

Evaluation of Sleep Quality in Teachers during the COVID-19 Pandemic Period

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ABSTRACT

The aim of this study was to evaluate the relation between teachers' perceived fear of the pandemic and their sleep quality and stress levels in the COVID-19 pandemic. The research is a descriptive study and was carried out with 218 teachers in a district of İstanbul between February and March 2021. Questionnaire form was used in the study. The questionnaire includes Pittsburgh Sleep Quality Index, Perceived Stress Scale, COVID-19 Fear Scale. The statistical procedures used were the Pearson Chi-square test, Mann-Whitney U test and Spearman correlation test. In the study, 35.3% of the participants were 30 years old and under, 41.8% were between 31-40 years old and their average age was 35.0 ± 8.9 . In the study, it was determined that 75.2% of the teachers were women, 59.6% were married, 78.9% had a bachelor's degree, 36.2% had a working period of five years or under, and 45.4% worked at high school. It was determined that 45.9% of the teachers participating in the study had low sleep quality. A strong positive correlation was determined between the Pittsburg Sleep Quality Index scores and the Perceived Stress Scale scores of the study participants. The study revealed that nearly half of the teachers had poor sleep quality and that those with poor sleep quality had shorter sleep times.

Keywords: Sleep quality, COVID-19, perceived stress, teachers

ÖZ

COVID-19 Pandemi Döneminde Öğretmenlerde Uyku Kalitesinin Değerlendirilmesi

Araştırmada COVID-19 pandemisinde öğretmenlerin algıladıkları pandemi korkusu ile uyku kalitesi ve stres düzeyleri arasındaki ilişkinin değerlendirilmesi amaçlanmıştır. Araştırma tanımlayıcı tipte olup Şubat-Mart 2021 tarihleri arasında İstanbul'un bir ilçesinde 218 öğretmen ile gerçekleştirilmiştir. Çalışmada anket formu kullanılmıştır. Ankette "Pittsburgh Uyku Kalitesi İndeksi", "Algılanan Stres Ölçeği" ve "COVID-19 Korku Ölçeği" yer almaktadır. Kullanılan istatistiksel analizler Pearson ki-kare testi, Mann-Whitney U testi ve Spearman korelasyon testidir. Araştırmada katılımcıların %35,3'ü 30 yaş ve altında, %41,8'i 31-40 yaş arasında olup yaşları ortalaması $35,0 \pm 8,9$ 'dur. Araştırmada öğretmenlerin %75,2'si kadın, %59,6'sı evli, %78,9'u lisans mezunu, %36,2'sinin çalışma süresi beş yıl ve altında ve %45,4'ünün lisede çalıştığı saptanmıştır. Araştırmaya katılan öğretmenlerin %45,9'unun uyku kalitesinin kötü olduğu belirlenmiştir. Araştırmaya katılanların Pittsburg Uyku Kalitesi İndeksi puanları ile Algılanan Stres Ölçeği puanları arasında pozitif yönde güçlü bir ilişki olduğu saptanmıştır. Çalışmada öğretmenlerin yarıya yakınının uyku kalitesinin kötü olduğu ve uyku kalitesi kötü olanların uyku sürelerinin daha düşük olduğu belirlenmiştir.

Anahtar kelimeler: Uyku kalitesi, COVID-19, algılanan stres, öğretmenler

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INTRODUCTION

The coronavirus diseases-2019 (COVID-19) virus spread very fast. Furthermore, morbidity and mortality rates were high (1). Governments worldwide have implemented unprecedented measures to combat the disease, including social isolation, self-quarantine, and social distancing (2). Stress, anxiety, depressive symptoms, sleep problems, and fear were all common mental health issues that arose due to the disease's rapid spread over the world and steps were taken to control it (3-7). Stress increases when job demands are high and resources are low. High stress in teachers can lead to poor performance and ultimately to a lack of learning in students (8). Teaching is generally considered to be one of the most stressful professions (9). During the pandemic, fear was one of the most common psychological reactions of the society (10). People were naturally concerned about their health, which was an appropriate attitude (11). Experiencing fear can increase risk perception and encourage protective behaviours (12). High levels of fear may cause individuals not to think clearly and rationally when responding to COVID-19 (13). For humans, sleep is a vital physiological process (14). Subjective sleep quality refers to a person's total contentment with their sleep, including sleep initiation, sleep maintenance, and sleep duration. Total sleep time, the quantity of waking during sleep, and frequency of waking during the night all contribute to objective sleep quality (15). Stress and sleep quality have been shown to have a two-way relationship in studies. High levels of stress have a detrimental impact on sleep quality, and poor sleep quality has a negative effect on subsequent stress levels (16,17). The lack of COVID-19 treatment and the new start of vaccination, combined with quarantine practices, interruption of education, and transition to distance education during the COVID-19 pandemic period in our country necessitated a study to determine the effect of stress and fear on sleep quality in teachers. The aim of the study was to evaluate the relation between teachers' perceived fear of pandemic and their sleep quality and stress levels in the COVID-19 pandemic.

MATERIALS AND METHOD

Study Design and Population

This research is a descriptive study. Between February and March 2021, 218 teachers working in schools associated with the Directorate of National Education in the district of Çatalca, İstanbul, participated in the study. An online questionnaire was sent to all teachers in the schools affiliated to the District Directorate of National Education. Of the 716 teachers working in the district, 218 agreed to participate in the study and completed the questionnaire (participation percentage 30.4%).

Variables of the Study

An online survey form was used in the study. In the study, a form consisting of 14 questions regarding sociodemographic characteristics and COVID-19, Pittsburgh Sleep Quality Index (PSQI) consisting of 24 questions, Perceived Stress Scale consisting of 10 questions and COVID-19 Fear Scale consisting of seven questions were used (18-23). Pittsburgh Sleep Quality Index, created by Buysse et al., was adapted into Turkish by Ağargün et al. PSQI is a 19-item self-report measure that assesses the quality and disruption of sleep over the previous month. It has 24 questions, 19 of which are self-report questions, and five of which the spouse or roommate must respond. There are seven components to the scale's 18 scored questions. Subjective Sleep Quality, Sleep Latency, Sleep Duration, Habitual Sleep Efficiency, Sleep Disorder, Sleeping Drug Use, and Daytime Dysfunction. Each component is graded on a scale of 0 to 3. The total scale score is calculated by adding the total scores of the seven components. The total score ranges from 0 to 21. "Poor sleep quality" is indicated by a total score of more than five (18,19). Cohen, Kamarck, and Mermelstein developed the Perceived Stress Scale (PSS), and Eskin et al. conducted a Turkish validity and reliability research on it (20,21). The scale, which has 14 elements, is used to evaluate how stressful certain situations in a person's life are. On a 5-point Likert scale ranging from "never (0)" to "very often (4)", participants rate each item. PSS includes two more 10- and four-item versions in addition to its four-item long form. In our research, we used the 10-question survey. The COVID-19 Fear Scale has seven items and is one-dimensional. The scale does not have a reverse function and produces a score ranging from 7 to 35. The fear of COVID-19 grows as the score rises (22,23).

Statistical Analysis

SPSS 22.0 was used to analyse the research data. Descriptive statistics are presented as mean \pm standard deviation, frequency distribution, and percentage. Pittsburgh Sleep Quality Index Score, Perceived Stress Scale Score, COVID-19 Fear Scale Score and sleep time with normal distribution was done by Kolmogorov-Smirnov test. It was found that they did not conform to normal distribution. The statistical procedures used were the Pearson Chi-square test, Mann-Whitney U test and Spearman correlation test. In the analysis, the statistical significance level was set at $p < 0.05$.

Ethics Statement

The study received ethics committee approval from the İstanbul Medeniyet Üniversitesi Göztepe Training and Research Hospital's Clinical Research Ethics Committee,

with decision number 2020/0757. Permission was obtained from the Provincial Directorate of National Education for the research.

RESULTS

A total of 218 teachers were contacted as part of the study.

Among the participants, 35.3% (n= 77) were 30 years old or younger, while 41.8% (n= 91) were between the ages of 31 and 40. The mean age of the participants was 35.0 years, with a standard deviation of 8.9 years. Additionally, 75.2% (n= 164) of the teachers were female, and 59.6% (n= 130) were married. It was determined that 78.9% (n= 172) of the participants were undergraduate graduates, 36.2% (n= 79) had been working for five years or less, and 45.4% (n= 99) worked in high school. Of the teachers, 16.1% (n= 35) had chronic diseases, 19.3% (n= 42) were current smokers and 13.8% (n= 30) exercised regularly (Table 1).

In the study, 9.6% (n= 21) of the participants were diagnosed with COVID-19 disease, 0.9% (n= 2) were hospitalized due to COVID-19 disease, 15.6% (n= 34) had contact with a person diagnosed with COVID-19 disease, 27.1% (n= 59) had a relative hospitalized due to COVID-19 disease, and 12.8% (n= 28) had a relative that died due to COVID-19 disease (Table 2).

The average time spent in bed at night by research participants in the previous month was 7.4 ± 1.2 hours, with an average sleep time of 6.9 ± 1.2 hours.

It was discovered that 45.9% of the teachers in the study had poor sleep quality; the Pittsburg Sleep Quality Index mean total score was 5.5 ± 3.0 ; the Perceived Stress Scale mean score was 18.4 ± 6.7 , and the COVID-19 Fear Scale mean score was found to be 17.0 ± 6.3 (Table 3).

There was a strong positive correlation between the Pittsburg Sleep Quality Index scores and the participants' Perceived Stress Scale scores ($r= 0.517$, $p< 0.001$); there was a weak positive correlation between Pittsburg Sleep Quality Index scores and the COVID-19 Fear Scale Scores ($r= 0.144$, $p= 0.034$); and there was a weak positive correlation between the COVID-19 Fear Scale Scores and Perceived Stress Scale scores ($r= 0.192$, $p= 0.004$) (Table 4).

In the study, people with high sleep quality slept for an average of 7.5 ± 1.1 hours, whereas those with poor sleep quality slept for an average of 6.3 ± 1.1 hours. The number of hours spent sleeping was found to be higher in individuals who had good sleep quality ($p< 0.001$). In the study, it was seen that 39.8% (n= 47) of the individuals with good sleep quality were 30 years old or younger, 73.7% (n= 87) were

Table 1. Distribution of socio-demographic characteristics of the participants

	n (%)*
Age	
30 years and under	77 (35.3)
31-40	91 (41.8)
41 years and older	50 (22.9)
Mean and standard deviation	35.0 ± 8.9
Median (min; max)	34 (22; 64)
Sex	
Male	54 (24.8)
Female	164 (75.2)
Marital status	
Married	130 (59.6)
Single	88 (40.4)
Educational status	
Associate degree	11 (5.0)
Bachelor's degree	172 (78.9)
Master's degree	35 (16.1)
Working time (year)	
Five years and under	79 (36.2)
6-10 years	65 (29.8)
11 years and older	74 (34.0)
Mean and standard deviation	9.9 ± 8.4
Median (min; max)	8 (0; 41)
Educational institution	
Primary school	49 (22.5)
Secondary school	70 (32.1)
High school	99 (45.4)
Have chronic disease	
Yes	35 (16.1)
No	183 (83.9)
Smoking status	
Still smoking	42 (19.3)
Smoked, quit	32 (14.7)
Never smoked	144 (66.0)
Status of exercising	
Regularly	30 (13.8)
Sometimes	137 (62.8)
No	51 (23.4)

(%): Column percentage.

Tablo 2. Distribution of the study participants' conditions related to COVID-19 disease

	n (%)*
Status of being diagnosed with COVID-19 disease	
Yes	21 (9.6)
No	197 (90.4)
Hospitalization status due to COVID-19	
Yes	2 (0.9)
No	216 (99.1)
Contact status with a person diagnosed with COVID-19	
Yes	34 (15.6)
No	184 (84.4)
Hospitalization of a relative due to COVID-19	
Yes	59 (27.1)
No	159 (72.9)
Death of a relative due to COVID-19	
Yes	28 (12.8)
No	190 (87.2)

(%): Column percentage.

Table 3. Distribution of Pittsburg Sleep Quality, Perceived Stress and COVID-19 Fear Scale Scores of the study participants

	n (%)*
Sleep quality level	
Good sleep quality	118 (54.1)
Poor sleep quality	100 (45.9)
Pittsburg Sleep Quality Index Total Score	
Mean and standard deviation	5.5 ± 3.0
Median (min; max)	5 (0; 15)
Perceived Stress Scale Score	
Mean and standard deviation	18.4 ± 6.7
Median (min; max)	18 (0; 40)
COVID-19 Fear Scale Score	
Mean and standard deviation	17.0 ± 6.3
Median (min; max)	17 (7; 35)

(%): Column percentage.

females, 59.3% (n= 70) were married, 44.9% (n= 53) worked in high school, 15.3% (n= 18) exercised regularly, and 8.5% (n= 10) had COVID-19 disease. It was also discovered that 15.3% (n= 18) of the participants had come into touch with someone diagnosed with COVID-19 disease. Those with poor sleep quality of 44.0% (n= 44) were between the ages of 31 and 40 years, 77.0% (n= 77) were females, 60.0% (n= 60) were married, 46.0% (n= 46) were working in high school, 12.0% (n= 12) were exercising regularly, and 11.0% (n= 11) were diagnosed with COVID-19 disease according to the study. It was also discovered that 16.0% (n= 16) of the participants had come into touch with someone diagnosed with COVID-19 disease. There was no statistically significant difference in sleep quality levels based on age, sex, marital status, educational institution, exercise status, COVID-19 disease diagnosis, or contact status with someone diagnosed with COVID-19 in the study (Table 5).

DISCUSSION

At the time of the study, our country had just launched its COVID-19 vaccination program for teachers, and in-person classes for primary school, eighth grade, and twelfth grade were set to resume. Among the teachers surveyed, 45% reported experiencing poor sleep quality. Additionally, a study conducted by Ciquinato et al. found that 54% of primary and secondary school teachers also reported poor sleep quality (24). In a study conducted in Japan by Iwasaki et al., it was found that 35% of the government officials had poor sleep quality (25). However, the prevalence of poor sleep quality is high at various rates in different studies.

The average total score of the PSQ in the study was 5.5 ± 3.0 . Median PSQI total score was discovered to be six in a study conducted by Ciquinato et al. (24). Mean PSQI total score was found to be 5.1 ± 2.6 in the study by Iwasaki et al (25). Research shows that the average sleep quality among teachers is poor.

The average sleep duration of the teachers was found to be 6.9 ± 1.2 hours in this study. Cropley et al. discovered that the average sleep duration for primary and secondary school teachers in England was six hours and 48 minutes (26). According to a study conducted in the Philippines by Asio et al., 59% of the people had 7-9 hours of sleep, 40% had 4-6

Table 4. Distribution of the relations of the Pittsburg Sleep Quality, Perceived Stress and COVID-19 Fear Scale Scores of the study participants

	Pittsburg Sleep Quality Index Score	Perceived Stress Scale Score	COVID-19 Fear Scale Score
Pittsburg Sleep Quality Index Score		$r = 0.517$ $p < 0.001$	$r = 0.144$ $p = 0.034$
Perceived Stress Scale Score			$r = 0.192$ $p = 0.004$

Spearman correlation test was applied.

Table 5. Distribution of Sleep Quality Levels according to various characteristics of the participants

	Sleep Quality Level		
	High	Low	
	n (%)	n (%)	p
Age			0.292
30 years and under	47 (39.8)	30 (30.0)	
31-40	47 (39.8)	44 (44.0)	
41 years and older	24 (20.3)	26 (26.0)	
Sex			0.577
Male	31 (26.3)	23 (23.0)	
Female	87 (73.7)	77 (77.0)	
Marital status			0.919
Married	70 (59.3)	60 (60.0)	
Single	48 (40.7)	40 (40.0)	
Educational institution			0.475
Primary school	30 (25.4)	19 (19.0)	
Secondary school	35 (29.7)	35 (35.0)	
High school	53 (44.9)	46 (46.0)	
Status of exercising			0.189
Regularly	18 (15.3)	12 (12.0)	
Sometimes	78 (66.1)	59 (59.0)	
No	22 (18.6)	29 (29.0)	
Sleep time**			<0.001
Mean and standard deviation	7.5 ± 1.1	6.3 ± 1.1	
Median (min; max)	8 (5; 10)	6 (4; 10)	
Status of being diagnosed with COVID-19 disease			0.529
Yes	10 (8.5)	11 (11.0)	
No	108 (91.5)	89 (89.0)	
Contact status with a person diagnosed with COVID-19			0.880
Yes	18 (15.3)	16 (16.0)	
No	100 (84.7)	84 (84.0)	

(%): Column percentage, **: Mann-Whitney U test was applied.

hours of sleep, and 1% had more than 10 hours of sleep (27). In the study by Iwasaki et al., insufficient sleep time was the most frequent sleep disorder (54%) (25). Although the average sleep duration in our study is higher than other studies, it is seen that there is a general problem sleep duration.

This study indicated a strong relation between teachers' sleep quality and reported stress, but a weak relation between fear of COVID-19. The fact that the study was conducted during the COVID-19 pandemic, with a fresh vaccine program and no comprehensive treatment for the disease, may have made a difference in this case.

There was no correlation between age, sex, marital status, and sleep quality in the study. The prevalence of sleep disorders was found to be higher in women than in men in a study conducted by Bannai et al. in Japan (41.5% in males and 44.4% in women) (28). Cropley et al. observed no correlation between any of the demographic characteristics and sleep quality in their investigation (26). The findings demonstrate that factors other than sociodemographic parameters have an impact on sleep quality.

The study discovered that people with better sleep quality slept for longer periods. In their research, Cropley et al. discovered a relationship between sleep quality and sleep

duration. Sleeping for longer periods of time was associated with better sleep quality (26). The findings of both studies showed that as sleep quality improved, the time spent asleep also increased.

The limited number of teachers participating in the study is one of the important limitations of the study.

CONCLUSION

Since our research was conducted during the COVID-19 epidemic, quarantine practices, online education, and face-to-face education all began during this time. COVID-19 vaccination of the teachers had just begun during this same timeframe. These circumstances are thought to have a significant impact on the study's outcomes. In our research, 45% of the teachers were found to have poor sleep quality. Sleep quality and perceived stress were found to have a high association in the study, while fear of COVID-19 was found to have a low relationship. In this study, those with good sleep quality averaged 7.5 hours of sleep, while those with low sleep quality averaged 6.3 hours.

Ethics Committee Approval: This study was approved by the İstanbul Medeniyet University Göztepe Training and Research Hospital (Decision no: 2020/0757, Date: 16.12.2020).

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