

## „SCREENING” CHILDREN FOR SCREEN TIME – HOW CONCERNED SHOULD WE BE?

RM Vlad<sup>1,2</sup>, A Coroleuca<sup>1</sup>, R Darie<sup>1</sup>, L Brezeanu<sup>1</sup>, A Brînzea<sup>2,3</sup>, D Pacurar<sup>1,2</sup>

### Abstract

Today's children grow up immersed in digital media. The experts' recommendations are: no screen time <18 months, for children 2-5 years limited to one hour/day, for children ≥6 years there should be limits on the time spent using media and the types of media. The authors aimed to evaluate how much screen time the children are exposed to during the day. We conducted a prospective study, February-May 2019 in the Pediatrics Department of "Grigore Alexandrescu" Hospital. Parents were asked to fill in a questionnaire containing screen time, type of screen, behavior related to screens. 200 patients were enrolled, mean age 8 years 9 months, sex ratio M/F=1.1/1, 82% from urban areas. Parents declared the children started using screens at an average age of 4 years 1 month (minimum 6 months). 3% were exposed to screens below the age of one. The devices used were: smartphone, TV, tablet, laptop, computer and gameboard in 81%, 59.5%, 42.5%, 36.5%, 22.5% and 22.5% respectively. Children used screens alone on average 2.8 hours/day, 5.6 days/week and alongside their parents on average 2.2 hours/day, 4.5 days/week. Devices were used during meal time in 41%. 22% of parents used screen time as reward and 48% felt retrieving the device to be an effective punishment. 20% of children were falling asleep with the TV on. Conclusions: Screen time for children is progressively increasing as the age of exposure decreases. The most frequently used devices are smartphones, laptops. The screen related behavior is "educated" in the family.

**Keywords:** screen time, media device, child

### Introduction

In the past decade, media has become an important factor that influences children's physical and psychological development. Whether we are talking about traditional media (television) or "new" media (cell phones, iPads and social media) there is evidence on the negative impact that digital media and screen viewing has on general health and cognitive development of children.

The American Academy of Pediatrics (AAP) encourages health care providers, parents and teachers to take action on diminishing harmful media use. The latest

statements recommend pediatrician to take "a media history" on a routine visit and ask at least 2 questions: "How much recreational screen time does your child or teenager consume daily?" and "Is there a television set or Internet-connected device in the child's bedroom?" (1). Some authors are concluding that media usage is one of the leading activities in young people other than sleeping (2, 3).

Prolonged screen viewing in infants and young children has been linked in several studies with neurodevelopmental problems such as delayed cognitive and language development (4,5), behavior issues such as violence and aggression (6-8) and low social interaction with peers and parents (9,10). A prospective study on a Canadian cohort of 2241 children evaluated using a developmental scale revealed that the higher the levels of screen time exposure, the poorer were the developmental test's performance (11).

Moreover, high screen view exposure has been correlated with vision (12-14) and overweight problems in late childhood and adolescence (15, 16).

Excessive screen media exposure has been associated to low quality of sleep by limiting sleep duration (17-20), increasing night awakenings and inducing an intermittent sleep pattern (21). The bright screens of electronic devices induce a state of hyper arousal by activating different automatic pathways of the nervous system (22). Also, recent research is suggesting that a good quality of sleep is mandatory for the processes of active learning and memory build up (23).

On the other hand, media use can promote social interactions, especially in teenagers. Social media platforms enhance communication with peers, create opportunities for engaging in community programs and promotes creativity through blogging and podcast production (24). Another advantage of social media is that it can improve the quality of learning by using platforms in which students can collaborate outside the class and exchange ideas and knowledge (25). Moreover, studies have shown positive impact for interactive technologies, such as smartphones and tablets, in supporting active learning beyond the formal way of education.

<sup>1</sup> "Grigore Alexandrescu" Emergency Hospital for Children, Bucharest, Romania

<sup>2</sup> "Carol Davila" University of Medicine and Pharmacy, Bucharest, Romania

<sup>3</sup> "Matei Balș" National Institute of Infectious Disease, Bucharest, Romania

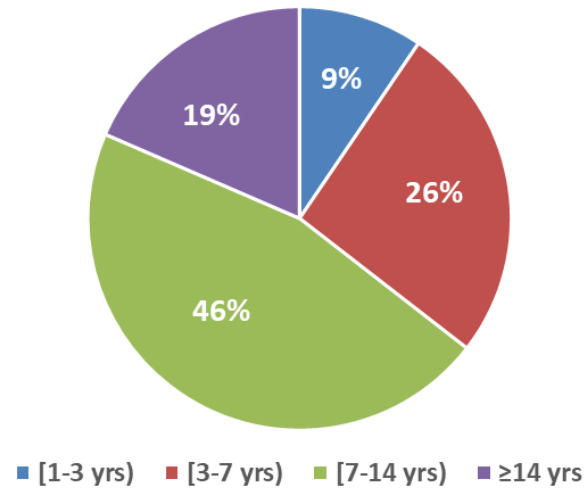
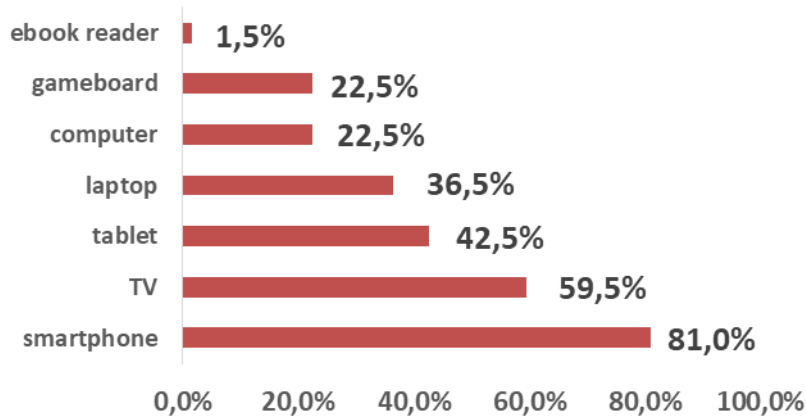


Fig.1. Age distribution



Taken into account all of the facts exposed, a balance must be kept in children of all ages between the time of screen viewing, media usage and quality of contents.

**Material and methods**

The authors aimed to evaluate how much screen time the children are exposed to during the day. We conducted a prospective study, February-May 2019. The patients were enrolled in the Pediatrics Department of “Grigore Alexandrescu” Emergency Children’s Hospital, Bucharest, where they were admitted for unrelated pathology. Parents were asked to fill in a questionnaire containing brief personal data (age, sex of the child, socio-economic status, education level of the family), screen time, type of screen and behavior related to screens.

**Results**

200 patients were enrolled in the study. The mean age was 8 years 9 months (ranging from 12 months to 17 years). The distribution of by age is depicted in fig.1. The patients were equally distributed among genders. Sex ratio was M/F=1.1/1.

The majority of patients (82%) came from urban areas. 27.5% of children were in kindergarten, 51% in primary school and 13.5% in high school. The parents were in most cases (70%) university graduates. Socioeconomic level of the family as declared by the parents was above 1000 euro/month in half the cases. 11% of children came from monoparental families. The main caregivers of the child were the parents in 78.5%, followed by the grandparents in 18.5%.

Parents declared the children started using screens at an average age of 4 years 1 month (minimum 6 months). 3% were exposed to screens below the age of one. This age did not differ according to parents' level of education, primary caregiver, nor type of family (mono/biparental).

The devices available in the home were: smartphone, laptop, TV, tablet, computer, gameboard, eBook reader in 88%, 71%, 67.5%, 56%, 35%, 26% and 4.5% of cases. More than 3 devices were present in 81% of homes. The most frequently used devices by children were: smartphone, TV, tablet and laptop in 162, 119, 85, 73 patients (fig.2).

80% of children used at least two devices and one third more than four.

The most frequently used device by children aged 1-3 years was by far the smartphone (78.9%), followed by the TV (42.1%) and tablet (15.7%). The percentages of children watching TV or using a laptop progressively increased with age. Boys played with game boards more than girls (31.1% vs. 12.7%). Children in rural areas used smartphones, tablets and TV less than city children: 67.5 vs. 84%, 32.4 vs. 44.7% and 48.6 vs. 61.9% respectively; nevertheless for all the other devices percentages were similar.

Children used screens alone on average 2.8 hours/day, 5.6 days/week and alongside their parents on average 2.2 hours/day, 4.5 days/week. Screen time did not differ according to age groups, gender, nor living area.

The declared main purposes for media device usage were: you tube (49%), game playing (46%), watching movies (45%) and listening to music (44%). Only 11% of children were using devices to read books online.

In 80% of cases at least one device was available in the child's room; 15% had more than 3 devices. The time period during the day the child was most likely to accumulate screen time is between 6 and 8 p.m. Only a little more than half of the parents (58%) declared they control the type of media content the child watches. The decision to get the media device was in most cases made by the parents (61%).

Devices were used during meal time in 41%. 22% of parents used screen time as reward and 48% felt retrieving the device to be an effective punishment. The device the child was most reluctant to be apart from was by far the smartphone (56.5%), distantly followed by the tablet (12%). Almost a quarter of children (20%) were falling asleep with the TV on.

### Discussion

According to the American Academy of Pediatrics, the experts' recommendations are: no screen time <18 months, for children 2-5 years limited to one hour/day and as for children  $\geq 6$  years, there should be limits on the time spent using media and the types of media allowed (1). In our study parents declared the children started using screens

at a relatively low average age (4 years 1 month). We consider the fact that 3% of children were exposed to screens below the age of one to be at least concerning, not to mention that the lowest age of exposure was 6 months.

Regardless of AAP recommendations, the majority of children are still spending most of their spare time in front of screens. Studies in the United States have shown that 98% of the aged 0-8 year-olds are spending an average time of 2 hours a day using screens (26), the average 8-10 year-old spends approximately 8 hours a day using different media sources, while teenagers spend more than 11 hours per day (2). The children in our group used screens alone on average 2.8 hours/day, 5.6 days/week and alongside their parents on average 2.2 hours/day, 4.5 days/week. Unlike literature data, in the present study, screen time did not differ according to age groups, nor according to gender or living area. The statistics on media usage and screen viewing are similar in other countries as well. In Japan, 86% of children by 18 months old spend > 1 hour watching TV daily (27). In Australia, children under 4 years of age watch TV more than 2 hours per day (28).

TV is still the leading type of used media (>4 hours daily), but with the development of new technology, about one third of TV programs are watched on alternative screens (computers, cell phones, iPads) (1). Our data placed the TV on the second place (59.5%), outranked by the smartphone (81%) and followed by the tablet (42.5%). Published data show that 71% of children and teenagers have a TV set in their bedrooms (2). This research revealed that in 80% of cases at least one device was available in the child's room; furthermore 15% had more than 3 devices. As regarding the use of internet, 98% of the children aged 0-8 years in the United States are living in houses with access to high speed internet (26), and about one third of all aged children have internet access in their bedrooms (1). Time spent using computers accounts for nearly 1.5 hours/day, half of it being used for videogames and social networking (1).

Although in most cases the decision to get the media device was made by the parents, a very concerning fact resulting from our study was that only a little more than half of the parents had control over the type of media content the child watches. The authors also identified other potentially harmful screen related behavior in parents: usage of media device to reward or punish the child, screen viewing during meal time or to induce sleep.

### Conclusions

Screen time for children is progressively increasing as the age of exposure decreases. Today's children grow up immersed in digital media. The most frequently used devices are smartphones, TV and tablets. The screen related behavior is "educated" in the family and unhealthy conduct should be actively discouraged.

### References

1. Strasburger VC, Hogan MJ, Mulligan DA, Ameenuddin N, Christakis DA, Cross C, Fagbuyi DB, Hill DL, Levine AE, McCarthy C, Moreno MA, Swanson

WSL:Children, Adolescents, and the Media Policy Statement from the American Academy of Pediatrics, Pediatrics. 2013 Nov;132(5):958-961;

2. Strasburger VC, Jordan AB, Donnerstein E. Health effects of media on children and adolescents. *Pediatrics*. 2010;125(4):756–767;
3. Lenhart A. *Teens and sexting*. Washington, DC: Pew Internet and American Life Project; December 15, 2009.
4. Kirkorian HL, Pempek TA, Murphy LA, Schmidt ME, Anderson DR. The impact of background television on parent-child interaction. *Child Dev*. 2009;80(5):1350–9;
5. Mendelsohn AL, Brockmeyer CA, Dreyer BP, Fierman AH, Berkule-Silberman SB, Tomopoulos S. Do verbal interactions with infants during electronic media exposure mitigate adverse impacts on their language development as toddlers? *Infant Child Dev*. 2010;19(6):577–93;
6. Comstock G, Strasburger VC. Deceptive appearances: television violence and aggressive behavior. *J Adolesc Health Care*. 1990;11(1):31–44;
7. Singer MI, Slovak K, Frierson T, York P. Viewing preferences, symptoms of psychological trauma, and violent behaviors among children who watch television. *J Am Acad Child Adolesc Psychiatry*. 1998;37(10):1041–8;
8. Johnson JG, Cohen P, Smailes EM, Kasen S, Brook JS. Television viewing and aggressive behavior during adolescence and adulthood. *Science (New York, NY)*. 2002;295(5564):2468–71;
9. Skaug S, Englund KT, Wichstrøm L: Young children's television viewing and the quality of their interactions with parents: A prospective community study, *Scandinavian J Psychol*, 2018, 59 (5):503-10;
10. Mendelsohn AL, Brockmeyer CA, Dreyer BP, Fierman AH, Berkule-Silberman SB, Tomopoulos S. Do verbal interactions with infants during electronic media exposure mitigate adverse impacts on their language development as toddlers? *Infant Child Dev*. 2010;19(6):577–93;
11. Sheri Madigan, PhD, Dillon Browne, PhD, Nicole Racine, PhD. Association Between Screen Time and Children's Performance on a Developmental Screening *JAMA Pediatrics*, 2019. 173 (3): 244-50;
12. French AN, Morgan IG, Mitchell P, Rose KA. Risk factors for incident myopia in Australian schoolchildren: the Sydney adolescent vascular and eye study. *Ophthalmology*. 2013;120(10):2100–8;
13. Yingyong P. Risk factors for refractive errors in primary school children (6-12 years old) in Nakhon Pathom Province. *J Med Assoc Thai*. 2010;93(11):1288–93;
14. Czepita D, Mojsa A, Ustianowska M, Czepita M, Lachowicz E. Reading, writing, working on a computer or watching television, and myopia. *Klin Oczna*. 2010;112(10–12):293–5;
15. Mendoza JA, Zimmerman FJ, Christakis DA. Television viewing, computer use, obesity, and adiposity in US preschool children. *Int J Behav Nutr Phys Act*. 2007;4:44;
16. Saldanha-Gomes C, Heude B, Charles MA, de Lauzon-Guillain B, Botton J, Carles S, Forhan A, Dargent-Molina P, Lioret S. Prospective associations between energy balance-related behaviors at 2 years of age and subsequent adiposity: the EDEN mother-child cohort. *Int J Obes*. 2017;41(1):38–45;
17. Calamaro CJ, Yang K, Ratcliffe S, Chasens ER. Wired at a young age: the effect of caffeine and technology on sleep duration and body mass index in school-aged children. *J Pediatr Health Care*. 2012;26(4):276–82;
18. Hitze B, Bosy-Westphal A, Bielfeldt F, Settler U, Plachta-Danielzik S, Pfeuffer M, Schrezenmeir J, Monig H, Muller MJ. Determinants and impact of sleep duration in children and adolescents: data of the Kiel obesity prevention study. *Eur J Clin Nutr*. 2009;63(6):739–46;
19. King DL, Delfabbro PH, Zwaans T, et al. Sleep interference effects of pathological electronic media use during adolescence. *Int J Ment Health Addiction*. 2014;12(1):21–35;
20. Bartlett NDGD, Bartlett CP, Eisenmann JC, Walsh DA. Sleep as a mediator of screen time effects on US children's health outcomes: a prospective study. *J Child Media*. 2012;6(1):37–50;
21. Chang AM, Aeschbach D, Duffy JF, Czeisler CA. Evening use of lightemitting eReaders negatively affects sleep, circadian timing, and nextmorning alertness. *Proc Natl Acad Sci U S A*. 2015;112(4):1232–7;
22. Garrison MM, Liekweg K, Christakis DA. Media use and child sleep: the impact of content, timing, and environment. *Pediatrics*. 2011;128(1):29–35;
23. Huber R, Born J. Sleep, synaptic connectivity, and hippocampal memory during early development. *Trends Cogn Sci*. 2014;18(3):141–52;
24. Gwenn Schurgin O'Keeffe, MD, Kathleen Clarke-Pearson, MD. Clinical Report—The Impact of Social Media on Children, Adolescents, and Families, From the American Academy of Pediatrics, *Pediatrics*. April 2011, 127 (4): 800-4;
25. Boyd D.: *Taken Out of Context: American Teen Sociality*, PhD Dissertation in Networked Publics Berkeley, CA: University of California; 2008, <https://www.ischool.berkeley.edu/research/publications/2008/taken-out-context-american-teen-sociality-networked-publics/>;
26. Common Sense Media. *The Common Sense census: media use by kids age zero to eight 2017*. Common

Sense Media website,  
<https://www.common-sense-media.org/research/the-common-sense-census-media-use-by-kids-age-zero-to-eight-2017>;  
27. Cheng S, Maeda T, Yoichi S, Yamagata Z, Tomiwa K, Japan Children's Study G. Early television exposure

and children's behavioral and social outcomes at age 30 months. J Epidemiol. 2010;20(Suppl 2):S482-9;  
28. Australian Communications and Media Authority (ACMA). Children's viewing patterns on commercial, free-to-air and subscription television: report analysing audience and ratings data for 2001, 2005 and 2006. Belconnen: ACT; 2007.

**Correspondence to:**

**Raluca Maria Vlad**

„Grigore Alexandrescu” Emergency Children's Hospital,  
30-32 Iancu de Hunedoara Blv, sector 1, Bucharest

E-mail: ralu\_neagoe@yahoo.com

Tel: 0722451462