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Screen time in preschool-aged children

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Abstract

The World Health Organization defines sedentary screen time as the time spent in passive screen-based entertainment (TV, computer, mobile phone), excluding active screen time, specifically time spent playing games requiring physical activity or movement. Researchers agree that preschool-aged children spend longer periods of time in front of screens than recommended for their age, contradicting WHO guidelines on sedentary screen time for children up to 5 years old. The aim of our research was to obtain data on the age at which children are first exposed to screens, determine the duration of screen exposure on a daily basis, the most common type of screen, and the situations in which preschool-aged children use them. The sample consisted of 200 children, aged 48 to 60 months, of both genders. A specially constructed sociodemographic questionnaire was used for the research, which included questions regarding the age at which the child was first exposed to screens, the duration of daily exposure, as well as the most common type of screen and situations in which the child uses them. Informants were the parents of the children included in the study. The research was conducted in preschool institutions in Bosnia and Herzegovina, during February and March 2024. The results of the research show that children are first exposed to screens as early as at the age of 7 to 12 months, and that screen exposure on a daily basis exceeds the recommended time by WHO guidelines for most participants. The most common type of screen to which children are exposed is TV, and the most common situations in which they use them are during meals or while parents perform various household chores. Attention should be directed towards further identifying factors leading to excessive screen usage and providing clear guidelines to parents regarding the timing, content, technology, and joint activities related to screen time for young children in various cultural settings.

Keywords: *screen time, screen exposure, preschool-aged children*

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Introduction

The World Health Organization (WHO, 2019) defines sedentary screen time as time spent in passive entertainment through screens (TV, computer, mobile phone), which does not include active screen time, specifically time spent playing games that require physical activity or movement. In the literature, the term screen time generally refers to the total time spent in front of screens, whether it is a TV, computer, or mobile phone. Screen time has been shown to be a risk factor for both general and specific areas of development, particularly when screen time exceeds the recommended limits for the child's age (according to WHO guidelines). However, screen time can also have positive educational effects for children around the age of two when it involves joint activities between parents and the child (Walter-Laager et al., 2017; Zimmermann, Moser, Lee, Gerhardstein, & Barr, 2017 according to Wan et al., 2021).

The WHO guidelines (2019) are as follows: no screen time is recommended for children under two years old, and for children aged two years, screen time should not exceed one hour per day (watching TV and computer games), which is also the recommendation for children aged three to five years. Researchers have been particularly interested in the effect of prolonged screen time on general and specific domains of child development, with the majority of research focusing on speech and language development. Results from a cohort longitudinal study indicated that increased screen time at 24 months of age leads to lower scores on the Ages and Stages questionnaires at 36 months, and that greater screen time at 36 months leads to lower scores at 60 months (Madigan, Browne, Racine, Mori, & Tough, 2019). Research findings suggest that higher screen exposure, especially background TV, may increase the risk of developing language disorders in children under two years old (Christakis et al., 2009; Madigan et al., 2022; Perdana, Medise, & Purwaningsih, 2017). Exposure to screens beyond the recommended amount can also lead to delays in socio-emotional development (Wan, Fitch-Bunce, Heron, & Lester, 2021), as well as the presence of screens during daily routines (meals, sleep, etc.) in children aged one to three years (Raman et al., 2017).

The relationship between children's cognitive skills and increased screen time has also been a subject of research. Results from a group of authors (Aishworiya et al., 2019) indicate that increased TV screen time at 12 months of age is negatively correlated with cognitive skills at four years and six months, while it is positively correlated with the mother's educational level and the nature of maternal caregiving. Research conducted in China shows that children exposed to screens at an early age (starting from six months) and whose screen time increased up to 36 months had lower scores on the Wechsler Intelligence Scale at 72 months (Zhao et al., 2022). Researchers also found that excessive screen use is associated with lower levels of children's executive functions (Cliff, Howard, Radesky, McNeill, & Vella, 2018; McHarg, Ribner, Devine, & Hughes, 2020; McMath et al., 2022).

Given these issues, the aim of our research was to obtain data on the age at which children are first exposed to screens, determine the daily duration of screen exposure, the most common type of screen, and the situations in which preschool children use screens.

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Methods

The sample consisted of 200 children, aged 48 to 60 months, of both genders. For the purposes of the research, a specially constructed sociodemographic questionnaire was used, which included questions related to the age at which the child was first exposed to screens, the daily duration of exposure, as well as the most common type of screen and the situations in which the child uses them. The informants were the parents of the children included in the study. The research was conducted in preschools in Bosnia and Herzegovina during February and March 2024.

Results

Table 1 shows the structure of the sample of children included in the study, in relation to gender and age. From the table, we can observe that the number of participants is evenly distributed by gender (100 boys and 100 girls). Regarding age, the study included 45 children (22.5%) aged 48 months, 66 children (33%) aged 54 months, and 89 children (44.5%) aged 60 months.

Table 1.

Sample Structure by Gender and Age

Age	**Gender**		**Total**
	M	**F**	
48 months	20	25	45 (22,5%)
54 months	30	36	66 (33%)
60 months	50	39	89 (44,5%)
Total	100 (50%)	100 (50%)	200 (100%)

Figure 1 presents data on the age at which the children included in the study were first exposed to screens. From the graph, we can observe that the largest number of children were first exposed to screens at the age of 7 to 12 months (31%), followed by those exposed at 13 to 18 months (21%), and those exposed at 19 to 23 months (18%). The smallest number of children were first exposed to screens after 24 months or age of two (14.5%). The results also show that a higher number of children were first exposed to screens from birth to six months (15.5%), compared to those first exposed after age of two.

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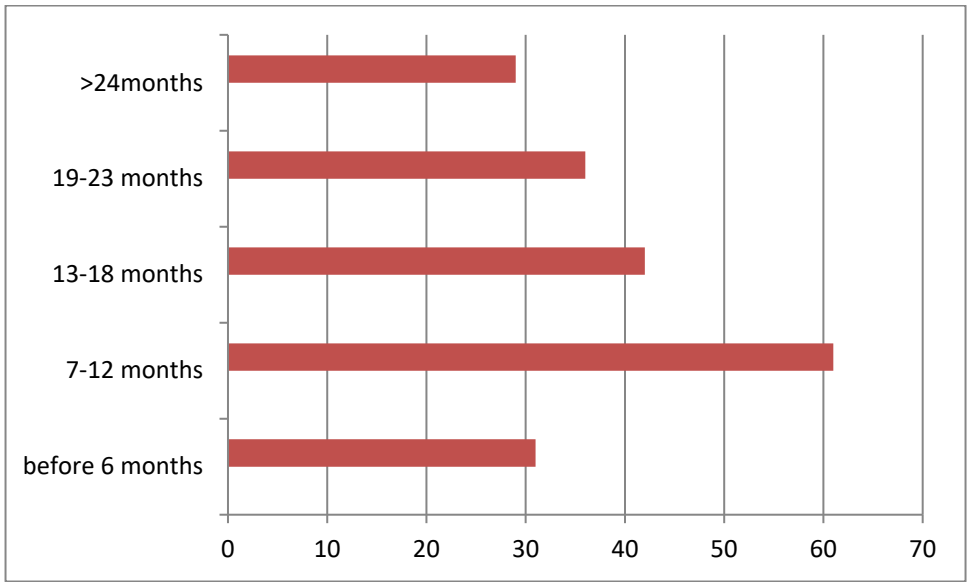

Figure 1. *Age at first screen exposure*

Table 2 presents the duration of daily screen exposure among preschool-aged children. The results show that the majority of children aged 48 to 60 months are exposed to screens for 1 hour per day (42.2% and 34.8%), while those aged 54 months are exposed for 2 hours per day (39.4%).

Table 2.

Daily Screen Exposure Duration

Daily Screen Exposure	**Age**			**Total**
	48 months	**54 months**	**60 months**	
<1h	12 (26,7%)	9 (13,5%)	27 (30,3%)	48
1h	19 (42,2%)	24 (36,4%)	31 (34,8%)	74
2h	13 (28,9%)	26 (39,4%)	27 (30,4%)	66
3h	1 (2,2%)	6 (9,1%)	3 (3,4%)	10
≥4h	0 (0%)	1 (1,5%)	1(1,1%)	2
Total	45	66	89	200

When it comes to the type of screens preschool-aged children are most commonly exposed to, observation of Figure 2 reveals that the predominant usage is TV (69.5%), followed by phones

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(27.5%), while a negligible percentage of children in this age group use tablets or computers (3%).

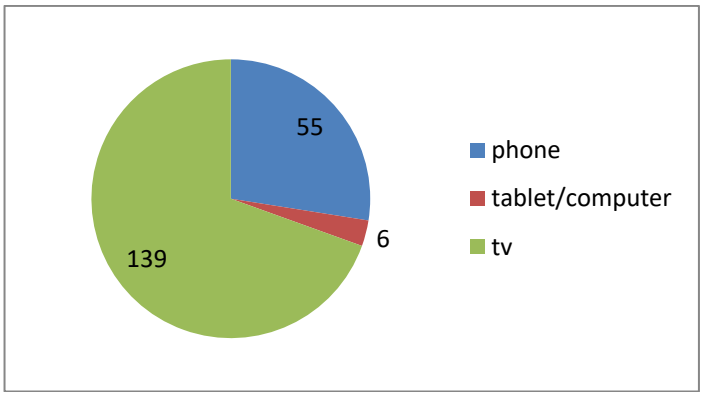

Figure 2. The Type of Screens Children Most Commonly Use

In Figure 3, the most common situations in which preschool-aged children use screens are depicted. The results show that children of this age group (48, 54, and 64 months) are most commonly exposed to screens when parents are engaged in various household chores or during mealtime/feeding. Additionally, frequent situations in which children use screens, as reported by parents, include bedtime, when the child is ill, or when screens are used as a form of reward.

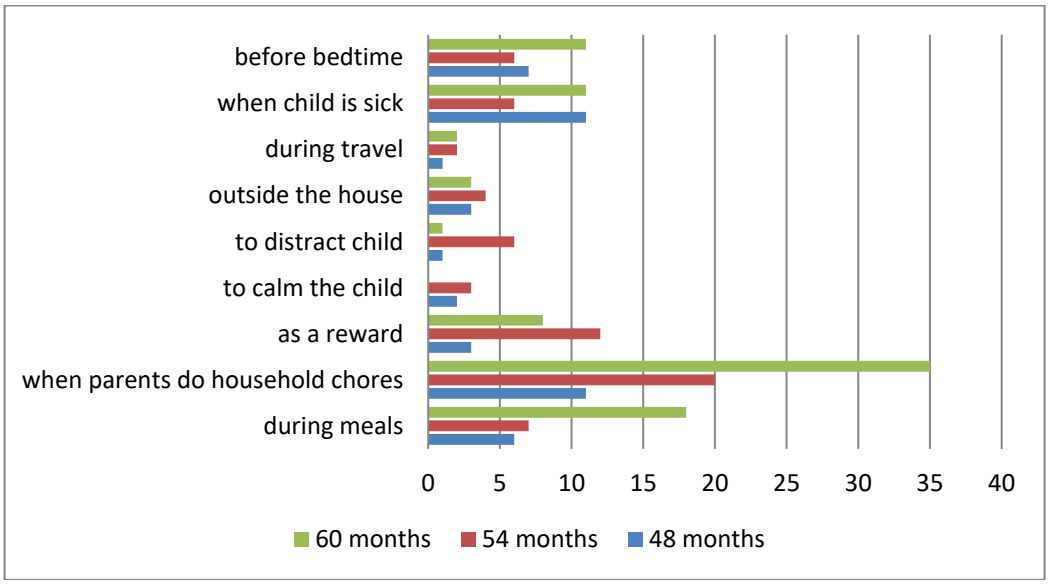

Figure 3. *Situations in which children most frequently use screens*

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Discussion

The presence and exposure to screens from an early age have prompted numerous scientists and researchers directly interested in early child development to examine the relationships between various domains of child development and screen exposure. This includes not only the time spent in front of screens but also the type of screen, the quality of content, the educational level and socioeconomic status of parents, parent-child interactions, and the psychological characteristics of both the child and the parents.

Digital screen time is recorded for children starting from three months of age (Emond et al., 2021), and it increases with age, accompanied by changes in digital technology, as confirmed by numerous studies (Azevedo, Riter, Pieta, & Frizzo, 2022; Duch et al., 2013; Durham, et al., 2021; González et al., 2022; Ferreira et al., 2020; Ofcom, 2018; Ofcom, 2022; Taylor, Monaghan, & Westermann, 2016). Regarding initial screen exposure, our research results show that most children in the study were first exposed to screens at the age of 7 to 12 months, followed by 13 to 18 months, then 19 to 23 months, with the fewest children first exposed to screens after 24 months or two years of age. The results also show that more children are first exposed to screens from birth to six months compared to those exposed only after the age of two.

Researchers agree that preschool-aged children spend more time in front of screens than recommended for their age, contrary to the WHO (2019) guidelines on sedentary screen time for children under 5 years old. The WHO (2019) guidelines are as follows: no screen time is recommended for children under 2 years, and for children aged 2 years, screen time should not exceed 1 hour per day (watching TV and computer games), which is also the recommendation for children aged 3 to 5 years. Our results on the daily screen exposure duration for preschool children show that most children aged 48 and 60 months are exposed to screens for 1 hour per day, while at 54 months, they are exposed for 2 hours per day. Other research results indicate that children aged 1 year are on average exposed to screens for 0.5 to 1 hour (Bernard et al., 2018; Niiranen, Kiviruusu, Vornanen, Saarenpää-Heikkilä, & Paavonen, 2021; Trinh et al., 2020).

Regarding the type of screen most commonly used by preschool children, our results show that TV usage is the most prevalent (69.5%), followed by phones (27.5%), while a negligible number of children this age use tablets or computers (3%). Preschool children (ages 3 to 4) spend the most time watching TV (85%), according to data presented by Ofcom (2022), which aligns with our findings.

Our research results also show that preschool children (48, 54, and 64 months) are most often exposed to screens when parents are performing various household chores or during their meals/feeding. Other common situations in which children use screens include bedtime, when the child is sick, or when screens are used as a form of reward. Parents cite the main reasons for screen use at a younger age as a way to calm and entertain children, reduce the time needed for sleep and meals, and a way for children to learn something new (Azevedo et al., 2022; Eichen et al., 2021; Elias & Sulkin, 2019; Rideout & Robb, 2020; Tang, Darlington, & Haines, 2018). One of the common habits of parents in the digital age is the use of digital screens during meals (Martinot et al., 2021; Pons, Bennasar-Veny, & Yañez, 2020), as shown by our research results.

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Conclusion

Attention should be directed towards further identifying the factors that lead to excessive screen use and providing clear guidelines for parents on the time, content, technology, and shared activities related to screen time for young children in different cultural contexts.

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