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Original Research Article

High screen time and associated factors among high-school students in an urban setting of Kerala: a cross sectional study

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ABSTRACT

Background: Screen time (ST) is the time spent in sedentary behaviors involving screen based media (SBM) like watching television, playing games, using computers and mobile phones. This situation is a matter of concern because excessive screen time is associated with the risk of excess weight gain, hypertension, metabolic syndrome, low cardiorespiratory fitness. In a study conducted in urban resettlement in New Delhi, 68% of adolescents engage in using SBM for more than 2 hours. This study aimed to estimate the prevalence of excess screen time and factors associated with it among school going adolescents in Kerala.
Methods: A cross sectional study was conducted among 130 students of age group 12-15 years studying in schools located in urban area of Thiruvananthapuram district from August 2019 to October 2019. Stratified sampling technique was used. A semi-structured self-administered questionnaire was used for data collection. Data was entered in MS Excel and was analyzed using appropriate statistical software.
Results: The proportion of students who had high screen time was 87.7%. Mobile phones were the most frequently used gadget. Male gender OR-8.3 (95% CI- 1.7-40.3), less duration of sleep OR-0.34 (95% CI- 0.15-3.12), and low socio-economic status OR-0.21 (95% CI- 0.21-0.96) were found to be associated with high screen time among high school students in Kerala.
Conclusions: The study observed that 87.7% of high school students engage in using Screen based media for more than 2 hours. In this study male gender and short sleep duration were found to be associated with excess screen time.

Keywords: High screen time, Students, Kerala

INTRODUCTION

Screen time (ST) is the time spent in sedentary behaviors involving screen-based media (SBM) like watching television, playing games, and using computers or mobile phones. According to the recommendation by American Academy of Pediatrics, daily screen time should be less than 2 hours/day for all age group above 2 years.[1] Around 80% of adolescents (aged 11–14 years) in Bulgaria and 94% of young people (aged 9–16 years) in Australia have daily television viewing of more than two hours.[2,3] In a study conducted in urban resettlement area in New Delhi showed that 68% of adolescents engage in using SBM for more than 2 hours.[4]

This situation is a matter of concern because excessive screen time is associated with the risk of excess weight gain, hypertension, excess abdominal fat, metabolic

syndrome, low cardiorespiratory fitness. It has been found that high screen time is also associated with high cigarette consumption among adolescents as well as adults.[5–10] High screen time is associated with overweight, poor dietary habits and physical inactivity.[11] Many observational studies as well as community based randomized control trials have identified excess screen time as an independent risk factor for obesity.[12]

FLASHE survey conducted by National Institute of Cancer on screen time among adolescents, it was found that the pervasiveness of prolonged screen viewing was positively linked with sedentary behavior.[13]

Excess time spent on screen based media predisposes to delay in cognitive development in children under-five years of age.[14] In children and adolescents it can predispose to behavioral problems and mental health issues like depression.[15,16] This study aimed to estimate the prevalence of excess screen time and factors associated with it among school going adolescents in Kerala.

Objective

To estimate the prevalence of high screen time among high school students in an urban setting in Kerala. To study the factors associated with high screen time among high school students in an urban setting in Kerala.

METHODS

A cross sectional study was conducted among 130 students of age group 12-15 years studying in schools located in urban area of Thiruvananthapuram district from August 2019 to October 2019. Sample size was calculated using formula based on a previous study conducted in New Delhi.[4] Considering a design effect of 1.5, the sample size was estimated as 130. The sampling technique used was stratified random sampling. Before starting the study, after getting ethics committee clearance, permission was taken from the deputy director of education. From the list of schools available in the website of education department, government and private schools were randomly selected. Permission was taken from school authorities prior to the visit for data collection. Classes were selected randomly and assent was distributed among all the students of the selected classes. Those students who had assent and consent of parent were recruited into the study. On the day of data collection, after briefing the purpose of study and getting written consent from the students, semi- structured self-reported questionnaire was administered to collect data from the students. Socio-demographic variables like age, gender, socio-economic status were studied.

Operational definition

Screen time (ST), that is, the time spent in sedentary behaviors involving screen-based media (SBM) like watching television, playing games, and using computer or smartphones. Presence of physical activity i.e., daily engagement in any of sports or leisure time purposeful physical activity, hours of sleep, grades obtained, time spend on various gadgets were studied. Screen time of the weekday and the weekend day was the sum of the time spent on all the SBM. It was then weighted separately for the week day and week end day. The average of this was taken as the screen time.

$$
\begin{aligned}
&Screen\ time \\
&= 5 \\
&\times [(time\ spent\ on\ watching\ TV \\
&+ time\ spent\ on\ mobile + time\ spent\ on\ tablet \\
&+ time\ spent\ on\ computer \\
&+ time\ spent\ on\ laptop) on\ weekdays] \\
&+ 2 \\
&\times [(time\ spent\ on\ watching\ TV \\
&+ \text{time spent on mobile} + \text{time spent on tablet} \\
&+ \text{time sepnt on computer} \\
&+ \text{time spent on laptop}) on\ weekend\ days \div 7
\end{aligned}
$$

Data was entered in MS excel and analyzed using Statistical package for social sciences (SPSS) version 25.0 (IBM Corp., Armonk, NY). Quantitative variables were summarized as mean and standard deviation and categorical variables as proportions.

RESULTS

The mean age of 130 study participants was 14 (0.81) years. Out of the 130 students, 71 (54.6) were females and 59 (45.4) were males. Socio-demographic data given in table 1.

Table 1: Socio-demographic characteristics of study participants (n=130).

Variable		Frequency	%
Completed age (in years)	12	1	0.8
	13	34	26.2
	14	46	35.4
	15	49	37.7
Gender	Male	59	45.4
	Female	71	54.6
Socio economic status	APL	49	37.3
	BPL	81	62.7
Type of family	Nuclear	105	80.9
	Extended	25	19.1
Reported regular physical activity	Present	43	33.1
	Absent	87	66.9
Grade	Poor	10	7.7
	Good	120	92.3

One third of the study participants had daily regular physical activity. The mean hours spent on physical activity per day was 4.12 (2.48) hours. The proportion of

students who had high screen time was 87.7%. Mobile phones were the most frequently used gadget. They used mobile phones mainly for seeing whatspp and facebook.

Table 2: Proportion of students using various gadgets (n=130).

Gadget	Frequency	Percentage
Mobile phones	56	72.8
Television	51	65.4
Videogame devices	15	20
Computer	7	9.3
Tablet	1	0.8

On a week day, the average duration of mobile phones was 2 hours on a week day and on a weekened day, the average duration of use of mobile phones was 4 hours. Proportion of students using various gadgets given in table 2. The study observed that 87.7% of high school students engage in using Screen based media for more than 2 hours. Table 3 shows factors associated with excess screen time. Students' experiences with various electronic gadgets is given in Table 4. In this study male gender, and duration of sleep were found to be associated with excess screen time. Results of logistic regression given in Table 5.

Table 3: Factors associated with high screen time (daily screen hours >2 hours).

Variable	Category	High Screentime present	High Screentime absent	P value	Odds Ratio (95%confidence interval)
Gender	Male	57 (96.6%)	2 (3.4%)	0.05	7 (1.52-32.21)
	Female	57 (80.2%)	14 (19.8%)		
Socioeconomic status	BPL	67 (82.7%)	14 (17.3%)	0.03	0.21 (0.05-0.96)
	APL	46 (93.8%)	3 (6.2%)		
Sleep	<6 hours	23 (71.8%)	(928.2%)	0.001	0.15 (0.06-2.55)
	≥6 hours	90 (91.8%)	8 (8.2%)		

Table 4: Students' experiences with screen-based gadgets.

Students' experiences while using screen based gadgets	Percentage of students who responded "YES"
As a way to escape from their problems.	47.7%
Felt nervous/ irritable when they cannot use electronic devices.	46.9%
Lied to their family members, friends, teachers about the number of hours they spent on screen.	42.3%
Stopped other activities that they liked, to continue using screen.	34.6%
Think often about how to get time to use electronic devices.	29.2%
Tried repeatedly in the past to stop the overuse of screen but they have not succeeded	46.2%
Missed school or other important social/family activities because of excessive screen time	20.76%
Overuse of electronic gadgets generated problems in relationships with friends, family and teachers	26.15%
Stopped activities they liked before to continue using screen time	34.61%

DISCUSSION

In this study, the prevalence of high screen time was found to be 87.7%. In a study conducted in China, the prevalence of high screen time was estimated as 49.7%.[17] In our neighboring country, Bangladesh, the prevalence of high recreational screen time was found to be 79%.[18] The reported prevalence of high screen time was 45% in Canada, 63% in Australia, 68% in Malaysia and 59% in United States.[19]

Table 5: Results of logistic regression.

	Adjusted OR	95% CI		P value
		Lower	Upper	
Male	8.27	1.70	40.29	0.009
Sleep (< 6 hours)	0.34	0.15	3.12	0.009
Low socioeconomic status	0.28	0.58	1.41	0.126

Dubey et al conducted a study in New Delhi observed that 68% of adolescent engage on screen based media for more than two hours daily4. In a study conducted in Brazil, the prevalence of excessive screen time was found to be 76.7% on week days and 78.4% on weekend days and age was found to be significantly associated with screen time more than 2 hours.[5] Higher prevalence of screen time among boys compared to girls was observed similar to a study conducted in China.[17]

Excessive screen time is associated with educational level of parents and socioeconomic status.[20] Higher parental education, a higher attendance level in school and physical activity were found to be negatively associated with high screen time in a study conducted in China.[17] Older age, a non-intact family, feeling of loneliness, drinking carbonated beverages more than three times a day were found to be positively associated with high screen time.[17]

It has be noted that excess screen time is associated with sleep disturbances such as late bed time, long sleep onset latency, and short sleep duration (<6.5 hours) on weekdays.[21,22] In this study also high screen time is associated with socio-economic status and daily sleep hours less than 6 hours.

Even though the prevalence of high screen time is relatively higher when compared to studies in other parts of the world, this study was conducted prior to COVID 19 pandemic. During the time of pandemic, the classes were made online and this might have further increased the time spent on screen based electronic gadgets for various purposes. Hence further studies may be needed to understand the implications of high screen time on our life as well as health.

CONCLUSION

The study observed that 87.7% of high school students engage in using Screen based media for more than 2 hours. In this study male gender and daily hours of sleep less than six hours were found to be associated with excess screen time.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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