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Original Research Article

A study on screen time use in children between 24 to 60 months of age in Tamil Nadu, India

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ABSTRACT

Background: This study was done with the objective of finding the average daily duration and pattern of screen time use in children in the age group of 24 to 60 months in the state of Tamilnadu, India and to find the correlation between screen time and demographic parameters.
Methods: This cross-sectional observational study was conducted at the state of Tamilnadu, India from June 2019 to August 2019 among 148 children in play school and kindergarten classes in the age group of 24 to 60 months fulfilling the inclusion and exclusion criteria. Details regarding screen time use were collected from the parents using a predesigned questionnaire and analyzed using suitable statistical methods.
Results: A total of 148 children (77(52.0%) male and 71(48.0%) female) were studied. The average daily screen time in the study group was 139.4 minutes (SD: 1.6). Majority of the children had a screen time duration between 61 to 120 minutes (48.6%). Only 14.2% had a screen time of ≤60 minutes as per AAP and WHO recommendations. Majority of the screen time was used to watch children's entertainment programs and play games (67.6%). 83.1% of the children were using 2 or more screen types. Television and smart phones were the commonest screen types used by children in this age group. The percentage of children with average daily screen time ≤ 60 minutes was found to be more in joint families (16.3%) compared to nuclear families (10%). But this difference was not statistically significant. No statistically significant correlation was found between screen time duration in children and age, gender, parent's socioeconomic status, education and occupation.
Conclusions: Increasing screen time activity in early childhood is an emerging problem of the digital age which requires interventions at family, social and healthcare levels.

Keywords: AAP screen time recommendations, Digital media, Screen time, Screen time preschool children, Screen time 2 to 5 years, 24 to 60 months, WHO screen time recommendations

INTRODUCTION

Advances in technology has led to increased digital media usage among children. Early childhood is a period of rapid development and lays foundation for lifelong lifestyle routines and health. Increased screen time in early childhood has been linked to several adverse effects such as obesity, sleep and behavioral problems, scholastic backwardness and psychological problems. World Health Organization (WHO) and American Academy of Pediatrics (AAP) has recommended guidelines for screen time use in children.[1,2]

The objective of this study was to find the average daily duration and pattern of screen time use in children in the age group of 24 to 60 months in the state of Tamil nadu, India and to find the correlation between screen time and demographic parameters.

METHODS

This cross-sectional observational study was conducted at the state of Tamil nadu, India among 148 children in play school and kindergarten classes in the age group of 24 to 60 months. The study was conducted over 3 months from June 2019 to August 2019. Inclusion criteria for the study was children in the age group of 24 to 60 months in play school and kindergarten classes. Exclusion criteria for the study were children with physical disability, developmental delay, intellectual disability, behavioral problems, visual impairment, hearing impairment, chronic illness and acute illness. After obtaining informed consent, data was collected from the parents using a predesigned questionnaire. The demographic details of the children were collected. Modified Kuppusamy's socioeconomic status scale was used to find the socioeconomic status. The details regarding duration of screen time, contents and types of screens (Television, Smart phone, Computer, Tablet screens, Video games) were collected by recall method. The duration of screen time on a typical school day and typical holiday were collected and the average screen time over one week was calculated as average screen time per day. The data collected were analyzed with suitable statistical methods using SPSS 25 software. Statistical significance was assessed at 5% level of significance (p value <0.05).

RESULTS

Of the 148 children, 77(52.0%) were male and 71(48.0%) female. 45 (30.4%) children were in the age group 24 to 35 months, 57 (38.5%) in the age group of 36 to 47 months and 46 (31.1%) in the age group of 48 to 60 months.

Table 1: Demographic Profile of the Study population (Based on age, gender and socioeconomic status).

Age group	
24 to 35 months	45 (30.4%)
36 to 47 months	57 (38.5%)
48 to 60 months	46 (31.1%)
Gender	
Male	77(52.0%)
Female	71(48.0%)
Socioeconomic Status	
Class I (Upper)	7 (4.7%)
Class II (Upper Middle)	35 (23.6%)
Class III (Middle)	38 (25.7%)
Class IV (Upper Lower)	42(28.4%)
Class V (Lower)	26 (17.6%)
Family Type	
Joint Family	98(66.2%)
Nuclear Family	50(33.8%)

As per Modified Kuppusamy Socio economic status scale, 7 (4.7%) belonged to Class I (Upper), 35 (23.6%) were class II (Upper Middle), 38 (25.7%) were Class III (Middle), 42(28.4%) were Class IV (Upper Lower) and 26 (17.6%) were Class V (Lower) (Table 1). The demographic distribution as per parent's education and occupation is shown in Table 2.

Table 2: Demographic Profile of the Study population. (Based on parent's occupation and education).

Parent's Occupation	**Father**	**Mother**
Housewife/House Husband	3 (2.1%)	60(40.5%)
Unskilled/ Semiskilled	27 (18.2%)	10(6.8%)
Skilled	38 (25.7%)	12(8.1%)
Clerical/Shop Owner/Farm	13 (8.8%)	9(6.1%)
Semi professional	32 (21.6%)	22(14.9%)
Professional	35 (23.6%)	35(23.6%)
Parent's education		
Illiterate	0(0%)	4(2.7%)
Primary	13(8.8%)	18(12.2%)
Middle/High School	32(21.6%)	29(19.6%)
Higher Secondary	25(16.9%)	26(17.5%)
Graduate	30(20.3%)	30(20.3%)
Professional	48(32.4%)	41(27.7%)

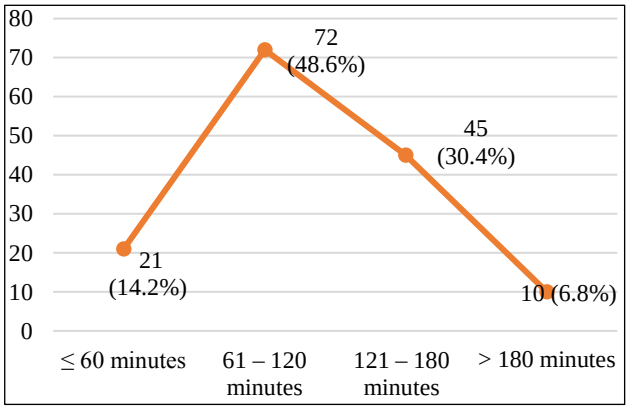

Figure 1: Average screen time per day.

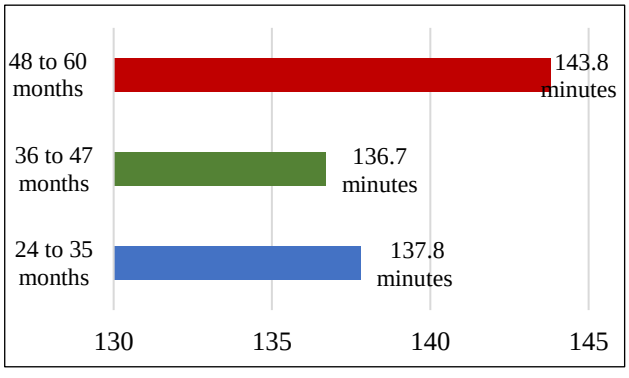

Figure 2: Average screen time per day in the age groups.

The average screen time per day in the study population was 139.4 minutes (SD:1.6). Majority of the children had a screen time duration between 61 to 120 minutes (48.6%) followed by 121 to 180 minutes (30.4%). Only

14.2% had a screen time of ≤60 minutes (Figure 1). The screen time duration distribution among the various age groups is shown in Table 3. The average screen time was 137.8 minutes (SD: 2.2), 136.7 minutes (SD: 1.8) and 143.8 minutes (SD: 1.7) in the age group of 24 to 35 months, 36 to 47 months and 48 to 60 months respectively (Figure 2).

Table 3: Screen time duration distribution among the age groups.

Age Group	Average Screen time per day				
	≤60 minutes	61–120 minutes	121–180 minutes	>180 minutes	Total
24 to 35 months	9 (20%)	20 (44.4%)	11 (24.5%)	5 (11.1%)	45
36 to 47 months	6 (10.5%)	34 (59.6%)	14 (24.6%)	3 (5.3%)	57
48 to 60 months	6 (13.1%)	18 (39.1%)	20 (43.5%)	2 (4.3%)	46
Total (24 to 60 months)	21 (14.2%)	72 (48.6%)	45 (30.4%)	10 (6.8%)	148

Table 4: Percentage of Screen time based on content.

	Educational	Children's entertainment (Children's Contents/Games)	Adult based entertainment
24 to 35 months	20.8%	65.9%	13.3%
36 to 47 months	24%	67.7%	8.3%
48 to 60 months	18.6%	69%	12.4%
Total (24 to 60 months)	21%	67.6%	11.4%

Table 5: Screen time duration and family type.

Family Type	Average Screen time per day		
	≤60 minutes	>60 minutes	Total
Joint family	16 (16.3%)	82(83.7%)	98
Nuclear family	5 (10%)	45 (90%)	50
Total	21	127	148
Chi square	1.0883	P Value	0.29683

Table 6: Statistical Correlation with screen time duration (Chi Square Test).

Parameter	Chi square	p value	Statistical Significance (p value <0.05)
Age	9.688	0.13842	Not Significant
Gender	2.0331	0.56556	Not Significant
Socioeconomic status	3.6457	0.98901	Not Significant
Mother's occupation	2.678	0.74948	Not Significant
Father's occupation	0.608	0.98763	Not Significant
Mother's education	3.467	0.48291	Not Significant
Father's education	1.222	0.94274	Not Significant
Family type	1.0883	0.29683	Not Significant

Majority of the screen time (67.6%) was based on children's entertainment (children's entertainment programs and playing games) followed by educational contents (21%) and adult based entertainment programs (11.4%). This pattern was observed in all the age groups studied. (Table 4). Of the 148 children, majority (73 children) were using two screen types (49.3%). One screen type was used by 16.9% of children, three screen types by 27.0% and 6.8% children used four screen types. Television and smart phones were the commonest screen types used by children studied.

The percentage of children with average daily screen time ≤60 minutes was found to be more in joint family type (16.3%) compared to nuclear family type (10%) as shown in Table 5. But this difference was not statistically significant (P value >0.05).

No statistically significant correlation was found between screen time duration in children and age, gender, parent's socioeconomic status, education and occupation by Chi Square Test. (Table 6).

DISCUSSION

WHO guidelines on physical activity, sedentary behaviour and sleep for children under 5 years of age, 2019 recommends no screen time under two years of age and to limit screen time in children 2 to 5 years to not more than 1 hour per day.[1]

AAP guidelines (2016) 2 recommends that children under 18 months avoid use of screen media other than video-chatting. It recommends that parents of children 18 to 24 months of age who want to introduce digital media

should choose high-quality programming and watch it with their children to help them understand what they're seeing. Kids between 2 and 5 years are recommended limit their use to an hour of high quality program, and that ideally Parents should co-view media with children. It is also recommended to designate media-free times together, such as dinner or driving, as well as media-free locations at home, such as bedrooms.

Both WHO and AAP recommends limiting screen time in children in the age group of 2 to 5 years to not more than one hour per day. In our study, authors found that only 14.2% fulfilled the WHO and AAP recommendation of limiting screen time to not more than one hour per day. Similar findings were also observed by the study on screen time usage among preschoolers aged 2-6 in rural Western India by Shah RR et al, in which only 17.2% participants met AAP recommendation.[3] A study on four-year-old Swedish children in 2017 by Berglind D et al, 97% and 86% of children exceeding the 1 h guideline for screen-time on weekend days and weekdays respectively.[4]

A study on preschool aged children's television viewing in child care settings in USA (2009) by Dimitri A et al, observed that preschool children in home-based programs were exposed to around 2.4 hours of average television viewing per day.[5] A study on preschoolers' physical activity, screen time, and compliance with recommendations done in Australia in 2012 by Hinkley T et al, observed that preschool children spent an average of 113 min per day in screen-based entertainment.[6]

Another study among preschool children by Hinkley T et al, in 2018 observed that boys and girls spent a mean of 2.0 and 2.2 hours per day in screen time.[7] The study on screen time usage among preschoolers aged 2-6 in rural Western India by Shah RR et al, observed an average screen time of 2.7 hours (SD: 1.7).[3] These observations were similar to the finding of our study in which the participants had an average daily screen time of 137.8 minutes (SD: 2.2). This trend towards increasing duration of screen time activity among this age group over time could be explained by wider availability of screens and increasingly easier access to free children's entertainment over the past few years.

AAP guidelines recommend that when using digital media, high quality program has to be chosen and watched with co engaging adults. In our study, only 21% of the screen time was used to watch educational contents, while majority of the screen time was used on children's entertainment including children's program and playing games. Parents have to be sensitized to the need of using children's screen time to watch high quality programs and to watch the programs along with their kids to help them understand and process digital media better.

Television and smartphone were found to be the major contributor to screen time by Shah RR et al, similar to our study.[3] In our study, 83.1% of the children were using 2 or more screen types indicating an increasing availability of screens contributing to increased screen time in children.

In our study, authors found no significant correlation between screen time duration in children with age, gender, parent's socioeconomic status, education and occupation. This finding is similar to the study by Hinkley T et al, at Australia where no demographic groups were identified as being less likely to comply with screen recommendations.[8] In a cross sectional study of 746 pre-school children (≤5 years old) at Canada by Valerie Carson and Ian Janssen age, parental attitudes, parental barriers, parental descriptive norms, parental screen time, and having a television in the bedroom were found to be positive predictors of screen time. Whereas parental education, parental income, and parental self-efficacy were found to be negative predictors of screen time.[9]

An observation that the percentage of children with average daily screen time ≤60 minutes was found to be more in joint family type (16.3%) compared to nuclear family type (10%) was made in our study. Though this was not statistically significant, the presence of other adults and children available for social interaction could play a major role in reducing the duration of screen time in children in this age group. Screen time is being increasing used by parents as a method to engage the kid in the absence of caretaker. The increasing trend towards nuclear family system where parents lack proper support system for child rearing, could be a contributing factor for increasing screen time.

Further studies need to be done at a larger scale involving various demographic groups to understand the magnitude of this emerging problem. Studies with long term follow up of children from early childhood to adulthood would help us to understand the effects of prolonged screen time in early childhood on various domains of life.

CONCLUSION

Increasing screen time activity among children in early childhood is an important upcoming problem of the digital age linked with negative physical, mental and social impact. Steps need to be taken at social level to increase awareness of parents regarding the effects of prolonged screen time in children and to emphasise the need to adhere to the recommended guidelines. Interventions at family, school, social, health care, national and international levels are required to tackle this emerging problem.

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REFERENCES

1. World Health Organization. Guidelines on physical activity, sedentary behaviour and sleep for children under 5 years of age. World Health Organization. 2019. Available at: http:// www.who.int/ iris/handle/10665/311664. Accessed on 15 September 2019.
2. Council OC. Media and Young Minds. Pediatr. 2016 Nov;138(5).
3. Shah RR, Fahey NM, Soni AV, Phatak AG, Nimbalkar SM. Screen time usage among preschoolers aged 2-6 in rural Western India: A cross-sectional study. J Family Medicine and Primary Care. 2019 Jun 1;8(6):1999.
4. Berglind D, Tynelius P. Objectively measured physical activity patterns, sedentary time and parent-reported screen-time across the day in four-year-old Swedish children. BMC Public Health. 2018 Dec;18(1):69.
5. Christakis DA, Garrison MM. Preschool-aged children's television viewing in childcare settings. Pediatr. 2009 Dec 1;124(6):1627-32.
6. Hinkley T, Salmon JO, Okely AD, Crawford D, Hesketh K. Preschoolers' physical activity, screen time, and compliance with recommendations. Medicine and science in sports and exercise. 2012 Mar;44(3):458-65.
7. Hinkley T, Brown H, Carson V, Teychenne M. Cross sectional associations of screen time and outdoor play with social skills in preschool children. PloS one. 2018 Apr 4;13(4): e0193700.
8. Hinkley T, Salmon J, Okely AD, Crawford D. The correlates of preschoolers' compliance with screen recommendations exist across multiple domains. Preventive medicine. 2013 Sep 1;57(3):212-9.
9. Carson V, Janssen I. Associations between factors within the home setting and screen time among children aged 0-5 years: a cross-sectional study. BMC Public Health. 2012 Dec;12(1):539.

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