Section: Miscellaneous

Original Research Article

ASSOCIATION BETWEEN SCREEN TIME AND SLEEP QUALITY AMONG SCHOOL GOING CHILDREN

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ABSTRACT

Background: Children who spend prolonged hours on digital devices may also develop irregular sleep schedules, late-night device use, and unhealthy bedtime routines. Furthermore, the presence of electronic devices in the bedroom has been associated with poor sleep habits and reduced sleep quality. Studies have shown that children who keep televisions, smartphones, or tablets in their bedrooms tend to sleep later, wake up more frequently during the night, and feel less rested during the day.

Materials and Methods: A total of 194 children both male and female were recruited in the study after obtaining assent and permission from the school authorities. After the recruitment, the children were screened about their sleep quality using Insomnia severity Index. Their parents were interviewed about the screen time of their children and same was confirmed observing their mobile phone app about the screen time. The sleep pattern of the children also enquired with the children as well as parents. The data was compiled and entered to excel sheet for analysis.

Results: The overall value was observed as 4.78±0.67. It was observed that academic purpose screen time is more than non-academic purposes. 9.27±1.44 was the overall mean duration of sleep. On holidays the sleep duration was more compared to school days. Correlation coefficient value between the overall mean sleep duration and over all mean screen time duration is -0.5123. It denotes a moderate and negative correlation. That clearly states that excessive screen time is negatively associated with the sleep quality in children.

Conclusion: The study results clearly states that there was a negative correlation between the screen time usage and the sleep quality in children. As sleep is most important factor that influences the cognition and quality of life and even the development of the brain in children, the children must be educated about the harmful effects of excessive screen time and they should be motivated to have physical activity like sports. The study strongly recommends to conduct awareness programs for school children regarding the same.

Keywords: Sleep quality, Children, Cognition, Quality of life, Screen time, Mobile phones.

INTRODUCTION

Sleep is a very essential for survival and it plays a vital role in the healthy growth and development of children. Good sleep quality is essential for maintaining physical health, emotional stability, cognitive functioning, learning ability, memory retention, and academic performance among school-going children. For all age groups especially in children and young adults, adequate sleep contributes significantly to brain maturation, behavioural regulation, immune function, and overall well-being. In contrast, poor sleep quality and insufficient sleep have been linked to impaired concentration, irritability, anxiety, depression, obesity, reduced academic achievement, and behavioural disturbances. Hence, sleep health has become an important area of concern in paediatric and public health research.[1] Rapid technological advancement

and increased access to electronic media devices have dramatically changed the lifestyle patterns of both children and adolescents. Although digital technology provides many educational and communication benefits, excessive use of screen-based devices has emerged as a growing public health concern, particularly regarding its effect on sleep among school-aged children. The increased use of electronic devices during the daytime and before bedtime has raised concerns among researchers, parents, educators, and healthcare professionals about the possible negative impact of screen exposure on children's sleep quality.[2]

Screen time is referred to the amount of time spent using electronic devices with digital displays, including watching television, playing video games, browsing the internet, using social media, or attending online classes. In recent time, screen exposure among children has increased considerably because of improved internet accessibility, online learning platforms, digital entertainment, and social networking applications. Children today are spending more time indoors engaging with electronic media than participating in physical activities or outdoor recreation. Prolonged screen use has been associated with several health-related problems such as sedentary behaviour, obesity, visual strain, psychological stress, and sleep disturbances.[3] Recent studies have also suggested that excessive screen time, especially among physically inactive children, may further worsen sleep disturbances and affect overall health. In the present digital era, the use of electronic devices has become an unavoidable part of children's daily life for education, communication, and entertainment purposes, particularly after the COVID-19 pandemic and the increased use of online learning platforms. Poor sleep quality during childhood can negatively affect physical health, emotional well-being, concentration, memory, and academic performance. Therefore, understanding the association between screen time and sleep quality is important for creating awareness among parents, teachers, and healthcare professionals regarding healthy screen usage and sleep practices among school-going children. Hence, the present study aims to assess the association between screen time and sleep quality among school-going children. Another important factor is that screen time often replaces activities that promote healthy sleep, such as physical exercise, family interaction, reading, and relaxation before bedtime. Children who spend prolonged hours on digital devices may also develop irregular sleep schedules, late-night device use, and unhealthy bedtime routines. Furthermore, the presence of electronic devices in the bedroom has been associated with poor sleep habits and reduced sleep quality. Studies have shown that children who keep televisions, smartphones, or tablets in their bedrooms tend to sleep later, wake up more frequently during the night, and feel less rested during the day.[4,5]

MATERIALS AND METHODS

Study design: The present study was a cross-sectional study conducted in September 2024-December 2025.

Study setting: The study was conducted at Department of Paediatrics., Yadgiri Institute of Medical Sciences, Karnataka, India.

Study population: The study followed universal sampling technique. The study covered a total of three government schools and two private school children in and around the Yadgir district of Karnataka. A total of 194 children both male and female were recruited in the study after obtaining assent and permission from the school authorities. All the students were explained about the harmful effects of excessive screen time and recommended them to reduce the usage soon after the data collection.

Inclusion and exclusion criteria

Male and female willing, school going children, within the age group of ten years to twelve years, whose parents are willing to allow their children to participate in the study were included in the study. Children with any neurological disorders, under any kind of treatment were excluded from the study.

Methods: The study protocol was approved by the institutional human ethical committee and the study was conducted as per the guidelines of ICMR. After the recruitment, the children were screened about their sleep quality using Insomnia severity Index.[6] Their parents were interviewed about the screen time of their children and same was confirmed observing their mobile phone app about the screen time. The sleep pattern of the children also enquired with the children as well as parents. The data was compiled and entered to excel sheet for analysis.

Statistical analysis: The data was analysed using SPSS version 21.0. All qualitative data was presented as frequency and percentage. Quantitative data was analysed and presented as mean and standard deviation. Pearson correlation coefficient test was applied to observe the correlation between the sleep quality and screen time. A probability value less than 0.05 was considered as significant.

RESULTS

[Table 1] presents the demographic data of the participants. Table 2 presents the mean average screen time duration per day. The over all value was observed as 4.78±0.67. It was observed that academic purpose screen time is more than non-academic purposes. Table 3 presents the mean average sleep duration per day. 9.27±1.44 was the overall mean duration of sleep. On holidays the sleep duration was more compared to school days. Correlation coefficient value between the overall mean sleep duration and over all mean screen time duration is -0.5123. It denotes a moderate and negative correlation. That clearly states that excessive screen time is negatively associated with the sleep quality in children.

Table 1: Demographic data of the participants (n=194)

	Number of children (n=194)	Percentage (%)
Age (years)		
10	80	41.23
11	68	35.05
12	46	23.71
Gender		
Male	72	37.11
Female	122	62.88
Type of family		
Joint	21	10.82
Nuclear	173	89.1

Data was presented as frequency and percentage.

Table 2: Mean average screen time duration per day

Average screen time duration per day	Mean and SD
Overall	4.78±0.67
On school days	3.22±0.97
On holidays	3±0.47
For academic purpose	4.4±0.70
Non-academic purpose	2.4±1.17

Table 3: Mean average sleep duration per day

Average screen time duration per day	Mean and SD
Overall	9.27±1.44
On school days	8.13±1.06
On holidays	9.79±1.89

Table 4: Correlation between the overall mean sleep duration and over all mean screen time duration

Average screen time duration per day	Average screen time duration per day	r value
9.27±1.44	4.78±0.67	-0.5123

Moderate negative correlation was observed

DISCUSSION

The present study was carried out to assess the association between screen time and sleep quality among school-going children. The findings of the study showed a significant negative correlation between screen exposure and sleep quality, indicating that increased use of electronic devices was associated with poorer sleep among children. Children who spent more time using smartphones, televisions, tablets, computers, and video games were found to have reduced sleep duration, delayed sleeping time, disturbed sleep patterns, and increased daytime tiredness.[7] These findings indicate that excessive screen exposure may negatively influence healthy sleeping habits among school-going children.The results of the present study are similar to findings reported in earlier research studies. Twenge and colleagues reported that higher use of smartphones and digital media was associated with shorter sleep duration and insufficient sleep among adolescents. Likewise, Hysing and colleagues observed that children and adolescents using electronic devices before bedtime experienced delayed sleep onset, sleep deficiency, longer sleep latency, and daytime sleepiness. These studies support the findings of the present research and suggest that prolonged screen use may interfere with normal sleep patterns in children.[8]

One possible reason for the negative association observed in the present study may be the effect of blue light emitted from electronic screens. Blue light exposure during evening and nighttime suppresses the release of melatonin, which is an important hormone responsible for regulating the sleep–wake cycle. Reduction in melatonin secretion may delay sleep initiation and disturb circadian rhythm, thereby affecting sleep quality and duration. In addition, children often engage in stimulating activities such as online gaming, social media use, internet browsing, and video watching before bedtime, which may increase mental alertness and emotional stimulation, making it difficult for them to fall asleep on time. Another possible explanation for poor sleep quality among children with higher screen exposure may be irregular bedtime habits and nighttime device usage. Many children continue using electronic devices late into the night, which can reduce total sleeping hours and disturb regular sleep schedules. Cain and Gradisar also reported that excessive media use among children and adolescents was consistently associated with delayed bedtime and shorter sleep duration. Similarly, LeBourgeois and colleagues found that nighttime use of digital media devices negatively affected sleep timing, sleep duration, and daytime alertness among children and adolescents. These findings suggest that electronic media exposure before bedtime may adversely affect healthy sleep behavior.[9,10]

After the COVID-19 pandemic, online classes and virtual learning further increased the duration of screen exposure among school-going children. Many children now spend long hours attending online classes, using smartphones, watching videos, or

playing online games. Increased screen exposure may reduce time spent on outdoor activities, physical exercise, and social interaction, thereby contributing to sedentary lifestyle habits and poor sleep outcomes. Poor sleep quality during childhood may negatively affect physical health, emotional well-being, cognitive performance, and academic achievement. Children with inadequate sleep may experience reduced concentration, poor memory, irritability, behavioral disturbances, daytime sleepiness, and decreased academic performance. Long-term sleep disturbances may also increase the risk of obesity, anxiety, stress, depression, and other psychological problems. Since adequate sleep is essential for proper growth, learning, and emotional regulation, identifying factors affecting sleep quality is important for improving the overall well-being of children.[11-15]

The findings of the present study highlight the need to create awareness among parents, teachers, and healthcare professionals regarding the harmful effects of excessive screen time on children's sleep health. Parents should be encouraged to monitor and limit the use of electronic devices, especially during evening and bedtime hours. Maintaining regular sleep schedules, promoting physical activity, and avoiding screen exposure before bedtime may help improve sleep quality among children.[16] Schools and healthcare providers can also play an important role in educating children and parents regarding healthy screen habits and proper sleep hygiene practices. Certain limitations of the present study should also be considered. The study was based on self-reported information related to screen time and sleep quality, which may be affected by recall bias or inaccurate reporting. In addition, the cross-sectional design of the study limits the establishment of a causal relationship between screen exposure and sleep quality. Overall, the present study concludes that increased screen time is negatively associated with sleep quality among school-going children. Reducing excessive use of electronic devices and encouraging healthy sleep practices may help improve sleep quality and support better physical, emotional, and academic health among children.

CONCLUSION

The study results clearly states that there was a negative correlation between the screen time usage and the sleep quality in children. As sleep is most important factor that influences the cognition and quality of life and even the development of the brain in children, the children must be educated about the harmful effects of excessive screen time and they should be motivated to have physical activity like sports. The study strongly recommends to conduct awareness programs for school children regarding the same.

REFERENCES

1. Hale L, Guan S. Screen time and sleep among school-aged children and adolescents: a systematic literature review. Sleep Med Rev. 2015;21:50–58. PMID: 25193149.
2. Yland J, Guan S, Emanuele E, Hale L. Interactive vs passive screen time and nighttime sleep duration among school-aged children. Sleep Health. 2015;1(3):191–196. PMID: 27540566.
3. Falbe J, Davison KK, Franckle RL, et al. Sleep duration, restfulness, and screens in the sleep environment. Pediatrics. 2015;135(2):e367–e375. PMID: 25560435.
4. Dos Santos AB, Prado WL, Tebar WR, et al. Screen time is negatively associated with sleep quality and duration only in insufficiently active adolescents: A Brazilian cross-sectional school-based study. Prev Med Rep. 2024;37:102579. PMID: 38222306.
5. Sekhar GC, Haarika V, Tumati KR, Ramisetty UM. The Impact of Screen Time on Sleep Patterns in School-Aged Children: A Cross-Sectional Analysis. Cureus. 2024;16(2):e55229. PMID: 38425328.
6. Bastien CH, Vallières A, Morin CM. Validation of the Insomnia Severity Index as an outcome measure for insomnia research. Sleep Med. 2001 Jul;2(4):297-307.
7. Twenge JM, Krizan Z, Hisler G. Decreases in self-reported sleep duration among U.S. adolescents 2009–2015 and association with new media screen time. Sleep Med. 2017;39:47–53. PMID: 29195784.
8. Hysing M, Pallesen S, Stormark KM, Jakobsen R, Lundervold AJ, Sivertsen B. Sleep and use of electronic devices in adolescence: results from a large population-based study. BMJ Open. 2015;5(1):e006748. PMID: 25540243.
9. Cain N, Gradisar M. Electronic media use and sleep in school-aged children and adolescents: A review. Sleep Med. 2010;11(8):735–742. PMID: 20673649.
10. LeBourgeois MK, Hale L, Chang AM, Akacem LD, Montgomery-Downs HE, Buxton OM. Digital media and sleep in childhood and adolescence. Pediatrics. 2017;140(Suppl 2):S92–S96. PMID: 29093040.
11. Exelmans L, Van den Bulck J. Bedtime mobile phone use and sleep in adults. Soc Sci Med. 2016;148:93–101. PMID: 26688552.
12. Jain S, Shrivastava S, Mathur A, Pathak D, Pathak A. Prevalence and determinants of excessive screen viewing time in children aged 3-15 years and its effects on physical activity, sleep, eye symptoms and headache. Int J Environ Res Public Health. 2023;20(4):3449.
13. Joseph HB, Sandhiya K, Shetty AP. Touch screen device usage and its effect on sleep among young children: Do parents delude younger generation deliberately? Time to ruminate and impede this technological harm. Indian J Community Med. 2022;47(3):360-363.
14. Maurya C, Muhammad T, Maurya P, Dhillon P. The association of smartphone screen time with sleep problems among adolescents and young adults: cross-sectional findings from India. BMC Public Health. 2022;22:1686.
15. Kadambi P, Reddy LSP, Aashiq SM, Suresh P. Study of screen-time and sleep in children aged 3-15 years in Kanchipuram, Tamil Nadu, India. Int J Contemp Pediatr. 2021;8(2):245-250.
16. Sekhar GC, Haarika V, Tumati KR, Ramisetty UM. The impact of screen time on sleep patterns in school-aged children: A cross-sectional analysis. Cureus. 2024;16(2):e55229.