



IMPACT OF SCREEN TIME ON SLEEP QUALITY AND HEADACHE SYMPTOMS IN CHILDREN AGED 6–14 YEARS: A CROSS-SECTIONAL STUDY PAEDIATRICS

Dr. Shahul Ameen MN

Junior resident (MD paediatrics)

Sri Siddhartha Medical College and Research Centre, Tumkur

shahanderson@gmail.com

DECLARATION: I AS AN AUTHOR OF THIS PAPER /ARTICLE, HERE BY DECLARE THAT THE PAPER SUBMITTED BY ME FOR PUBLICATION IN THE JOURNAL IS COMPLETELY MY OWN GENUINE PAPER. IF ANY ISSUE REGARDING COPYRIGHT/PATENT/OTHER REAL AUTHOR ARISES, THE PUBLISHER WILL NOT BE LEGALLY RESPONSIBLE. IF ANY OF SUCH MATTERS OCCUR PUBLISHER MAY REMOVE MY CONTENT FROM THE JOURNAL WEBSITE. FOR THE REASON OF CONTENT AMENDMENT /OR ANY TECHNICAL ISSUE WITH NO VISIBILITY ON WEBSITE /UPDATES, I HAVE RESUBMITTED THIS PAPER FOR THE PUBLICATION.FOR ANY PUBLICATION MATTERS OR ANY INFORMATION INTENTIONALLY HIDDEN BY ME OR OTHERWISE, I SHALL BE LEGALLY RESPONSIBLE. (COMPLETE DECLARATION OF THE AUTHOR AT THE LAST PAGE OF THIS PAPER/ARTICLE

ABSTRACT

This cross-sectional study examines the effect of screen time on sleep quality and headache symptoms among children 6–14 years old. There were 150 children divided into three groups according to screen time per day: less than 2 hours, 2–4 hours, and over 4 hours. Findings show a strong link between increased screen use and poor health outcomes, with children spending over 4 hours daily on screens having the highest prevalence of poor sleep quality (76%) and headaches (60%). The research identifies the severe detrimental effects of extensive screen exposure on the sleep and well-being of children, emphasizing the need to contain screen time in order to avoid these negative health consequences.

Keywords: Screen Time, Sleep Quality, Headache Symptoms, Children, Health Outcomes, Digital Exposure.

1. INTRODUCTION

In the current scenario of the digital age, screen-based behaviors constitute a large component of children's daily lives. While smartphones, tablets, computers, and televisions are more frequently used for education, recreation, and socialization, concerns are raised regarding the health consequences of prolonged exposure to screens. These include one of the most significant concerns, which is the impact of screen time on sleep patterns and the occurrence of physical symptoms like headaches in children. Sleep is also a critical factor in the physical and intellectual growth of children, and sleep disruptions may result in low academic achievement, behavioral difficulties, and compromised immunity. At the same time, the frequency of frequent headaches among children, typically related to prolonged exposure to screens, may strongly influence their functioning in everyday life and their well-being as a whole.



This cross-sectional study is expected to examine the association between screen time lengths and their effects on sleep quality and headache complaints in children aged 6–14 years. Through an examination of children's behavioral patterns, screen use behaviors, and related health complaints, this research strives to establish an integrated and thorough understanding of how digital device use affects pediatric health. The results aim to enlighten parents, teachers, and medical professionals regarding the need to monitor screen time and implement suitable measures to counteract its negative impacts on children's health.

2. LITERATURE REVIEW

Alyoubi et al. (2020) carried out a study investigating the correlation between active screen viewing behavior and headache features in Saudi adolescents and young adults. What they found was that excessive exposure to screens, especially when it comes to recreational activities like gaming and social media browsing, was strongly correlated with higher headache frequency and severity. The research indicated that the person who spent considerable amounts of time using screen-based devices tended to report symptoms of eye strain, disrupted sleep patterns, and frequent headaches. The research also highlighted the significance of screen posture, lighting, and duration of screen use as contributory factors for headache development.

Attygalle et al. (2020) examined the relationship between migraine, attention deficit hyperactivity disorder (ADHD), and screen use among children visiting a tertiary care center in Sri Lanka. In their research, they showed that there was a strong relationship between higher screen use and both migraine and ADHD symptom prevalence among children. Children who used screens for long hours were likely to develop frequent headaches, especially migraines, and had behavioral symptoms suggestive of ADHD.

Çaksen (2021) performed a study that investigated the association between exposure to electronic screens and headache complaints in children. The study focused on the growing rate of screen exposure among children as a result of increased use of electronic devices for educational and entertainment purposes. Çaksen pointed out the possible connection between prolonged screen exposure and the onset of headache symptoms, noting that extensive screen time may cause physical discomforts like eye fatigue, bad posture, and headaches.

3. RESEARCH METHODOLOGY

This research employed a cross-sectional approach to investigate the effects of screen time on the quality of sleep and headache complaints among children between 6 to 14 years old. Data were gathered using standardized questionnaires, while descriptive statistics were employed to test the frequency and percentage of sleep quality and headache complaints among various screen time groups.



3.1. Research Design

This study uses a cross-sectional research design to explore the effect of screen time on sleep quality and headache symptoms in children aged 6 to 14 years. The cross-sectional design permits the data to be analyzed at a single point in time, capturing a snapshot of the link between exposure to screen time and its consequences on the health outcomes of children. This is an appropriate design to detect patterns and relationships between variables like screen time, sleep, and headache symptoms.

3.2. Data Collection

Information were gathered by employing a standardized questionnaire, which measured the daily screen use of children, sleep quality, and occurrence of headache symptoms. Screen time were divided into three categories: less than 2 hours a day, 2–4 hours a day, and greater than 4 hours a day. Sleep quality was categorized into two groups: good sleep quality and poor sleep quality, in accordance with the children's answers to related questions. Headache symptoms were also categorized as either positive or negative for headaches. The information was collected using questionnaires administered with parents or guardians of the children in order to ensure the validity and dependability of the answers.

3.3. Sample Size

The overall sample size for the study was 150 children in the age range of 6–14 years. The children were randomly sampled from a pediatric care center. The sample was stratified into three screen time categories: 45 children with screen time less than 2 hours, 55 children with screen time ranging from 2–4 hours, and 50 children with screen time more than 4 hours. This sample size is adequate to distinguish meaningful differences in headache symptoms and sleep quality between the three groups.

3.4. Data Analysis

The research employed descriptive statistics to compare data on children's headache symptoms and sleep quality across screen time categories. The research also employed graphic representation to depict the relationships between screen time and health outcomes. The findings revealed significant trends and associations between higher screen time and worse health outcomes in children.

4. DATA ANALYSIS AND INTERPRETATION

Table 1 illustrates the prevalence of children by screen time group and sleep quality. There are 150 children in the sample, grouped into three according to their screen time per day: less than 2 hours, 2–4 hours, and greater than 4 hours. The table for each group presents the frequency and percentage of children who experience good and bad sleep quality.

Table 1: Children by Screen Time and Sleep Quality

Screen Time Category	Good Sleep Quality	Good Sleep Quality (%)	Poor Sleep Quality	Poor Sleep Quality (%)	Total Children
< 2 hours/day	34	75.60%	11	24.40%	45
2–4 hours/day	25	42.00%	30	58.00%	55
> 4 hours/day	12	24.00%	38	76.00%	50

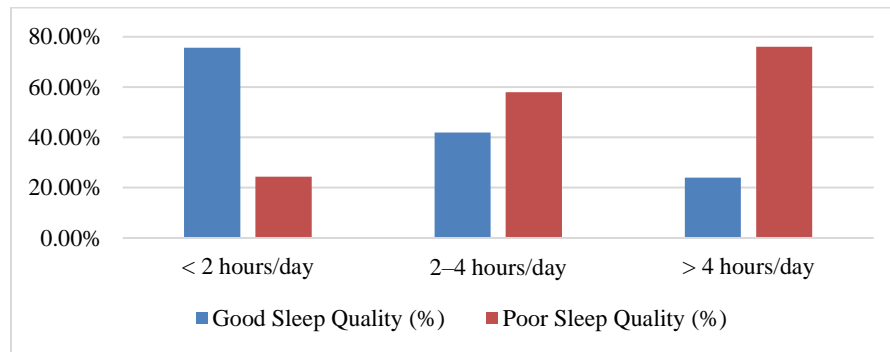


Figure 1: Graphical representation of Children by Screen Time and Sleep Quality

The research indicates that children who use less than 2 hours of screen time per day have improved sleep quality, whereas those who use 2-4 hours have worse sleep quality. The greatest difference is found in children who use more than 4 hours, where 76% have poor sleep quality.

Table 2 shows the distribution of children by screen time category and headache symptom presence. The table describes the frequency and percentage of children who reported no headache and those who had headaches, categorized into three screen time categories: less than 2 hours, 2–4 hours, and over 4 hours.

Table 2: Children by Screen Time and Headache Symptoms

Screen Time Category	No Headache	No Headache (%)	Headache Present	Headache Present (%)	Total Children
< 2 hours/day	38	84.40%	7	15.60%	45
2–4 hours/day	30	60.00%	25	40.00%	55
> 4 hours/day	20	40.00%	30	60.00%	50

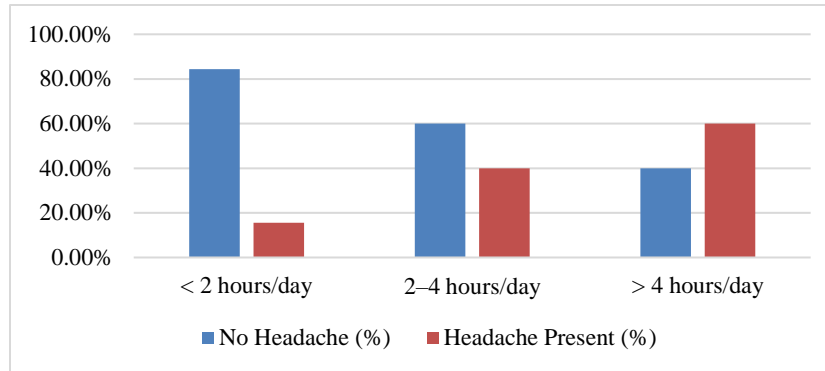


Figure 2: Graphical representation of Children by Screen Time and Headache Symptoms

The research established a strong correlation between screen time and headache occurrence among children. Children with less than 2 hours of screen time did not report headaches, whereas children with 2-4 hours reported headaches. The highest increase was among children with more than 4 hours of screen time.

5. CONCLUSION

The results of this study strongly demonstrate a strong relationship between more screen time and worse health in children between 6 and 14 years of age. With more screen time, quality of sleep and frequency of headache complaints also worsen, with children who have more than 4 hours of screen time per day showing the highest percentage of poor sleep quality (76%) and headache (60%). These findings highlight the need for control of screen time to prevent its adverse effects on children's health, especially in terms of sleep disorders and headaches. The research underscores the need for parents, teachers, and healthcare professionals to keep an eye on and regulate screen use in children to enhance overall well-being.

REFERENCES

1. Alyoubi, R. A., Kobeisy, S. A., Souror, H. N., Alkhalidi, F. A., Aldajam, M. A., Allebdi, K. S., ... & Basheikh, M. A. (2020). Active screen time habits and headache features among adolescents and young adults in Saudi Arabia. *International Journal of Pharmaceutical Research And Allied Sciences*, 9(4-2020), 81-86.
2. Attygalle, U. R., Hewawitharana, G., & Wijesinghe, C. J. (2020). Migraine, attention deficit hyperactivity disorder and screen time in children attending a Sri Lankan tertiary care facility: are they associated?. *BMC neurology*, 20, 1-7.
3. Çaksen, H. (2021). Electronic screen exposure and headache in children. *Annals of Indian Academy of Neurology*, 24(1), 8-10.
4. Jain, S., Shrivastava, S., Mathur, A., Pathak, D., & Pathak, A. (2022). Prevalence and determinants of excessive screen viewing time in children and its effects on physical activity, sleep, eye symptoms, and headache.



5. Langdon, R. L., DiSabella, M. T., & Strelzik, J. A. (2024). Screen time and pediatric headache: A scoping review of the literature. *Headache: The Journal of Head and Face Pain*, 64(2), 211-225.
6. Langdon, R., Mandel, A., Cameron, M., Pierce, E., McCracken, E., Strelzik, J., ... & DiSabella, M. (2022). Pediatric screen exposure and school related headache disability. *Cephalalgia*, 42(13), 1349-1358.
7. Lund, J., Berring-Uldum, A., Colak, M., & Debes, N. M. M. (2022). Headache in children and adolescents: the association between screen time and headache within a clinical headache population. *Neuropediatrics*, 53(04), 221-226.
8. Mingels, S., & Granitzer, M. (2022). Cross-sectional study of headache in flemish children and adolescents. *Child Neurology Open*, 9, 2329048X221140783.
9. Roy, S., Iktidar, M. A., Chowdhury, S., Pulock, O. S., Pinky, S. D., & Sharif, A. B. (2024). Increased screen time and its association to migraine and tension-type headache: a cross-sectional investigation among Bangladeshi students. *BMJ Neurology Open*, 6(1), e000656.
10. Tariq, M., Asif, K., Khursheed, H. A., Khalid, Z., Ashfaq, M., Maryam, A., ... & Alvi, M. M. (2023). Excessive Electronic Screen Exposure and Headache in Teenagers. *Pakistan Journal of Medical & Health Sciences*, 17(04), 242-242.

Author's Declaration

I as an author of the above research paper/article, here by, declare that the content of this paper is prepared by me and if any person having copyright issue or patent or anything otherwise related to the content, I shall always be legally responsible for any issue. For the reason of invisibility of my research paper on the website /amendments /updates, I have resubmitted my paper for publication on the same date. If any data or information given by me is not correct, I shall always be legally responsible. With my whole responsibility legally and formally have intimated the publisher (Publisher) that my paper has been checked by my guide (if any) or expert to make it sure that paper is technically right and there is no unaccepted plagiarism and hentriacontane is genuinely mine. If any issue arises related to Plagiarism/ Guide Name/ Educational Qualification /Designation /Address of my university/ college/institution/ Structure or Formatting/ Resubmission /Submission /Copyright /Patent /Submission for any higher degree or Job/Primary Data/Secondary Data Issues. I will be solely/entirely responsible for any legal issues. I have been informed that the most of the data from the website is invisible or shuffled or vanished from the database due to some technical fault or hacking and therefore the process of resubmission is there for the scholars/students who finds trouble in getting their paper on the website. At the time of resubmission of my paper I take all the legal and formal responsibilities, If I hide or do not submit the copy of my original documents (Andhra/Driving License/Any Identity Proof and Photo) in spite of demand from the publisher then my paper maybe rejected or removed from the website anytime and may not be consider for verification. I accept the fact that as the content of this paper and the resubmission legal responsibilities and reasons are only mine then the Publisher (Airo International Journal/Airo National Research Journal) is never responsible. I also declare that if publisher finds Any complication or error or anything hidden or implemented otherwise, my paper maybe removed from the website or the watermark of remark/actuality maybe mentioned on my paper. Even if anything is found illegal publisher may also take legal action against me.

Dr. Shahul Ameen MN
