

Screen Time Among Children: A Cross-Sectional Study Across Age, Gender, And Urban–Rural Setting

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ABSTRACT:

Background: Excessive screen exposure during early childhood may adversely affect language, social interaction, attention, sleep, and behavioural development. This study assessed and compared screen time among children according to age, gender, and urban–rural residence.

Materials and Methods: A cross-sectional analytical study was conducted among 200 children aged 0–6 years attending selected paediatric vaccination clinics and primary schools in Pune city and surrounding districts. Participants were selected by purposive sampling after obtaining informed consent and Institutional Ethics Committee approval. Sociodemographic data were collected using a structured questionnaire. Screen time was assessed using the validated Screen Time Measuring Questionnaire (STMQ) developed by Raje and Sontakke (2023). Screen exposure was categorized as recommended or high according to age-specific recommendations. Data were analysed using IBM SPSS version 29.0. The Chi-square test was used to assess associations, with $p < 0.05$ considered statistically significant.

Results: Of the 200 children, 100 (50.0%) were boys and 100 (50.0%) were girls; 101 (50.5%) were from urban and 99 (49.5%) from rural areas. Overall, 134 (67.0%) children had high screen time, while 66 (33.0%) had recommended screen time. High screen time was observed in 73.7% of children aged < 2 years and 64.3% of those aged ≥ 2 years ($\chi^2 = 1.611$, $p = 0.204$). It was reported in 69.0% of boys and 65.0% of girls ($\chi^2 = 0.362$, $p = 0.547$), and in 70.6% of rural and 63.4% of urban children ($\chi^2 = 1.218$, $p = 0.270$). None of these associations were statistically significant.

Conclusion: High screen time was prevalent among young children, irrespective of age, gender, or place of residence.

Key Words: Screen time; Early childhood; Digital media; Parental supervision.

Introduction:

Screen time in early childhood can significantly influence development. Excessive screen use may impair language acquisition, social interaction, and attention span, as young children need real-world experiences and human interaction for proper brain development. ⁽¹⁾ It can also disrupt sleep patterns and contribute to behavioral issues. ⁽²⁾ However, when used in moderation, educational screen time can support cognitive skills and early learning. ⁽³⁾ It's essential to balance screen time with activities like reading, outdoor play, and hands-on learning, which are crucial for motor skills, emotional regulation, and overall healthy development in early childhood. ⁽⁴⁾

In recent years, global populations have experienced a rise in screen exposure through digital platforms such as televisions, smartphones, tablets, and computers. ⁽⁵⁾ Although screen use was already increasing before the COVID-19 outbreak, the pandemic-induced lockdowns, social distancing, and closures significantly accelerated this trend. ⁽⁶⁾

Prolonged screen time is commonly linked to sedentary lifestyles, which contribute to cardiovascular risk factors including elevated blood pressure, obesity, decreased levels of beneficial High-Density Lipoprotein (HDL) cholesterol, impaired stress response (marked by heightened sympathetic activity and cortisol imbalance), and insulin resistance. ⁽⁷⁾ Additional physical health concerns involve vision issues and lower bone mineral density. ⁽⁸⁾ Psychological effects documented in various studies include anxiety, depressive symptoms, suicidal ideation, and behavioural issues, all of which are often connected to disrupted sleep patterns. ⁽⁹⁾

Approximately 98% of children who prefer staying at home spend over 2 hours a day on digital screens. This amount exceeds the recommended guidelines and shows negative effects on their growth. ⁽¹⁰⁾ On the contrary, when these children spend adequate time on digital screens, some positive benefits were noted, but only for those who followed recommended guidelines. ⁽¹¹⁾ Adequate use of screen time is therefore recommended for children and is one of the basic needs today.

This study aims to assess and compare the screen time among children across different age groups, gender, and urban–rural settings among children.

Objective:

- To assess and compare the screen time among children across different age groups, gender, and urban–rural settings.

Material and Methodology:

A cross-sectional analytical study employing a 2 × 2 factorial design was conducted to assess screen time among children aged 0–6 years attending selected pediatric vaccination clinics and primary schools in Pune city and surrounding districts. A total of 200 children were included in the study using a purposive sampling technique after obtaining written informed consent from their parents or caregivers. The study sample comprised 100 boys and 100 girls, with nearly equal representation from urban (n=101) and rural (n=99) areas. Children meeting the predefined inclusion and exclusion criteria were enrolled after obtaining approval from the Institutional Ethics Committee. Sociodemographic information, including age, gender, place of residence, parental education, occupation of the head of the family, and type of family, was collected using a structured interviewer-administered questionnaire. Screen time was assessed using the Screen Time Measuring Questionnaire (STMQ) developed by Raje and Sontakke (2023), a validated instrument specifically designed for children younger than six years. The questionnaire includes information on the availability and use of digital devices such as televisions, smartphones, tablets, and computers, and records the average daily screen time during the preceding one month along with parental supervision. The instrument has demonstrated excellent psychometric properties with a test–retest reliability coefficient of 0.91 and a content validity index of 1.0. Based on age-specific recommendations, screen time was categorized as recommended or high screen time. Data were entered into Microsoft Excel and analyzed using IBM SPSS Statistics version 29.0. Descriptive statistics were expressed as frequencies and percentages, while associations between screen time and selected demographic variables were evaluated using the Chi-square test. A p-value of <0.05 was considered statistically significant.

Results:

Table 1: Demographic details of the children:

Variables		Frequency (n=200)	Percentage
Age (years)	<2	57	28.5%
	≥2	143	71.5%
Gender	Male	100	50.0%
	Female	100	50.0%
Region	Rural	99	49.5%
	Urban	101	50.5%
Mothers Education	< 8 th Std.	04	2.0%
	8 th to 12 th std.	58	29.0%
	Graduate	102	51.0%
	PG & Above	36	18.0%
Fathers Education	< 8 th Std.	03	1.5%
	8 th to 12 th std.	52	26.0%
	Graduate	101	50.5%
	PG & Above	44	22.0%
Occupation of head of family	Unskilled worker	06	3.0%
	Semiskilled worker	01	0.5%
	Skilled worker	45	22.5%
	Semi-professional	95	47.5%
	Professional	53	26.5%
Type of family	Joint	122	61.0%
	Nuclear	70	35.0%
	Extended	03	1.5%
	Separated	05	2.5%

Table 1 shows, among the 200 children included in the study, the majority (71.5%) were aged 2 years or above. More than half of the mothers (51.0%) and fathers (50.5%) were graduates, while 18.0% of mothers and 22.0% of fathers had postgraduate or higher education. Most children (61.0%) belonged to joint families.

Table 2: Prevalence of Screen time details among children:

Screen time	Frequency (n=200)	Percentage
High screen time	134	67.0%
Recommended screen time	66	33.0%
Total	200	100

Table 2 shows, out of the 200 children studied, 134 (67.0%) had high screen time, exceeding the recommended limits.

Table 3: Association of Screen time and age:

			Screen Time		Total
			High Screen Time	Recommended	
Age (years)	<2	n	42	15	57
		%	73.7%	26.3%	100%
	≥	n	92	51	143
		%	64.3%	35.7%	100%
Total		n	134	66	200
		%	67.0%	33.0%	100%

(Chi-Square=1.611; p=0.204)

Table 3 shows, among children aged less than 2 years, 73.7% had high screen time, while 26.3% had screen time within the recommended limits. The association between age and screen time was not statistically significant (p = 0.204).

Table 4: Association of Screen time and gender:

Variable			Screen Time		Total
			High Screen Time	Recommended	
Gender	Boys	n	69	31	100
		%	69.00%	31.00%	100.00%
	Girls	n	65	35	100
		%	65.00%	35.00%	100.00%
Total		n	134	66	200
		%	67.00%	33.00%	100.00%

(Chi-square=0.362; p=0.547)

Table 4 shows, among boys, 69.0% had high screen time compared to 65.0% among girls and the difference was not statistically significant (p = 0.547).

Table 5: Association of Screen time and gender:

Variable			Screen Time		Total
			High Screen Time	Recommended	
	Urban	n	64	37	101

Region		%	63.4%	36.6%	100.0%
	Rural	n	70	29	99
		%	70.6%	29.4%	100.0%
Total		n	134	66	200
		%	67.0%	33.0%	100.0%

(Chi-square=1.218; p=0.270)

Table 5 shows, high screen time was reported among 70.6% of children residing in rural areas compared to 63.4% of those residing in urban areas. The association between place of residence and screen time was not statistically significant ($p = 0.270$).

DISCUSSION

The present study assessed the prevalence of excessive screen time among young children and examined its association with age, gender, and place of residence. Overall, 67.0% of the children exceeded the recommended screen time limits, indicating that excessive screen exposure is highly prevalent in this population. The study included equal proportions of boys and girls, with the majority of participants aged 2 years or above (71.5%). Urban and rural children were almost equally represented, providing a balanced comparison between the two groups.

The study hypothesized that boys would have higher screen time than girls. Although a slightly greater proportion of boys (69.0%) had excessive screen time compared to girls (65.0%), the difference was not statistically significant ($\chi^2 = 0.362$, $p = 0.547$). Therefore, the hypothesis was rejected.

These findings suggest that excessive screen time is equally common among boys and girls. Similar observations have been reported by Twenge and Campbell⁽⁵⁾ and Rideout et al.⁽¹²⁾ who found that increasing access to smartphones, televisions, and digital media has reduced traditional gender differences in screen use. Equal availability of digital devices and similar parental practices may explain the comparable screen time patterns observed in the present study.

The hypothesis that urban children would have higher screen time than rural children was also not supported. Although excessive screen time was slightly more common among rural children (70.6%) than urban children (63.4%), the difference was not statistically significant ($\chi^2 = 1.218$, $p = 0.270$).

Nearly equal representation of urban (50.5%) and rural (49.5%) participants strengthened this comparison. The findings indicate that excessive screen exposure is no longer limited to urban settings. Increased smartphone ownership, internet connectivity, digital education, and online entertainment have made screen use equally common across both communities. Similar findings have been reported in recent literature, highlighting that screen time has become a universal public health concern irrespective of geographical location.^(11,12)

The study further hypothesized that children aged 2 years and above would have higher screen time than younger children. Although a greater number of older children had high screen time because they constituted the majority of the sample, the proportion of excessive screen time was actually higher among children below 2 years (73.7%) compared to those aged 2 years and above (64.3%). However, this difference was not statistically significant ($\chi^2 = 1.611$, $p = 0.204$), and the hypothesis was rejected.

This finding is of particular concern because the World Health Organization (WHO) and the American Academy of Pediatrics (AAP) recommend minimal or no screen exposure for children younger than two years.^(10,13) Excessive screen use during early childhood has been associated with delayed language development, poor sleep quality, reduced physical activity, and adverse cognitive and behavioural outcomes. The high prevalence of excessive screen time in both age groups highlights the need for early parental counselling and promotion of age-appropriate screen habits.

The study included a balanced representation of boys and girls as well as urban and rural children, allowing meaningful comparisons across demographic groups. Standard recommendations were used to classify excessive screen time, improving the validity of the findings. The study also provides recent evidence on screen time practices among young children, an area of growing public health importance.

The cross-sectional study design limits the ability to establish causal relationships between demographic factors and screen time. Screen time information was obtained from parents or caregivers and may therefore be subject to recall and reporting bias. Other potential determinants such as parental screen habits, socioeconomic status, parenting practices, and the purpose of screen use were not assessed. Since the study was conducted at a single centre, the findings may not be generalizable to all populations.

These findings emphasize the need for universal interventions, including parental education, routine counselling during paediatric visits, promotion of outdoor play and physical activity, and adherence to WHO and AAP screen time recommendations.^(10,13) Public health strategies targeting families and caregivers are essential to encourage healthy digital habits and minimize the adverse developmental effects of excessive screen exposure.

Conclusion:

The present study demonstrated a high prevalence of excessive screen time among young children, with exceeding the recommended limits. These findings highlight the need for universal parental awareness and public health interventions to promote healthy screen use during early childhood.

References:

1. Christakis DA. The effects of infant media usage: what do we know and what should we learn?. *Acta paediatrica*. 2009 Jan;98(1):8-16.
2. Hale L, Guan S. Screen time and sleep among school-aged children and adolescents: a systematic literature review. *Sleep medicine reviews*. 2015 Jun 1;21:50-8.
3. Hirsh-Pasek K, Zosh JM, Golinkoff RM, Gray JH, Robb MB, Kaufman J. Putting education in “educational” apps: Lessons from the science of learning. *Psychological science in the public interest*. 2015 May;16(1):3-4.
4. Ginsburg HP. The challenge of the preschool child’s development: a developmental psychology perspective. Cambridge: Cambridge University Press; 2007.
5. Twenge JM, Campbell WK. Associations between screen time and lower psychological well-being among children and adolescents: Evidence from a population-based study. *Preventive medicine reports*. 2018 Dec 1;12:271-83.
6. Nagata JM, Magid HS, Gabriel KP. Screen time for children and adolescents during the coronavirus disease 2019 pandemic. *Obesity (Silver Spring, Md.)*. 2020 Aug 7;28(9):1582.
7. Robinson TN, Banda JA, Hale L, Lu AS, Fleming-Milici F, Calvert SL, Wartella E. Screen media exposure and obesity in children and adolescents. *Pediatrics*. 2017 Nov 1;140(Supplement_2):S97-101.
8. Communications Con. Media use in school-aged children and adolescents. *Pediatrics*. 2016 Nov;138(5):e20162592.
9. Twenge JM. *iGen: why today's super-connected kids are growing up less rebellious, more tolerant, less happy—and completely unprepared for adulthood*. New York: Atria Books; 2017.
10. World Health Organization. Guidelines on physical activity, sedentary behaviour, and sleep for children under 5 years of age. Geneva: WHO. 2019.
11. Reid Chassiakos YL, Radesky J, Christakis D, Moreno MA, Cross C, Hill D, Ameenuddin N, Hutchinson J, Levine A, Boyd R, Mendelson R. Children and adolescents and digital media. *Pediatrics*. 2016 Nov 1;138(5):3-16.
12. Rideout VJ, Foehr UG, Roberts DF. *Generation m 2: Media in the lives of 8-to 18-year-olds*. Henry J. Kaiser Family Foundation. 2010.
13. American Academy of Pediatrics. Media and young minds. *Pediatrics*. 2016;138(5):e20162591.