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Sleep Patterns and Disturbances in Children Aged 6-16 Years During the COVID-19 Pandemic in Türkiye

COVID-19 Pandemisi Sürecinde Türkiye'de 6-16 Yaş Arası Çocuklarda Uyku Düzeni ve Bozuklukları

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Abstract

Objective: This study aimed to evaluate the factors causing sleep patterns and disturbances in children during the coronavirus disease-2019 (COVID-19) pandemic.

Materials and Methods: This descriptive and cross-sectional study collected data from 408 mothers with children aged between 6 and 16 years. "The Sleep Disturbance Scale for Children (SDSC)" was used to collect data.

Results: The study found the mean SDSC score was 46.25±16.34, with 11.8% of children showing symptoms of sleep disturbances. With increased sleep latency, significant bedtime and rise time delays were observed on weekdays and weekends. Children aged 6-12 slept less, whereas those aged 13-16 slept more ($p<0.001$). During the pandemic, irregular sleep, oversleeping, inability to sleep, and nightmares increased significantly ($p<0.001$). Late dinners, increased daytime sleep, and nighttime awakening were also significant ($p<0.001$). There was also a significant increase in the use of electronic devices before bedtime and during television viewing.

Conclusion: It was observed that approximately one in ten children experienced sleep disturbance symptoms during the pandemic. In addition, it was concluded that the sleeping/waking times of the children were negatively affected and that they had more frequent sleep disturbances. Based on these findings, it is crucial for pediatric nurses to identify and address sleep disturbances in children, particularly during situations such as the COVID-19 pandemic, which affects children's daily routines. Based on these findings, it is crucial for pediatric nurses to identify and address sleep disturbances in children, particularly during situations such as the COVID-19 pandemic, which affects children's daily routines.

Keywords: Pandemic, sleep, children, sleep habits

Öz

Amaç: Bu çalışmada, yeni koronavirüs hastalığı-2019 (COVID-19) pandemisi sürecinde çocuklarda uyku düzenini ve bozukluklarını etkileyen faktörlerin değerlendirilmesi amaçlanmıştır.

Gereç ve Yöntem: Tanımlayıcı ve kesitsel tipte olan bu çalışma, 6-16 yaş aralığında çocuğu olan 408 anne ile gerçekleştirilmiştir. Veriler "Çocuklar İçin Uyku Bozukluğu Ölçeği (ÇUBÖ)" kullanılarak toplanmıştır.

Bulgular: Çalışmada ÇUBÖ ortalama puanı 46,25±16,34 olarak bulunmuş ve çocukların %11,8'inin uyku bozukluğu belirtileri gösterdiği saptanmıştır. Hafta içi ve hafta sonu yatma ve kalkma saatlerinde önemli gecikmeler ile artmış uykuya dalma süresi gözlenmiştir. Altı-on iki yaş grubundaki çocukların daha az, 13-16 yaş grubundakilerin ise daha fazla uyuduğu tespit edilmiştir ($p<0,001$). Pandemi sürecinde düzensiz uyku, aşırı uyuma, uyuyamama ve kabus görme sıklığında artış olduğu belirlenmiştir ($p<0,001$). Ayrıca geç saatlerde yemek yeme, gündüz uykuları ve gece uyanmaları da anlamlı düzeyde artmıştır ($p<0,001$). Uyku öncesi elektronik cihaz kullanımı ve televizyon izleme davranışlarında da önemli bir artış olduğu gözlenmiştir.

Sonuç: Pandemi sürecinde çocukların yaklaşık her on çocuktan birinin uyku bozukluğu belirtileri gösterdiği saptanmıştır. Ayrıca çocukların uyuma ve uyanma saatlerinin olumsuz etkilendiği ve daha sık uyku bozukluğu yaşadıkları sonucuna ulaşılmıştır. Bulgulara dayanarak, çocukların günlük rutinlerini etkileyen COVID-19 pandemisi gibi durumlarda pediatri hemşirelerinin çocuklardaki uyku bozukluklarını belirlemesi ve bu sorunlara yönelik müdahalelerde bulunması büyük önem taşımaktadır.

Anahtar Kelimeler: Pandemik, uyku, çocuk, uyku alışkanlıkları

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Introduction

The coronavirus disease-2019 (COVID-19), which the World Health Organization declared a pandemic on March 11, 2020, has caused a global crisis affecting the daily lives of millions of people.[1] Measures taken in many countries to prevent the transmission of COVID-19, such as social distancing, closure of schools, and home confinement, have significantly affected and changed children's daily routines.[2] These measures, taken to reduce the rate of contagion and spread of the COVID-19 virus, have caused deficiencies in many areas, such as nutrition, physical activity, and psychosocial well-being of children.[3] In addition, changes in daily routines and pandemic conditions adversely affect sleep quality, which is an important factor for protecting and developing children's health.[4]

Sleep is an important component of a child's health.[5] Sufficient sleep duration in children is associated with better attention, behavior, cognitive functions, quality of life, emotional regulation, and physical health, whereas insufficient sleep leads to accidents and injuries, hypertension,[6] poor brain development and cognitive performance,[7] depression and obesity in children[5-8]. Additionally, insufficient sleep increases the risk of self-harm, suicidal thoughts, and suicide attempts among adolescents.[9]

The American Academy of Pediatrics (AAPs) reported that insufficient physical activity during the day, snacks, and caffeinated/carbonated beverages consumed before bedtime adversely affected sleep quality.[10] With the lockdown measures taken to prevent the COVID-19 outbreak, the physical activity rates of children decreased, and their snack food consumption increased.[3,11] For quality sleep in children, the AAPs suggests turning off electronic devices at least one hour before bedtime and keeping them out of room.[10] However, the increase in children's screen use during the pandemic[12] caused nighttime bright light exposure and suppression of melatonin production, thus reducing sleep quality.[13] These changes in children's daily routines during the pandemic have led to a decrease in sleep quality and sleep disturbances in children.[4]

Initiatives implemented by pediatric nurses for the development and protection of sleep, which directly affects children's health, have positive results.[14] Therefore, pediatric nurses play an important role in determining the factors that lead to sleep disturbances and preventing them during the COVID-19 pandemic. In this context, this study aimed to evaluate the sleep patterns and factors that lead to sleep disturbances in children aged 6-16 during the COVID-19 pandemic.

Materials and Methods

Study Design and Setting

This study was cross-sectional and descriptive in nature. Between June 1 and September 1, 2021, the study was conducted in the center of Zonguldak, Türkiye's Western Black Sea area.

Sample and Recruitment Procedure

Mothers who lived in Zonguldak made up the universe of study. The Turkish Statistical Institute 2020 address based population registration statistics show that there are 81,882 children in Zonguldak city center between the ages of 6 and 16.[15] Using the sample formula, a minimum sample size of 380 was required to obtain a 95% confidence interval and 5% margin of error. The inclusion criteria were being literate, residing in Zonguldak, and having a child aged between 6 and 16 years. The exclusion criteria were mothers who did not provide written or electronic consent. Significantly, children diagnosed with neurological or psychiatric disorders that could affect their sleep patterns were excluded. A total of 434 mothers consented to participate in this study. However, because 26 mothers failed to complete the written/electronic permission form on the first page of the information form, they were not allowed to participate in the study. In total, 408 mothers were included in the final sample.

Demographic and Scale Data

In this study, the "participant information form" and the "Sleep Disturbance Scale for Children" (SDSC) developed by the researchers were used to collect data.

The participant information form included 49 questions about the introductory characteristics of mothers and children, the bedtime and rise time of the children before and during the pandemic, sleep disturbances, and activities before bedtime.

Sleep Disturbance Scale for Children was developed by Bruni et al.[16] The validity and reliability of the Turkish version of the scale were assessed by Agadayi et al.[17] The SDSC is a five-point Likert-type Scale that investigates sleep disturbances in school-age children aged 6-16 in the last six months. The scale was completed by the children's mothers. The child's sleep disturbances were assessed using 26 items and six subscales on the scale. High scores on this scale indicate sleep disturbances. In addition, according to the T-score table in the original scale, a T-score >70 indicates sleep disturbance symptoms.[17]

Data collection forms were delivered to the mothers via social media (Facebook, Instagram, and WhatsApp). Mothers answered the survey questions for only one child aged 6-16. The online survey took an average of 15 minutes to complete.

Ethical Considerations

This study was conducted following the ethical guidelines of the Declaration of Helsinki. The Turkish Republic Ministry of Health, General Directorate of Health Services and Zonguldak Bülent Ecevit University Human Research Ethics Committee granted the required authorization prior to the study (approval number: 44860, date: 31.05.2021). A written informed consent form explaining the study's goal, data confidentiality, voluntary nature of participation, and participants' right to withdraw from the questionnaire at any time was given to them on the first page of the online survey.

Statistical Analysis

The Statistical Package for the Social Sciences Program (SPSS-24) was used to analyze the data. Descriptive statistical methods (number, percentage, mean, and standard deviation) were used for data evaluation. The chi-square test was used to examine group differences in the categorical variables. The mean SDSC score was examined using analysis of variance and t-tests in several groups based on sociodemographic traits. Statistical

significance was set at $p<0.05$, and data were assessed at a 95% confidence interval.

Results

Data were collected from 408 children and their mothers. Of the children, 69.9% (n=285) were between the ages of 6 and 12 years and 55.9% (n=228) were male. During the pandemic, 49.0% (n=200) of the mothers said that the quality of their children's sleep had declined (Table 1). The study indicated that the SDSC overall mean score was 46.25±16.34. The SDSC T-score table indicates that among the children in the study, 11.8% (n=48) exhibited signs of sleep disturbances (T-score >70).

The mean SDSC scores of the children in the study were not statistically different based on the mother's level of education, gender, age, or family economic level ($p>0.05$). The SDCS mean scores for secondary school-aged children were found to be significantly higher than those of high school-aged children ($p=0.001$) and for children whose mothers were between the ages of 20 and 40 compared to those whose mothers were between the ages of 41 and 60 ($p=0.04$). In addition, it was observed that the SDSC mean scores of children with three or more siblings were significantly higher than those of children with only one or two siblings ($p=0.002$). According to the mothers' statements, those whose children's sleep quality decreased during the pandemic had statistically significantly higher SDSC mean scores than those whose sleep quality did not change (Table 1).

Children in both age groups (6-12 years and 13-16 years) went to sleep ($p<0.001$) and woke up later during the pandemic than before ($p<0.001$), according to an analysis of their weekday and weekend sleeping patterns (Table 2). In comparison to the pre-pandemic period, children aged 13-16 slept longer ($p<0.001$), and children aged 6-12 slept for shorter periods ($p<0.001$) during the pandemic, according to an evaluation of the children's overall sleep duration. The pandemic caused increased sleep latency in both age groups (6-12 years, 13-16 years) ($p<0.001$) (Table 3).

It was determined in the study that during the pandemic period, children had disturbances with irregular sleep, oversleeping, inability to sleep, and experience nightmares more frequently than in the pre-pandemic period ($p<0.001$). In addition, while there was a statistically significant decrease in the number of children who had dinner at 6 p.m. during the pandemic, there was an increase in the number of children who had dinner at 8 p.m. and later ($p<0.001$). There was a statistically significant increase in the rate of children who slept during the day and woke up at night during the pandemic process ($p_{\text{sleeping during the day}}<0.001$; $p_{\text{waking up at night}}<0.001$) (Table 4).

In this study, when the activities of children before bedtime were examined, it was found that 52.7% (n=215) of the children were using electronic devices before the pandemic, while this rate increased to 71.1% (n=290) during the pandemic, and the rate of watching television increased from 55.1% (n=225) to 58.8% (n=240). The rate of children reading before sleep decreased from 54.9% (n=224) to 36.0% (n=147), the rate of doing homework from 50.2% (n=205) to 38.7% (n=158), and the rate of brushing teeth from 65.4% (n=267) to 59.1% (n=241) (Table 5).

Discussion

One of the important effects of the pandemic on child health is sleep disturbances.[4,18] According to the SDSC scores in this study, 11.8% of the children experienced sleep disturbance symptoms. When the literature was examined, the general mean SDSC score in a study conducted in Türkiye was somewhat lower[19] but closer to the results observed in Egypt.[20] In a study conducted in Italy, the SDSC score during the pandemic was slightly higher than the pre-pandemic level; however, it remained lower than the mean score observed in this study.[21] In addition, the frequency of sleep disturbance during the pandemic was reported to be 54%[22] in a meta-analysis, 65.6% in Egyptian children[20], and 2.6% in Türkiye. It is thought that the variance in the SDSC mean scores and sleep disturbance frequency rates in children between countries is due to differences in the countries' implementation of pandemic measures.

In our study, similar to the literature, it was found that there was a delay in bedtime and rise time in children aged 6-16 years and an increase in the length of time they fell asleep during the pandemic. In a study examining the sleep habits of children aged 3-16 during the pandemic, it was reported that secondary school children slept and woke up later and slept longer than the pre-pandemic period.[4] Similarly, two studies examining children's sleep patterns during the quarantine period in Italy revealed a delay in bedtime and rise time[18,21] and an increase in sleep duration and the length of time to fall asleep.[18] The results of this study are compatible with those of other studies conducted in different countries. Our study determined that the dinner was eaten later, the use of technological devices such as phones and tablets, and the rate of watching television increased during the pandemic compared to the pre-pandemic period. During the pandemic, the AAPs recommends that children should be physically active during the day for healthy sleep, stop consuming snacks and fizzy/caffeinated drinks at least one hour before sleep, stop using electronic devices, and keep electronic devices out of the room.[10] In light of the literature, it is thought that the measures taken to prevent the spread of the COVID-19 virus in Türkiye, such as the closure of schools, transition to online lessons, and home confinement, which restrict the physical mobility of children and cause an increase in screen exposure, affect their sleep routines. Changes in mealtime and screen time may cause children in all age groups to go to sleep later, increase the length of time to fall asleep, and therefore wake up later.

According to the AAPs, children aged 6-12 should sleep 9-12 hours daily, and children aged 13-18 should sleep 8-10 hours daily to promote optimal health.[9] Our research, however, found that although 39.3% of children aged 6 to 12 years had sleep durations that met the AAP guidelines prior to the pandemic, this percentage dropped to 35.8% during the outbreak. Prior to the pandemic, 48% of the 13-16-year-old children in our

Table 1. Characteristics of the participants (n=408)				
Variables			**SDSC**	
	n	**%**	**Mean ± SD**	**p**
Gender				
Male	180	44.1	46.14±15.63	p*=0.905
Female	228	55.9	46.33±16.91	
Age‡				
6-12 years	285	69.9	45.89±16.07	p*=0.499
13-16 years	123	30.1	47.08±16.98	
Education level				
Primary school (a)	144	35.3	45.25±15.97	**p**=0.001** b>c
Secondary school (b)	214	52.5	48.19±17.45	
High school (c)	50	12.3	40.82±9.98	
Siblings				
Only child (a)	91	22.3	44.86±16.92	**p**=0.002** c>a c>b
Two children (b)	222	54.4	44.30±13.96	
More than three children (c)	95	23.3	52.13±19.43	
Family income				
The income is less than expenses.	75	18.4	47.97±18.63	p**=0.117
The income is equal to expenses.	238	58.3	46.73±16.78	
The income is more than expenses.	95	23.3	43.68±12.76	
Mother's age				
20-40 years	214	52.5	47.81±18.10	**p*=0.04**
41-60 years	194	47.5	44.52±13.99	
Mother's education				
No graduation/primary school	54	13.2	48.13±20.83	p**=0.142
Secondary school	46	11.3	50.20±17.39	
High school	113	27.7	43.75±15.72	
University	195	47.8	46.24±14.84	
Mother's perception of child's sleep quality during the COVID-19 pandemic				
It has not changed (a)	183	44.9	42.01±15.72	**p**<0.001** b>a
It has decreased (b)	200	49.0	49.66±15.86	
It has increased (c)	25	6.1	50.00±17.81	

‡Data were organized per age groups (6-12 years: school-age child, 13-16 years: adolescent), *: Student's t-test, **: One-way ANOVA and post-hoc.
SD: Standard deviation, SDSC: Sleep Disturbance Scale for Children

study had sleep durations that complied with AAP guidelines; during the pandemic, this percentage increased to 52.8%. Children aged 6-12 slept for shorter periods than before the pandemic, but children aged 13-16 slept for longer periods. When the literature was examined, the sleep duration of 27.1% of children aged 5-11 and 54.0% of children aged 12-17 increased during the pandemic period in America compared to the pre-pandemic period.[23] A study conducted by Kaditis et al.[24] in various countries across Asia, Europe, the Middle East, North America, and South America reported an increase in children's sleep duration during home confinement.

An important finding of our study was that children experienced sleep disturbances more frequently during the pandemic than during the pre-pandemic period, and there was an increase in sleeping during the day and night awakenings in children during the pandemic. When the literature was examined, similar results were found.[22,25,26] In a study conducted in Italy, Spain, and Portugal, 12.2% of parents with children aged 3-18 reported that their children frequently woke up, 12.8% stated that their children slept less, 17.1% indicated that their children were afraid of sleeping alone, 11.4% noted that their children had nightmares, and 16.8% reported that their children experienced sleep difficulties.[27] In the study conducted by Bruni et al.[18], it was observed that while the children aged 6-12 had difficulty falling asleep, had anxiety at bedtime, woke up at night, ground their teeth, and had nightmares more frequently, children aged 13-18 had difficulty falling asleep. It is thought that children are at home all day because of the closure of schools, which is an important part of social and physical activity, and the increase in screen exposure is effective for children's sleep disturbances.

Table 2. Changes in bedtime and rise time during the COVID-19 pandemic and pre-pandemic period							
Bedtime		**20:00-22:00**	**22:00-24:00**		**24:00-02:00**	**02:00-04:00**	**p***
Weekdays	**6-12 years**						
	Pre-pandemic period	147 (51.6)	132 (46.3)		6 (2.1)	0 (0)	**<0.001**
	During pandemic	34 (11.9)	196 (68.8)		52 (18.2)	3 (1.1)	
	13-16 years						
	Pre-pandemic period	29 (23.6)	82 (66.7)		12 (9.8)	0 (0)	**<0.001**
	During pandemic	10 (8.1)	54 (43.9)		49 (39.8)	10 (8.1)	
Weekend	**6-12 years**						
	Pre-pandemic period	48 (16.8)	200 (70.2)		36 (12.6)	1 (0.4)	**<0.001**
	During pandemic	14 (4.9)	165 (57.9)		95 (33.3)	11 (3.9)	
	13-16 years						
	Pre-pandemic period	6 (4.9)	63 (51.2)		46 (37.4)	8 (6.5)	**<0.001**
	During pandemic	1 (0.8)	43 (35.0)		58 (47.2)	21 (17.1)	
Rise time		**05:00-07:00**	**07:00-09:00**	**09:00-11:00**	**11:00-13:00**	**13:00-15:00**	
Weekdays	**6-12 years**						
	Pre-pandemic period	10 (3.5)	239 (83.9)	34 (11.9)	2 (0.7)	0 (0)	**<0.001**
	During pandemic	2 (0.7)	146 (51.2)	123 (43.2)	13 (4.6)	1 (0.4)	
	13-16 years						
	Pre-pandemic period	12 (9.8)	99 (80.5)	8 (6.5)	2 (1.6)	2 (1.6)	0.280
	During pandemic	4 (3.3)	70 (56.9)	37 (30.1)	9 (7.3)	3 (2.4)	
Weekend	**6-12 years**						
	Pre-pandemic period	0 (0)	87 (30.5)	175 (61.4)	23 (8.1)	0 (0)	**<0.001**
	During pandemic	0 (0)	68 (23.9)	167 (58.6)	47 (16.5)	3 (1.1)	
	13-16 years						
	Pre-pandemic period	1 (0.8)	23 (18.7)	75 (61.0)	24 (19.5)	0 (0)	**<0.001**
	During pandemic	1 (0.8)	14 (11.4)	60 (48.8)	42 (34.1)	6 (4.9)	

*: Chi-square test
COVID-19: Coronavirus disease-2019

Table 3. Changes in sleep duration and sleep latency during the COVID-19 pandemic and pre-pandemic period						
Sleep duration	**9-11 hours**	**8-9 hours**	**7-8 hours**	**5-7 hours**		**p***
6-12 years						
Pre-pandemic period	112 (39.3)	130 (45.6)	41 (14.4)	2 (0.7)		**<0.001**
During pandemic	102 (35.8)	123 (43.2)	54 (18.9)	6 (2.1)		
13-16 years						
Pre-pandemic period	25 (20.3)	59 (48.0)	33 (26.8)	6 (4.9)		**<0.001**
During pandemic	24 (19.5)	65 (52.8)	29 (23.6)	5 (4.1)		
Sleep latency	**Less than 15 minutes**	**Between 15-30 minutes**	**Between 30-45 minutes**	**Between 45-60 minutes**	**More than 60 minutes**	
6-12 years						
Pre-pandemic period	102 (35.8)	148 (51.9)	21 (7.4)	7 (2.5)	7 (2.5)	**<0.001**
During pandemic	58 (20.4)	160 (56.1)	51 (17.9)	8 (2.8)	8 (2.8)	
13-16 years						
Pre-pandemic period	49 (39.8)	58 (47.2)	10 (8.1)	5 (4.1)	1 (0.8)	**<0.001**
During pandemic	28 (22.8)	59 (48.0)	31 (25.2)	2 (1.6)	3 (2.4)	

*: Chi-square test
COVID-19: Coronavirus disease-2019

Similar to the results of our study, it was reported in studies conducted in Türkiye that there was an increase in children's use of the Internet[28] and the duration of screen and digital games during the pandemic.[29] Studies conducted in other countries have also reported that children's screen duration increased to very high levels during the pandemic.[23,30] In a study by El Refay et al.[20], a positive correlation was reported between SDSC scores, screen duration, and anxiety symptoms. In light of the literature, in addition to the increase in screen exposure, it is thought that the majority of children (79.4%) experienced behavioral/psychological problems such as anxiety, depression, and restlessness during the pandemic period[2], which caused an increase in the frequency of sleep disturbances.

Mothers play a significant role in childcare in Türkiye. The SDSC scale used in our study was also completed by mothers of children aged 6-16. According to the mothers' evaluations, the mean SDSC scores of children reported to have decreased sleep quality during the pandemic were higher. This situation can be considered an indication that mothers indeed interpret their children's sleep characteristics. The fact that the mother was younger and the child had three or more siblings was associated with an increase in SDSC scores in the study. During the pandemic, children's sleep disturbance symptoms were affected by factors such as screen exposure, decrease in physical activity, closure of schools, increase in snack consumption and family characteristics. It is thought that the number of siblings from different age groups of three or more may cause difficulties in establishing a daily routine and sleep routine, and it may also affect each other's sleep characteristics since siblings mostly share the same room. Previous studies have reported that the mother's work schedule during the pandemic affects the sleep characteristics of children.[21,25] However, no study has reported the effects of maternal age on children's sleep characteristics.

Table 4. Sleep characteristics of children during the COVID-19 pandemic and pre-pandemic period

	Pre-pandemic	During pandemic	p*
	n (%)	n (%)	
Sleep disturbances			
No sleep problems	344 (84.3)	225 (55.1)	<0.001
İrregular sleep	42 (10.3)	113 (27.7)	
Oversleep	6 (1.5)	26 (6.4)	
Inability to sleep	14 (3.4)	40 (9.8)	
Nightmares	2 (0.5)	4 (1.0)	
Dinner time			
6 p.m.	139 (34.1)	116 (28.4)	<0.001
7 p.m.	204 (50.0)	207 (50.7)	
8 p.m. and later	65 (15.9)	85 (20.9)	
Sleeping during the day			
Yes	24 (5.9)	43 (10.5)	<0.001
No	384 (94.1)	365 (89.5)	
Waking up at night			
Yes	59 (14.5)	91 (22.3)	<0.001
No	349 (85.5)	317 (77.7)	

*: Chi-square test
COVID-19: Coronavirus disease-2019

Table 5. Activities prior to bedtime during the COVID-19 pandemic and pre-pandemic period

	Pre-pandemic	During pandemic
	n (%)	n (%)
Activities prior to bedtime*		
Using an electronic device (computers, phones, tablets)	215 (52.7)	290 (71.1)
Reading a book	224 (54.9)	147 (36.0)
Watching TV	225 (55.1)	240 (58.8)
Doing homework	205 (50.2)	158 (38.7)
Drinking milk	104 (25.5)	87 (21.3)
Brushing teeth	267 (65.4)	241 (59.1)
Others	8 (2.0)	0 (0)

*More than one option was ticked
COVID-19: Coronavirus disease-2019

Study Limitations

The study was limited to mothers living in Türkiye. The results of this study cannot be generalized to all children living in the world or Türkiye. Additionally, delivering the questions via social media instead of face-to-face meetings and obtaining responses from mothers rather than directly from children are other limitations of this study. The strengths of this study are the use of a frequently preferred questionnaire in evaluating sleep disturbance and the consideration of two different age groups to evaluate age-related changes.

Conclusion

This study determined that the children's SDSC mean scores were at an average level (46.25±16.34). However, approximately one in nine (11.8%) of the children included in the study showed symptoms of sleep disturbances. It was revealed that the pandemic caused changes in children's sleep patterns. Children were observed to go to sleep and wake up later and had difficulty falling asleep. It was concluded that children experienced sleep disturbance more frequently, and their use of electronic devices and watching television, which were factors affecting sleep disturbance, were much higher during the pandemic than during the pre-pandemic period.

Sufficient sleep quality is one of the key factors in ensuring and sustaining a child's health. Improving children's sleep quality has become increasingly important, particularly when the child's health is directly impacted by the steps taken to stop the spread of COVID-19. Therefore, pediatric nurses should actively identify sleep issues and enhance children's sleep quality. Nurses are advised to counsel parents on creating a sleep schedule and steps to take for healthy sleep, given the shifts in children's sleep habits during the pandemic.

In future studies on this subject, it is recommended that the sample be formed from children and mothers living in different countries and regions and that sleep duration be evaluated using objective methods. In addition, studies should be conducted to evaluate the effects of the pandemic on the frequency of sleep disturbances in children with chronic diseases or developmental disorders.

Ethics

Ethics Committee Approval: The Turkish Republic Ministry of Health, General Directorate of Health Services and Zonguldak Bülent Ecevit University Human Research Ethics Committee granted the required authorization prior to the study (approval number: 44860, date: 31.05.2021).
Informed Consent: A written informed consent form explaining the study's goal, data confidentiality, voluntary nature of participation, and participants' right to withdraw from the questionnaire at any time was given to them on the first page of the online survey.

Footnotes

Authorship Contributions

Concept: A.A., Ö.Ö.Ş., Design: Ö.Ö.Ş., Y.T., Data Collection or Processing: A.A., Ö.Ö.Ş., Y.T., Analysis or Interpretation: A.A., Ö.Ö.Ş., Y.T., Literature Search: Ö.Ö.Ş., Y.T., Writing: A.A., Ö.Ö.Ş., Y.T.
Conflict of Interest: No conflict of interest was declared by the authors.
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