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Original Article

# The effect of the digital world on sleep: Problematic media use and sleep disturbances in school age children

Dijital dünyanın uykuya etkisi: Okul çağındaki çocuklarda problemli medya kullanımı ve uyku sorunları



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#### ABSTRACT

Aim: This study examines the relation between problematic media use and sleep disturbances in school age children.

*Method:* The descriptive study was conducted between January and June 2024, with participation from 326 parents of children who visited the pediatric outpatient clinics of a university hospital. Data were obtained through the Introductory Information Form, Parent Form of Screen Addiction Scale in Children (Problematic Media Use Scale), and the Sleep Disturbance Scale in Children.

**Results:** Findings indicated that mothers reported significantly higher scores for both sleep disturbances and problematic media use compared to fathers (p < 0.05). No significant differences were observed based on income, parental employment, family structure, or educational level. However, children residing in urban areas had higher media use scores than those in rural areas (p < 0.001). A weak but positive correlation was identified between sleep disturbances and media use (r = 0.384, p < 0.001). Problematic media use was associated with an 81.6% increase in abnormal sleep status (OR = 1.816, p < 0.05).

**Conclusion:** The results suggest that regulating children's media use may help mitigate sleep disturbances. Nurses have an important role in supporting children's healthy development by educating families on sleep disturbances and problematic media use, promoting healthy sleep habits, managing screen time, and providing multidisciplinary support when necessary.

Keywords: children; dependency; nursing; parasomnia; social media

## ÖΖ

Amaç: Bu çalışma, okul çağındaki çocuklarda problemli medya kullanımı ile uyku bozuklukları arasındaki ilişkiyi incelemektedir.

**Yöntem:** Ocak-Haziran 2024 tarihleri arasında tanımlayıcı tipte yürütülen çalışmaya, bir üniversite hastanesinin çocuk polikliniklerini ziyaret eden çocukların 326 ebeveyni katılmıştır. Araştırma verilerinin toplanmasında Tanıtıcı Bilgi Formu, Çocuklarda Ekran Bağımlılığı Ölçeği Ebeveyn Formu (Problemli Medya Kullanım Ölçeği) ve Çocuklarda Uyku Bozukluğu Ölçeği kullanılmıştır.

**Bulgular:** Sonuçlar annelerin hem uyku bozuklukları hem de problemli medya kullanımı açısından babalara kıyasla daha yüksek puanlar bildirdiğini göstermiştir (p < 0.05). Gelir, ebeveyn istihdamı, aile yapısı veya eğitim düzeyi açısından anlamlı bir fark bulunamamıştır. Ancak kentsel alanlarda yaşayan çocukların medya kullanım puanları kırsal alanlardakilere göre daha yüksek olarak bulunmuştur (p < 0.001). Uyku bozuklukları ile medya kullanımı arasında pozitif, zayıf bir korelasyon bulunmuştur (r = 0.384, p < 0.001). Problemli medya kullanımı ise anormal uyku durumunu %81.6 oranında artırmaktadır (OR = 1.816, p < 0.05).

**Sonuçlar:** Bulgular, çocukların medya kullanımının yönetilmesinin uyku bozukluklarını hafifletmeye yardımcı olabileceğini düşündürmektedir. Hemşireler, çocuklarda uyku bozuklukları ve problemli medya kullanımı konusunda aileleri eğiterek, sağlıklı uyku alışkanlıkları kazandırmak, ekran süresini yönetmek ve gerektiğinde multidisipliner destek sunarak çocukların sağlıklı gelişimlerini destekleyebilirler.

Anahtar kelimeler: bağımlılık; çocuklar; hemşirelik; uyku bozuklukları; sosyal medya

#### Introduction

The advent of digital technology has significantly increased children's use of screens, including smartphones, tablets, computers, and televisions. While these technologies offer certain benefits, concerns have emerged regarding the adverse effects of excessive screen time on children, including impacts on their health, sleep patterns, and academic performance (Bhatia, 2023; Haarika et al., 2024; Poulain et al., 2024). Sleep plays a crucial role in the health and well-being of children and adolescents. It is essential for development and learning, and prolonged sleep deprivation can lead to long-term physical and psychological health issues. Physiological and psychological changes during childhood and adolescence can negatively impact sleep, while external factors such as school

start times, bedroom environmental conditions (e.g., noise, high temperatures, or excessive light), and exposure to electronic media also contribute to poor sleep quality (Dutil et al., 2022; Lund et al., 2021).

As internet use grows, medically alarming reports highlight the detrimental effects of excessive and unnecessary digital media use on sleep patterns, mood, and social interactions. Excessive screen time often displaces physical activities that promote better sleep quality. Research indicates that prolonged screen exposure reduces sleep duration and increases difficulty falling asleep (Staples et al., 2021; Kokka et al., 2021). Furthermore, nighttime exposure to blue light suppresses melatonin production (Diaconu et al., 2023), disrupts circadian rhythms, and shortens sleep cycles, leading



Content of this journal is licensed underaCreative Commons Attribution-Noncommercial 4.0 International License Corresponding Author: Özlem Selime Merter, Necmettin Erbakan University, Seydişehir Kamil Akkanat Health Sciences Faculty, Nursing Department, Konya, Türkiye Phone: +90 507 253 6619, E-mail: osmerter@erbakan.edu.tr Received: 28.12.2024, Revision: 01.04.2025, Accepted: 16.04.2025 to daytime drowsiness and impaired academic performance (Alam et al., 2024; Lissak, 2018; Nakshine et al., 2022). These findings have led pediatric experts to recommend limiting screen time for children and adolescents to under two hours per day (Hisler et al., 2020). Reports suggest that even children as young as four months have experience with electronic media, and usage rates peak in older age groups (Reid Chassiakos et al., 2016). Given these concerns, this study aims to explore the relationship between problematic media use and sleep disturbances in school-age children, a group particularly vulnerable to the effects of excessive screen time due to developmental changes, academic pressures, and increasing media exposure during this critical period. Media use during this stage can have lasting consequences on both physical and psychological health, making it essential to understand its impact on children's well-being. By contributing to existing research, the study seeks to provide insights for families and healthcare professionals, particularly nurses, on strategies to address this issue effectively.

#### Methods

#### Study design

This research adopts a descriptive and correlational design to examine the relationship between two or more variables without implying causality.

#### Study setting and duration

The study was conducted at the pediatric outpatient clinics of a university hospital between January 2024 and June 2024. **Study population and sample** 

The study included a total of 326 participants. A post-hoc power analysis, conducted using G\*Power 3.0.10, determined the study's power to be 100%, with a 5% margin of error and an effect size derived from the sample size of 326.

## Inclusion criteria

Parents capable of understanding and completing the study forms. Parents of children aged 6–11 years who consented to participate in the study.

#### **Exclusion criteria**

Parents of children with a diagnosed mental illness.

#### Data collection tools

The data were collected using the following instruments: Introductory information form

Developed by the researchers, this form includes 11 questions covering demographic and familial information, such as the age and income level of the family, parental employment status, family structure, number of children, educational background, the child's gender and age, place of residence, and whether the child has a private room.

#### Sleep Disturbance in Children Scale (SDCS)

Developed by Bruni et al. (1996) and validated in Turkish by Ağadayı et al. (2020), this scale assesses six dimensions of sleep disturbances:

- Sleep initiation and maintenance problems (Items 1, 2, 3, 4, 5, 10, 11)
- Sleep breathing disorders (Items 13–15)
- Wakefulness reaction disorders (Items 17, 20, 21)
- Sleep-wake transition disorders (Items 6, 7, 8, 12, 18, 19)
- Excessive sleep disturbances (Items 22–26)
- Excessive sweating (Items 9, 16)

The 26-item scale uses a five-point Likert scale (1 = never, 5 = always), yielding total scores between 26 and 130, with higher scores indicating greater sleep disturbance. The Cronbach's alpha value was reported as 0.81 (Ağadayı et al., 2020). Cronbach's alpha values for our study was found .83.

## Screen Addiction Scale in Children Parent Form (Problematic Media Use Scale - PMAS)

Developed by Domoff et al. (2019) to measure problematic media use in children aged 4–11, this scale's Turkish validation was conducted by Furuncu and Öztürk (2020). Based on the DSM-V criteria for Internet Gaming Disorder, the scale includes both a 27-item long form and a 9-item short form, with a single-factor structure. Each item is rated on a five-point Likert scale (1 = never, 5 = always), with the total score calculated as the average of all item scores. Higher scores indicate more problematic media use (Domoff et al., 2019; Furuncu & Öztürk, 2020).

The scale, which is filled out by parents taking into account the child's behavior, does not attempt to identify problematic use of a specific media tool, but problematic use of visual media tools in general (such as television, computer, tablet, phone), in other words, screen addiction. Cronbach's alpha values for the long and short forms of the scale were found to be .97 and .93, respectively (Furuncu & Öztürk, 2020). Cronbach's alpha values for our study was found .91.

#### Data collection

The research data were gathered through face-to-face interviews within the specified study period. The questionnaires were completed by parents while they were waiting in the outpatient clinic queue with their children. Parents who met the inclusion criteria and consented to participate were first informed about the study. Written informed consent was obtained prior to administering the questionnaires. The Introductory Information Form, PMAS, and the SDCS were distributed, and parents completed them within approximately 10 minutes.

#### Data analysis

Statistical analyses were conducted with IBM SPSS Statistics version 27.0. Descriptive statistics and frequency tables were used to interpret the findings. For variables that did not meet the criteria for normal distribution, nonparametric methods were applied. Specifically, The Mann-Whitney U test (Z-table value) was used to compare measurement values between two independent groups.

The Kruskal-Wallis H test ( $\chi^2$ -table value) was applied to compare measurement values among three or more independent groups. The Bonferroni correction was used for pairwise comparisons of significant parameters in groups of three or more. Spearman's correlation coefficient was employed when at least one of the two quantitative variables did not follow a normal distribution. A Binary Logistic Regression: Backward LR model was used for further analysis. A p-value of < 0.05 was considered statistically significant.

#### Ethics committee approval

The study was approved by the Health Sciences Scientific Research Ethics Committee of Firat University (Approval date: December 14, 2024, Approval number: 2024/14-28). Legal permission was also obtained from the hospital where the study was conducted. Parents were fully informed about the study, and written informed consent was obtained to ensure voluntary participation.

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Table 1. Examining the relationship between some quantitative infulings of children and parents and so	alive indings of children and parents and scales
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Correlation*	Mean + SS	Median	S	DSC	PMAS	
Correlation	Wear ± 55.	(min-max)	r	р	r	р
Age of the mother (years)	37.36 ± 5.68	38.0 (23.0-66.0)	0.041	0.459	0.014	0.805
Age of the father (years)	41.28 ± 5.79	41.5 (28.0-65.0)	0.031	0.576	0.000	0.996
Number of children	3.19 ± 1.63	3.0 (1.0-13.0)	-0.004	0.938	-0.125	0.024
Age of the child (years)	9.17 ± 1.27	9.0 (6.0-11.0)	0.055	0.319	-0.137	0.013

Since the two quantitative variables were not normally distributed, Spearman's correlation coefficient was used. SDSC: Sleep Disturbance in Children Scale; PMAS: Problematic Media Use Scale.

#### Results

Table 1 presents the demographic data of the children and parents who participated in the study and the relationships between the scales. The mean age of the mothers was 37.36±5.68, while the mean age of the fathers was 41.28±5.79. The average number of children per family was 3.19±1.63, and the mean age of the children was 9.17±1.27. No significant correlation was observed between the SDSC scores and

variables such as parental age, number of children, and child age (p>0.05). Similarly, no significant relationship was found between PMAS and the age of parents (p>0.05). However, a weak but statistically significant negative relationship was identified between PMAS and both the number of children and the child's age (p<0.05), suggesting that as the number of children and the child's age increase, PMAS decrease.

Table 2. Distribution of descriptive characteristics of children and parents and comparison of scale scores according to descriptive characteristics (n=326)

Variable		SDSC	-	Statistical analysis* Probability	PI	MAS	Statistical analysis* Probability
	n (%)	$\overline{\mathbf{X}} \pm \mathbf{SS}$ .	Median [IQR]	-	$\overline{\mathbf{X}} \pm \mathbf{SS}$ .	Median [IQR]	
Parents							
Mother	187 (57.4)	39.98±10.70	38.0 [14.0]	Z=-3.085	2.09±0.91	1.9 [1.4]	Z=-2.684
Father	139 (42.6)	36.56±8.92	35.0 [11.0]	p=0.002	1.83±0.81	1.7 [1.2]	p=0.007
Income level							
Income less than expenditure	79 (24.2)	39.20±11.06	36.0 [12.0]	v <sup>2</sup> -0 706	1.95±0.91	1.7 [1.4]	v <sup>2</sup> -1 690
Income matches expenditure	192 (58.9)	38.83±10.29	37.0 [14.0]	$\chi = 2.730$	2.03±0.89	1.8 [1.3]	$\chi = 1.000$
Income more than expenditure	55 (16.9)	35.98±7.66	35.0 [12.0]	p=0.255	1.88±0.79	1.8 [1.3]	p=0.432
Does the mother work?							
Yes	60 (18.4)	39.62±8.51	38.5 [12.0]	Z=-1.822	2.09±0.86	2.0 [1.1]	Z=-1.418
No	266 (81.6)	38.17±10.45	36.0 [13.0]	p=0.068	1.96±0.89	1.8 [1.3]	p=0.156
Does the father work?							
Yes	276 (84.7)	38.01±9.71	36.0 [13.0]	Z=-1.262	2.00±0.90	1.8 [1.3]	Z=-0.622
No	50 (15.3)	40.82±12.04	37.0 [15.3]	p=0.207	1.88±0.75	1.9 [1.3]	p=0.534
Family structure							
Nuclear family	233 (71.5)	37.98±9.11	37.0 [12.0]		2.04±0.89	1.8 [1.3]	
Extended family	81 (24.8)	39.80±12.30	36.0 [18.0]	χ <sup>2</sup> =0.521	1.84±0.80	1.7 [1.3]	χ <sup>2</sup> =3.925
Single parent	12 (3.7)	38.17±12.65	33.5 [16.8]	p=0.771	1.83±0.98	1.7 [0.8]	p=0.140
Mother's education level							
Primary education	171 (52.5)	38.96±11.45	36.0 [15.0]		1.93±0.91	1.7 [1.4]	
High School	75 (23.0)	37.21±9.08	36.0 [12.0]	χ <sup>2</sup> =2.859	1.89±0.76	1.7 [1.0]	χ <sup>2</sup> =6.643
Bachelor's degree	63 (19.3)	39.04±8.15	38.0 [11.0]	p=0.414	2.20±0.92	2.1 [1.3]	p=0.084
Postgraduate	17 (5.2)	36.35±6.17	38.0 [11.0]		2.06±0.78	2.2 [1.2]	
Father's education level							
Primary education	130 (39.8)	39.30±11.07	37.0 [15.3]		1.89±0.86	1.7 [1.4]	
High School	83 (25.5)	38.26±11.36	36.0 [10.0]	χ <sup>2</sup> =1.594	1.96±0.89	1.8 [1.0]	χ <sup>2</sup> =4.776
Bachelor's degree	86 (26.4)	37.27±7.92	36.5 [12.0]	p=0.661	2.11±0.89	1.9 [1.4]	p=0.189
Postgraduate	27 (8.3)	38.59±7.28	38.0 [13.0]		2.09±0.87	2.0 [1.1]	
Place of residence							
Province <sup>(1)</sup>	158 (48.5)	38.96±9.71	37.0 [12.0]		2.13±0.91	1.9 [1.3]	
District <sup>(2)</sup>	92 (28.2)	37.34±8.39	36.0 [13.8]	χ <sup>2</sup> =2.734	2.08±0.86	1.9 [1.3]	χ <sup>2</sup> =29.168
Village <sup>(3)</sup>	76 (23.3)	38.71±12.62	34.5 [16.8]	p=0.255	1.56±0.69	1.3 [0.9]	p<0.001 [1.2-3]
Gender of the child							
Female	161 (49.4)	38.44±10.41	36.0 [13.0]	Z=-0.211	1.91±0.90	1.7 [1.2]	Z=-2.001
Male	165 (50.6)	38.44±9.89	37.0 [13.0]	p=0.833	2.05±0.85	1.9 [1.2]	p=0.045
Child have a private room							
Yes	208 (63.8)	37.99±9.21	37.0 [13.0]	Z=-0.187	2.04±0.88	1.9 [1.3]	Z=-2.156
No	118 (36.2)	39.23±11.56	36.0 [14.3]	p=0.851	1.88±0.88	1.7 [1.3]	p=0.031
Category of sleep disturbance	in children						
Normal	208 (63.8)						
Abnormal	118 (36.2)						

\*In the case of data that did not follow a normal distribution, the Mann-Whitney U test (Z-table value) was employed to compare the measurement values of two independent groups. The Kruskal-Wallis H test (χ2-table value) statistics were used to compare three or more independent groups.

SDSC: Sleep Disturbance in Children Scale; PMAS: Problematic Media Use Scale.

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Table 2 provides descriptive characteristics of the children and parents and a comparison of the scale scores. Among the participants, 57.4% of mothers and 58.9% of fathers reported that their income matched their expenses. Employment status differed significantly between parents: 81.6% of mothers were not working, while 84.7% of fathers were employed. Regarding family structure, 71.5% reported living in nuclear families, and 52.5% of mothers and 39.8% of fathers were primary school graduates. Concerning the children, 50.6% were male, 63.8% had their own room, and 63.8% scored within the normal range on the Sleep Disturbance Scale. A difference was found in Sleep Disturbance Scale scores based on the reporting parent; mothers reported higher sleep disturbance scores for their children than fathers (Z=-3.085, p=0.002).A significant difference in problematic media use scores was observed based on the reporting parent; mothers reported higher scores compared to fathers (Z=-2.684, p=0.004). No significant differences in sleep disturbance or problematic media use scores were found in relation to income level, parental employment status, family structure, or parental education level (p>0.05). However, place of residence significantly influenced problematic media use scores, with children living in urban areas (provinces and districts) scoring higher than those in rural areas (villages) ( $\chi^2$ =29.168, p<0.001). Additionally, boys had higher Problematic Media Use scores than girls (Z=-2.001, p=0.045). The presence of a private room also significantly affected the scores, as children with their own rooms reported higher problematic media use scores (Z=-2.156, p=0.031). In contrast, no significant differences were found between other variables, such as gender, room presence, or place of residence, and Sleep Disturbance Scale scores.

	Table 3.	Distribution	of scores	for the s	scales (n	=326)
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Scale	Mean ( SS)	Median	Min.	Max.	Cronbach's α
SDCS	38.44 (10.13)	36.5	26.0	88.0	0.837
PMAS	1.98 (0.88)	1.8	1.0	5.0	0.911
	een Disturbance in	Children S	cale: PM	AS: Prob	lematic Media Llse

SDSC: Sleep Disturbance in Children Scale; PMAS: Problematic Media Use Scale.

Table 3 presents the distribution of scores for the scales used in the study. The general mean score for the SDSC was 38.44±10.13, while the general mean score for the PMAS was 17.86±7.93. The responses to both scales were found to exhibit a very high level of reliability.

Table 4.	Examination	of the	relationship	amona t	he scales
	-/	•••••			

Correlation*		PMAS	
8008	r	0.384	
3003	р	<0.001	

\*Since the two quantitative variables were not normally distributed, Spearman's correlation coefficient was used.

SDSC: Sleep Disturbance in Children Scale; PMAS: Problematic Media Use Scale.

Table 4 analyzes the relationships between the scales. A weak but positive relationship was identified between the SDCS and the PMAS (r=0.384; p<0.001). This finding indicates that as SDCS scores increase, PMAS scores also increase.

Table 5 presents the results of the Backward LR logistic regression analysis conducted to identify parameters affecting Sleep Disturbance Scale scores in children. In the final optimal model, only the Problematic Media Use Scale scores emerged as a significant parameter influencing abnormal sleep status

(p<0.05). Specifically, a one-unit increase in PMAS scores was associated with an 81.6% increase in the likelihood of abnormal sleep status (OR=1.816).

Table 5. Logistic Regression model based on abnormal sleep condition

Variable	В	S.H.	Wald	SD	р	OR	95 Confic Interva	% dence II (OR)
						-	Upper	Lower
PMAS	0.597	0.137	19.065	1	<0.001	1.816	1.389	2.374
Constant	-1.779	0.306	33.867	1	<0.001	0.169		
CCR= 68.0% $\chi^{2}_{(7)}$ =4.447; p=0.727								
PMAS: Pro	blematic	Media I	Jse Scale					

#### Discussion

The findings of this study indicate a significant relationship between problematic media use and sleep disturbances in children. The existing literature extensively documents the adverse effects of digital media use on children and adolescents. For instance, previous research has shown that increased screen time disrupts sleep patterns, and the use of digital devices late at night reduces sleep quality by inhibiting melatonin production (Lissak, 2018; Priftis & Panagiotakos, 2023). Consistent with these findings, our study revealed that evening screen use negatively impacts children's sleep patterns. Mothers reported higher scores for both sleep disturbance and problematic media use in their children, which suggests that the parent responsible for monitoring and managing media use plays a critical role. The reason mothers reported higher scores for their children's sleep disturbances and problematic media use could be that mothers are more involved in their children's daily routines and are more likely to notice the effects of media useAdditionally, since mothers are more sensitive to their children's emotional states, they may be more attentive to observing the negative effects. Furthermore, the observed decrease in problematic media use scores as the number of children increased implies that the family's capacity to control media use may vary depending on family size (Paulus et al., 2024). In contrast to some studies (Paulus et al., 2024; Rega et al., 2023), this study found that problematic media use scores decreased with increasing child age. The decrease in problematic media use as the number of children increases can be explained by the increased sharing of responsibilities, the adoption of more effective management strategies, and the potential for improved communication within the family. More communication among family members may lead to better awareness and control over media use, resulting in its reduction.

Children in urban areas may have more access to technological devices and the internet than those in rural areas, which could contribute to the observed differences in problematic media use. The increased availability of devices and internet connectivity in urban settings likely provides children with greater opportunities for extended screen time, which aligns with previous research showing that urban children often exceed recommended screen time limits more frequently (Tomaz et al., 2020). This higher accessibility could be a key factor influencing the higher problematic media use scores in urban areas, highlighting the role of environmental factors in media consumption patterns. Gender differences were also evident in our findings, as boys exhibited higher problematic media use scores than girls. This observation

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aligns with the literature; for example, a systematic review by Baloğlu et al. (2020) concluded that problematic media use was more prevalent among boys. Another factor influencing media use was the presence of a personal room. Children with their own room had higher media use scores, suggesting that having personal space may facilitate greater media consumption.

The finding that problematic media use contributes to sleep disturbances in children is consistent with previous research. Earlier studies have established that problematic media use is associated with shorter sleep duration, delayed bedtimes, and increased difficulty falling asleep (Khan et al., 2024; Lund et al., 2021; Poulain et al., 2024). For example, Poulain et al. (2024) examined 453 individuals aged 10-14 years and emphasized the disruptive role of media use at bedtime. Similarly, Yamamoto et al. (2022) investigated the relationship between multiple media use, device-specific screen time, and bedtime delays in children aged 4-8 years. Their study, which included 1837 children, found that extended screen time for multimedia use, tablets, and console games was associated with delayed bedtimes. Additionally, Ali (2024) evaluated the impact of excessive screen-based media use on the sleep patterns of 341 school-aged children and confirmed that excessive media device use negatively affected children's sleep quality. These consistent findings across multiple studies underline the need to address problematic media use as a factor influencing sleep disturbances in children.

#### Limitations

The limitations of this study include its reliance on parental reports for data collection and the restriction of the sample to a single hospital outpatient clinic.

#### **Conclusion and Recommendations**

In conclusion, the findings of this study underscore the negative impact of children's media use on their sleep patterns and highlight the potential for mitigating this issue through active parental involvement. Health professionals should routinely assess screen time habits during pediatric evaluations and consider the potential effects of these habits on sleep patterns and academic performance. Nurses, in particular, can play a critical role by educating parents about the adverse effects of excessive digital media use and implementing interventions to improve sleep hygiene and promote healthy sleep habits. Additionally, nurses should guide parents in monitoring and limiting their children's media use, detecting sleep disturbances early, and developing personalized intervention strategies. Future research should focus on evaluating the effectiveness of nursing interventions to provide more targeted and effective solutions

#### **Ethics Committee Approval**

Ethics committee approval was obtained from Health Sciences Scientific Research Ethics Committee of a Firat University (Board Decision No: 2024/04-28) on December 14, 2024.

## **Informed Consent**

Written consent was obtained from the participants of parents.

#### Peer-Review

Externally peer-reviewed.

## **Author Contributions**

O.S.M.: Design, Methodology, Data Collection, Data Collection, Data Analysis, Methodology Writing, Original Draft.

Z.K.Ş.: Design, Methodology, Methodology Writing,

Original Draft.

K.A.: Design, Methodology Writing, Original Draft.

#### **Conflict of Interest**

There is no conflict of interest.

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