems in healthcare workers .³ Healthcare workers working on the front lines are afraid of being infected and infecting their relatives at home due to the increasing virus load. Not only the risk of death and disability on health workers of covid 19, but also the economic, social and secondary psychological conditions that will affect the family in case of a possible death and disability are also very important. In our study, 98.9% of those working in the COVID service and 96.1% of those working in the non-COVID service were found to be afraid of contagion to a family member. This fear has been found to significantly increase symptoms of anxiety and depression. The development of more specific procedures and treatment protocols, as well as educational activities and increased knowledge of disease prevention and coping, will contribute to boosting the morale of healthcare workers dealing with the pandemic .⁴

Limitation: Our study was conducted in a single center and with a limited number of patients. Multicenter, prospective studies with more patients are needed in the future. In addition, the Beck Depression and Beck Anxiety Scale can only inquire about symptoms, not make a diagnosis of depression and anxiety. Health care workers should be examined with more detailed and prospective tests.

CONCLUSION

This observational cross-sectional clinical study showed that working in the COVID service with patients with a high risk of infection caused psychological problems such as depression, anxiety, and sleep disorders in healthcare workers. In such a life-threatening pandemic, psychological evaluations should be routine.

Author Contributions: Surgical and medical practices:AK; Concept/Design : : AK, SOE,MK ; Data collecting and processing: AK,M-K,GK,Analysis of Interpretations:AK,SOE,OG,Literature Search:AK, Writing: AK,SOE,BT

Ethical Approval: This study was approved by the local Ethics Committee with the decision no. 1258 dated 13.01.2021.

Peer-review: Externally peer-reviewed.

Conflict of Interest: Authors declared no conflict of interest.

Informed Consent: Written consent was obtained from the participants.

Financial Disclosure: Authors declared no financial support

Acknowledgement: We thank Özdemir. A. for statistical analysis.

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