

Electronic Screen Exposure and Headache in Children

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Abstract

Headache represents the most common neurologic disorder in the general population including children and is increasingly being recognized as a major source of morbidity in youth related to missed school days and activities. Electronic screens are becoming increasingly important in the lives of preteens and teens. In this review, we discussed effects of electronic screens on primary headache in childhood to emphasize the importance of electronic screen exposure in children with headache. Using digital and social media can bring some benefits and risks for mental and physical health. Time spent on screen-based activities contributes to the chance of reporting general physical complaints, in particular, headache and backache during early adolescence. We suggest that all children with primary headache should be evaluated for abuse of electronic screens in neurology practice. We also think that restriction of electronic screen should be advised in children with migraine and tension type headache before initiation of pharmacotherapy. As online classes are a reality, use of electronic screen may be allowed for school age children up to 2 h/day with taking time away from digital media every 20 min for 20 sec. In conclusion, we would like to emphasize that limiting the time spent on the screen is important for the reduction of headache symptoms of children and adolescents.

Keywords: Child, electronics, headache

INTRODUCTION

Headache represents the most common neurologic disorder in the general population including children and is increasingly being recognized as a major source of morbidity in youth related to missed school days and activities.^[1-3] Evaluation and diagnosis of pediatric headache starts with a thorough headache and medical history, family and social history, and identification of risk factors. A thorough physical and neurologic exam is important, with close attention to features that could suggest secondary headache pathology.^[4] While most headaches are due to primary headache disorders, in a small population, they can be an indication of a potentially life-threatening neurologic condition. Common thought is that increased frequency and severity of headache may reflect secondary pathology. Headache location, particularly occipital headache alone, does not necessarily signify secondary intracranial pathology. Certain warning signs warrant neuroimaging, but others only warrant imaging in certain clinical contexts.^[4] The correct advice and treatment requires consideration of a wide differential diagnosis between primary and secondary headaches, and also of the different types of primary headache.^[5] It has been demonstrated that behavioral intervention is highly effective, especially in the treatment of pediatric headache, and can enhance or replace pharmacotherapy, with the advantage of eliminating dangerous side effects and or reducing costs.^[6]

In this review, we discussed effects of electronic screens including watching television, music lyrics with headphones, use of smartphone/tablet and computer on primary headache in childhood. Our aim is to increase the awareness of clinicians regarding the importance of electronic screen exposure in children with primary headache.

EFFECTS OF MEDIA ON CHILD HEALTH AND HEADACHE

Social media and new media are becoming increasingly important in the lives of preteens and teens. In terms of research, traditional media (e.g., television, movies, videos) have been shown to have a greater impact on most areas of public health, but research on new media (e.g., cell phones, iPads, and social media) is basically still in its infancy.^[7-9] There are both benefits and risks of media use for the health of children. Benefits include exposure to new ideas and knowledge acquisition, increased opportunities for social contact and support, and new opportunities to access health-promotion messages and information. Risks include negative health effects on weight and sleep; exposure to inaccurate, inappropriate, or unsafe content and contacts; and compromised privacy and confidentiality.^[10] Torjesen^[11] noted that there is not enough evidence to conclude that screen time is harmful to the health of children and young people or advice on how much screen

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time is too much, says the first guidance on children's screen time to be published in the United Kingdom.

Media, from television to the "new media", are a dominant force in children's lives. Although television is still the predominant medium for children and adolescents, new technologies are increasingly popular.^[8] The American Academy of Pediatrics continues to be concerned by evidence about the potential harmful effects of media messages and images; however, important positive and prosocial effects of media use should also be recognized.^[8] Using digital and social media can bring some benefits and risks for mental and physical health.^[12] Sitting for lengthy periods in fixed postures such as at computer terminals may result in adolescent neck pain and headaches.^[13]

Studies on traditional media have identified some negative consequences related to child health.^[12] During early adolescence, time spent on screen-based activities contributes to the chance of reporting general physical complaints, in particular, headache and backache. Differences in symptoms according to screen type have been documented.^[14] Headache was found to be more often among children who watched television longer ($P < 0.05$).^[15] Redmayne *et al.*^[16] examined the relationship between adolescents' well-being and their wireless phone use. The number and duration of cellphone and cordless phone calls were associated with increased risk of headaches (>6 cellphone calls over 10 minutes weekly, [$P \leq 0.01$] >15 minutes cordless use daily [$P \leq 0.001$] and wireless headsets were associated with headache [$P \leq 0.001$]).^[16] Torsheim *et al.*^[17] examined the association between screen-based activity and physical complaints (backache and headache) among adolescents. They found that boys' computer use, computer gaming and television viewing were associated with increased odds of headache. Girls' computer use and television viewing, but not computer gaming, were associated with increased odds of headache.^[17] Palm *et al.*^[18] analyzed associations between computer use and health problems in students (16 and 18 yr old) and they found that headache was by 51% and 24%, of the females and males, respectively. Watching television more than 3 h reported having a headache significantly more frequently in comparison with those watching television less than 2 h ($P < 0.01$). Working with a personal computer or playing personal computer games more than 3 h significantly increased the chances of headache in comparison with those using a computer for less than 2 h ($P < 0.001$). Spending even 2-3 h with a computer significantly increases the chance of suffering a headache in comparison with those using a computer for less than 2 h ($P < 0.01$).^[19] Alexander and Currie^[20] noted that extended periods (3 h or more per weekday) of time spent computing were associated with neck/shoulder pain ($P < 0.01$) and headache ($P < 0.01$) in young adults. However, Smith *et al.*^[13] noted a concerning association between neck pain and high hours of computing for school students ($P < 0.05$), but high hours of computer use were not significantly associated with headache ($P > 0.05$). Across all types of screen-based activities,

headache increase with greater number of hours spent on screen use.^[21] A significant association was noted between listening to music and headache in adolescents, aged 13-17 yr.^[22]

An association was noted between excessive use of electronic devices and the presence of headache in adolescents (14 to 19 yr) ($P < 0.05$). This habit is considered a risk factor, especially for the development of migraine-type ($P < 0.05$).^[23] Similarly, Montagni *et al.*^[24] reported that high levels of screen time exposure are associated with migraine in young adults (a mean age of 20.8 yr and 75.5% were female) ($P < 0.05$), but, no significant association was found with non-migraine headache ($P > 0.05$). However, Oksanen *et al.*^[25] noted children with both migraine and episodic tension-type headache used computers more often than children without headache ($P < 0.05$). Tepecik Büyükbaş *et al.*^[26] found that headache was triggered in 57.3% patients with migraine and in 40.2% patients with tension-type headache by computer use ($P < 0.05$) and in 55.3% patients with migraine and in 36.1% patients with tension-type headache by television watching ($P < 0.05$). Cerutti *et al.*^[27] reported no significant relationship was found between students with and without headache with respect to the abuse of internet and mobile phone categories ($P > 0.05$). Additionally, also by excluding the no headache group, the relationship between the two groups of headache (migraine and tension type headache) and the abuse of media is not statistically significant ($P > 0.05$). No significant relationship emerged between headache and the internet and mobile phone addiction groups ($P > 0.05$) as well as no significant relationship was found when only the different headache types were considered ($P > 0.05$).^[27]

RECOMMENDATIONS

By understanding and supporting media education, pediatricians can play an important role in reducing harmful effects of media on children and adolescents.^[28] It is suggested that age appropriate boundaries are established, negotiated by parent and child, which everyone in the family understands. When these boundaries are not respected, actions need to be put in place with parents making consequences clear.^[11] Picherot *et al.*^[29] proposed five simple messages: Understanding without demonizing; screen use in common living areas, but not in bedrooms; preserve time with no digital devices (morning, meals, sleep, etc.); provide parental guidance for screen use; and prevent social isolation. We ask all children with headache whether they have abuse of electronic screens in neurology practice. We also advise restriction of electronic screen in children with migraine and tension type headache before initiation of medical treatment. We observe that frequency and/or severity of headache are decreased after elimination of electronic screen exposure in many children during their follow-up. As online classes are a reality, use of electronic screen may be allowed for school age children up to 2 h/day with taking time away from digital media every 20 min for 20 sec.

CONCLUSION

We would like to emphasize that children with primary headache should be evaluated for abuse of electronic screens. Many children with primary headache are associated with abuse of electronic screens. Limiting the time spent on the screen is important for the reduction of headache symptoms of children and adolescents.

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There are no conflicts of interest.

REFERENCES

- Langdon R, Di Sabella MT. Pediatric headache: An overview. *Curr Probl Pediatr Adolesc Health Care* 2017;47:44-65.
- Açikel SB, Bilgiç A, Derin H, Eroğlu A, Akça ÖF, Çaksen H. Comparison of children with migraine and those with tension-type headache for psychiatric symptoms and quality of life. *J Pediatr Neurol* 2021;19:14-23.
- Deda G, Çaksen H, Öcal A. Headache etiology in children: A retrospective study of 125 cases. *Pediatr Int* 2000;42:668-73.
- Dao JM, Qubty W. Headache diagnosis in children and adolescents. *Curr Pain Headache Rep* 2018;22:17.
- Whitehouse WP, Agrawal S. Management of children and young people with headache. *Arch Dis Child Educ Pract Ed* 2017;102:58-65.
- Faedda N, Cerutti R, Verdecchia P, Migliorini D, Arruda M, Guidetti V. Behavioral management of headache in children and adolescents. *J Headache Pain* 2016;17:80.
- Dinleyici M, Carman KB, Ozturk E, Sahin-Dagli F. Media use by children, and parents' views on children's media usage. *Interact J Med Res* 2016;5:e18.
- Council on Communication and Media. Children, adolescents, and the media. *Pediatrics* 2013;132:958-61.
- Hogan M, Strasburger VC. Social media and new technology: A primer. *Clin Pediatr (Phila)* 2018;57:1204-1215.
- Council on Communications and Media. Media use in school-aged children and adolescents. *Pediatrics* 2016;138:e20162592.
- Torjesen I. Parents should decide when children's screen time is too high, says first UK guidance. *BMJ* 2019;364:160.
- Reid Chassiakos YL, Radesky J, Christakis D, Moreno MA, Cross C; Council on Communications and Media. Children and adolescents and digital media. *Pediatrics* 2016;138:e20162593.
- Smith L, Louw Q, Crous L, Grimmer-Somers K. Prevalence of neck pain and headaches: Impact of computer use and other associative factors. *Cephalalgia* 2009;29:250-7.
- Domingues-Montanari S. Clinical and psychological effects of excessive screen time on children. *J Paediatr Child Health* 2017;5:333-8.
- Toyran M, Ozmert E, Yurdakök K. Television viewing and its effect on physical health of schoolage children. *Turk J Pediatr* 2002;44:194-203.
- Redmayne M, Smith E, Abramson MJ. The relationship between adolescents' well-being and their wireless phone use: A cross-sectional study. *Environ Health* 2013;12:90.
- Torsheim T, Eriksson L, Schnohr CW, Hansen F, Bjarnason T, Välimaa R. Screen-based activities and physical complaints among adolescents from the Nordic countries. *BMC Public Health* 2010;10:324.
- Palm P, Risberg EH, Mortimer M, Palmerud G, Toomingas A, Tornqvist EW. Computer use, neck and upper-extremity symptoms, eyestrain and headache among female and male upper secondary school students. *Scand J Work Environ Health* 2007;33(Suppl 3):S33-S41.
- Brindova D, Veselska ZD, Klein D, Hamrik Z, Sigmundova D, van Dijk JP, *et al.* Is the association between screen-based behaviour and health complaints among adolescents moderated by physical activity? *Int J Public Health* 2015;60:139-45.
- Alexander LM, Currie C. Young people's computer use: Implications for health education. *Health Educ (Lond)* 2004;104:254-61.
- Taehtinen RE, Sigfusdottir ID, Helgason AR, Kristjansson AL. Electronic screen use and selected somatic symptoms in 10-12 year old children. *Prev Med* 2014;67:128-33.
- Milde-Busch A, von Kries R, Thomas S, Heinrich S, Straube A, Radon K. The association between use of electronic media and prevalence of headache in adolescents: Results from a population-based cross-sectional study. *BMC Neurol* 2010;10:12.
- Xavier MK, Pitanguí AC, Silva GR, Oliveira VM, Beltrão NB, Araújo RC. Prevalence of headache in adolescents and association with use of computer and videogames. *Cien Saude Colet* 2015;20:3477-86.
- Montagni I, Guichard E, Carpenet C, Tzourio C, Kurth T. Screen time exposure and reporting of headaches in young adults: A cross-sectional study. *Cephalalgia* 2016;36:1020-7.
- Oksanen A, Metsähonkala L, Anttila P, Aromaa M, Jäppilä E, Viander S, *et al.* Leisure activities in adolescents with headache. *Acta Paediatr* 2005;94:609-15.
- Tepecik Büyükbaş İ, Çıtak Kurt AN, Tural Hesapçioğlu S, Uğurlu M. Relationship between headache and Internet addiction in children. *Turk J Med Sci* 2019;49:1292-7.
- Cerutti R, Presaghi F, Spensieri V, Valastro C, Guidetti V. The potential impact of internet and mobile use on headache and other somatic symptoms in adolescence. A population-based cross-sectional study. *Headache* 2016;56:1161-70.
- Strasburger VC; Council on Communications and Media American Academy of Pediatrics. Media education. *Pediatrics* 2010;126:1012-7.
- Picherot G, Cheymol J, Assathiany R, Barthet-Derrien MS, Bidet-Emeriau M, Blocquaux S, *et al.* Children and screens: Groupe de Pédiatrie Générale (Société française de pédiatrie) guidelines for pediatricians and families. *Arch Pediatr* 2018;25:170-4.