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## Association of Physical Activity and Screen Time Usage of Adolescents in Rural Areas of Mysore.

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# Association of Physical Activity and Screen Time Usage of Adolescents in Rural Areas of Mysore.

## Abstract

### Introduction:

In these changing times there have been increased usage of screen device due to more accessibility to both device and the internet and a greater number of children are having reduced physical activity. The purpose of the current study was to determine if screen usage among adolescents (11-17yrs) who live in supportive environments is associated with decreased levels of moderate to vigorous physical activity.

### Methods & materials:

A school-based cross-sectional study was conducted in two rural schools of Mysore, Karnataka in February 2023, in 176 students between the age group of 11 – 17yrs. Physical activity and screen time was evaluated using a questionnaire. School sports, Leisure Time Physical Activity (LTPA), and mode of transportation to school was evaluated for their physical activity pattern and the amount of time spent on each type of screen device – TV, Computers, video games, mobile phones, and tablets was measured in hours per day.

### Results:

Prevalence of excessive screen time usage was 36% and physical activity >1hr./day was found to be 57% in study subjects. However, there is no correlation between physical exercise and screen time found in rural adolescents.

### Conclusion:

Prevalence of excessive screen time with 57% of adolescents having physical activity more than 1hr/day. A tighter control of screen usage was also shown by 77% of adolescents, being role models for appropriate screen time, all are factors for an improved lifestyle.

## Keywords

Adolescents, screen time, physical activity, internet, mobile phone

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## **Association of Physical Activity and Screen time usage of Adolescents in rural areas of Mysore.**

### **INTRODUCTION:**

About 12.9 % of the world's population is adolescents. Healthy youth are the foundation of a constructive world. Based on recent research it is evident that social media has a major impact on adolescents. Long hours spent on social media directly must result in reduced physical activity which further reduces socio-psychological health. Spending a lot of time on social media has a negative impact on physical activity. the increasing rate of obese adolescents and non-communicable diseases is a warning signal about the poor health status of the future generation. excessive use of screens requires more studies related to it in India.

Therefore, there is a gap present between the studies on the use of social media and its effects on physical activity among school-going adolescents

According to the American Academy of Pediatrics (AAP) and WHO, children (5-17 years) should not spend more than 2 hours/day on screen activities, as it is considered high screen time; and should have at least one hour of moderate to vigorous physical activity per day <sup>[7]</sup>.

Active travel activities are like walking or cycling so that is included in active travel but parents' bikes or other vehicle transport are included in passive travel <sup>[3]</sup>. The physical index in India is very important for physical and mental health. Indian children spend a major part of their day in sedentary pursuits and roughly half of children and youth meet physical activity guidelines. <sup>[3]</sup>

Active transport to school provides children an opportunity to involve in regular exercise. Children who walked to school had more chances of smaller waist circumference, higher HDL, lower BMI, higher muscular endurance, and cardiorespiratory fitness than the children who opted for passive transport. <sup>[3]</sup>

The most influential factors for an increased sedentary lifestyle are family and home related. Other than that these school-based interventions have effects on sedentary behavior in children <sup>[4]</sup>. To ensure healthy lifestyles, students must participate in enough physical activity and schools could become an important factor

### **OBJECTIVES:**

1. To determine the prevalence of screen usage and physical activity in the study subjects.
2. To assess the association of screen time and physical activity patterns in school children (11-17 years) in rural schools of Mysore.

### **METHODOLOGY:**

A school-based cross-sectional study was conducted among adolescents (11-17yrs) in February 2023, from two rural schools in Mysore under the School Health Programme conducted by the Department of Community Medicine , JSS Medical College , Mysuru. The adolescent students of 6<sup>th</sup> to 11<sup>th</sup> standards are included in the sampling frame.

The study was done among the school going children in the schools located in Sargur, Ramapura in Mysore, Karnataka. 176 adolescents were recruited during our study period.

### Data collection techniques

A structured questionnaire developed by the team for the study purpose, and the questionnaire was face validated. The same questionnaire used to obtain the data from the students regarding information on viewing digital screen, television watching, frequency of activities in digital devices, purpose and duration of usage of digital screen.

The outcome variable for physical activity was assessed. Physical activity in adolescents was measured by collecting information regarding the level of physical activity of the past seven days before study date. Information on physical activity in the spare time for the past seven days, activeness during the physical education period, evening of the last weekend, and how often physical activity was done on each day in the study week. The data was later entered in excel datasheet.

**Variables under the study:** the independent variables are age and gender of the students, type of screen device used: Either tv or phone or both as reported by the students, type of content: content viewed by children such as movies, songs, study material, YouTube, Instagram, serial, games, sports, etc. amount of screen time used: The overall amount of hours spent using screen time per day were taken into consideration.

Dependent variable: **Physical activity:** It is defined as any voluntary bodily movement produced by skeletal muscles that require energy expenditure. Total physical activity was calculated by considering physical activity in school i.e., during physical education classes, physical activity outside school (sports outside school in home or grounds after school), transport from home to school such as walking, cycling, etc.

### Statistical Methods

Descriptive data was analyzed and presented as percentages and frequencies by using SPSS version 26. ANOVA was used for comparison of means through which significance of data and p values were obtained. A p value <0.05 was considered statistically significant.

### Results

#### Demographic profile of the study participants

( Table 1) Gender distribution

Gender	Age (mean $\pm$ SD)	percentage
Male	13.76 $\pm$ 1.57	49.71
Female	14.30 $\pm$ 1.56	50.29

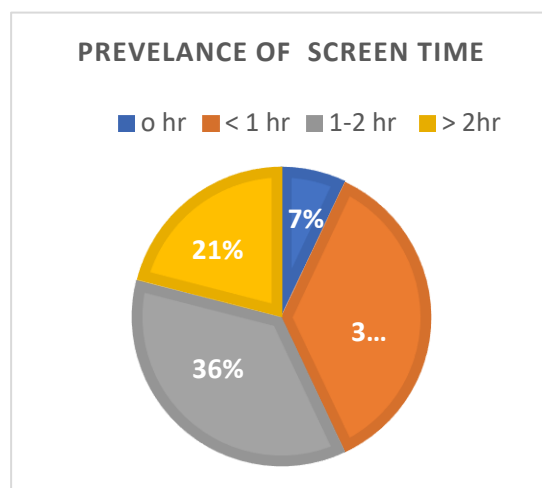
**(Table 2) Age distribution**

Age (yrs)	Frequency(n)	Percentage (%)
11	13	7.45
12	22	12.53
13	28	15.91
14	41	23.27
15	34	19.30
16	27	15.29
17	11	6.25

A total of 176 students were surveyed in the age group 11-17 years. **Table 1** and **Table 2** represents basic demographic characteristics of the study population. The mean age of the students was  $14.01 \pm 1.66$ , the age of 14 years had the highest proportion of students. Overall, 49.7% were boys and 50.3% were girls in the study.

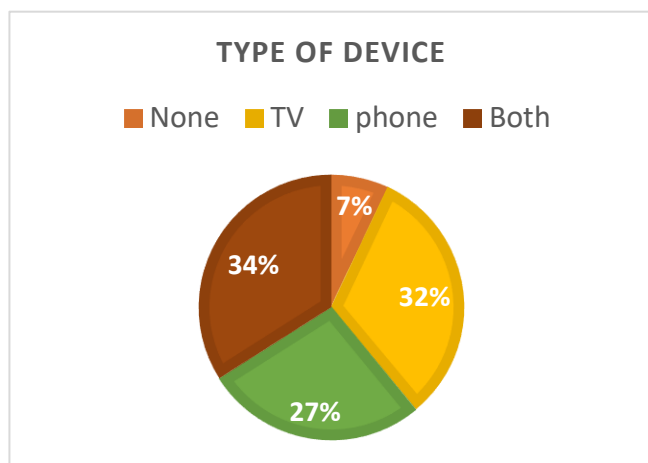
#### **Screen time:**

**Fig: 1** shows prevalence of screen time usage among adolescents. It shows 7% does not use any screens, 36% use screen for less than 1hr/day, 36% use screen for 1-2 hrs./day, 36% use screen devices for more than 2 hrs./day.



The average amount of screen time was to be observed as  $1.05 \pm 1.66$  hrs where average screen time in males were 51.6 minutes and in females were 74.4 minutes.

From **fig :2** we can note the percentage distribution of type of screen device used in homes where majority use both phones and tv at 34% those who only uses phones are 27%, those who only use tv is 32%, and those who do not use either is 7%.



**Table 3:** Contents seen in screen devices

Sl. No.	Content	Frequency(N)	Percentage (%)
1	None	13	7.3
2	Cartoon	14	7.9
3	Film	53	29.9
4	Game	15	8.5
5	YouTube	21	11.9
6	Instagram	12	6.8
7	Study purposes	12	6.8
8	Songs	6	3.4
9	WhatsApp	6	3.4
10	Serial	16	9.0
11	Total	168	94.9
12	Missing	8	5.1

**Table 3** shows type of content watched in screen devices, where movies have the highest proportion, second preference being YouTube which was followed by serial, games, cartoon, Instagram, study purposed, WhatsApp, songs.

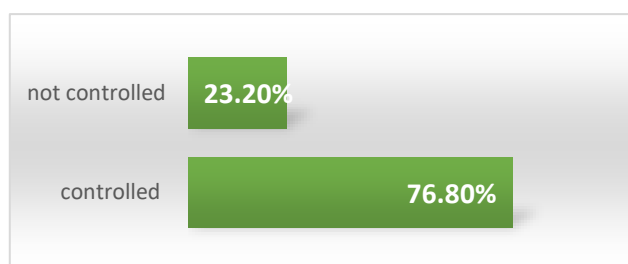
**Physical activity:**

**Table 4:** Distribution participants according to physical activity during school time

<b>Variables</b>	<b>Frequency</b>	<b>Percent</b>
<b>No activity</b>	30	16.9
<b>Occasionally</b>	17	9.6
<b>All the time</b>	130	73.4
<b>Total</b>	177	100

**Table 4** shows activity during school PE period where 73.4% of students used to play in all classes, 9.6% played occasionally and 16.9% did not play at all during the period

**Fig: 3** shows parental restriction on screen device usage



**Fig: 3** shows parental restriction on screen device usage, where 76.8% of children were restricted by their parents from overusing devices and 23.2% were not restricted.

**Table 5:** Association between Physical activity and screen time.

<b>Screen time</b>	<b>frequency</b>	<b>Mean physical activity in hrs)</b>	<b>Std. Deviation</b>	<b>P value*</b>
0	12	0.48	0.40	<b>0.82</b>
<1hr	63	0.83	0.90	
1-2hr	64	0.75	0.75	
>2hr	36	0.62	0.49	
<b>Total</b>	175	0.73	0.75	

\*ANOVA test

**Table 5** shows screen time with mean physical activity in those groups. Students with no screen time were having mean physical activity of 28.8 min, <1hr screen time were having 49.8 min mean physical activity, 1-2hr screen time were having 45mins of mean physical activity,>2hr screen time were having 37.2 min average physical activity.

The mean physical activity between boys and girls are also shown where in boys it was 60±52.8min per day whereas it was 29±28.2min per day in girls

On analysing using ANOVA the p value for relation between screen time and total physical activity was found out to be 0.82 which is >0.05, thus showing that there is no association between screen time and physical activity in rural school adolescents

## Discussion

The association of screen time and physical activity among adolescents residing in a rural area in Mysore district were estimated in the present study. The study provided insights onto situation in rural areas with regards to screen time and physical activity. 93% of adolescents used screen-based devices in our study. This was comparable with a study in four schools of Magadi Taluk, Ramanagara District, South Karnataka where 91.3% of participants used screen-based devices <sup>[1]</sup>. Also, smartphone use was higher than television use in this study <sup>[1]</sup> whereas television usage was higher in our study. There is public health importance as smartphone usage is linked with sleep disorders <sup>[17]</sup>.

From another study <sup>[4]</sup> there were conclusive findings of association between physical activity with screen time in urban areas due to more and easy accessibility to screen devices, reduced physical activity, more sedentary lifestyle, etc. The screen usage in rural areas were considerably lower compared to urban areas with 21% of students having excessive screen time >2hrs/day. Excessive screen time is linked to adverse effects such as loss of positive activities such as exercise, good sleep hygiene and social contact with friends <sup>[16]</sup>

Physical activity was higher in boys as compared to girls. Many other factors such as restrictions from parents, socioeconomic status, more space to play outdoors, encouraged outdoor activities all allow more children to have more physical activity which meets who standards of physical activity in a day.

Travelling using active methods (walking or cycling) may provide a convenient way of increasing physical activity significantly, thus helps to maintain healthy weight and improves cardiovascular health in children and young people <sup>[15]</sup>.

We found no evidence which relates screen time with physical activity as p value was >0.05 in rural areas. Similar results were reported earlier in study <sup>[18]</sup> where patterns of social media and digital screen were explored with its association with physical activity. Physical inactivity associated with media use in adolescents would lead to adult behavior [Craigie et al 2011, Hallal et al 2006]. This study noted that the adolescents who spend more time on social media have slightly higher physical activity which is not significant<sup>[18]</sup>. These results correlates with study <sup>[9]</sup> which found no correlation between objectively measured smartphone usage and objectively measured physical activity <sup>[9]</sup>. But from another study <sup>[3]</sup>, results revealed association of greater screen time with lower physical activity levels, and increased sleep



disturbances in adolescents during COVID 19. Another study <sup>[2]</sup> suggests that physical activity levels during adolescence remains important for establishment for lifelong habits and short-term weight maintenance, but these levels should be increased substantially and sustained into adulthood in order to negate the negative effects of screen time <sup>[2]</sup>.

### Limitations

- All the data is self-reported by children and might lead to bias.
- The quantification of physical activity is difficult to measure in exact frequency and intensity.

### Conclusion

Overall, it was found that only 36% of students used screens for more than 2hrs/day. Adolescents overall had a mean physical activity of 43min/day, of which boys had mean physical activity of 59min/day. These data shows low prevalence of excessive screen time with 57% of adolescents having physical activity more than 1hr/day. A tighter control of screen usage was also shown by 77% of adolescents also, being role models for appropriate screen time, all are factors for improved lifestyle.

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