



## Original Article

## Association Between Screen-Time and Dietary Habits Among Students of 11-25 Years

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## ABSTRACT

The continuous technological advancement has provided innovative and attractive electronic devices that led individuals to spend longer times in front of screens. Longer periods of screen time have been linked to poor dietary habits including higher consumption of sugar, low nutritional quality foods like french fries, refined grain products, snacks and desserts, lower intakes of fiber, vegetables, fruits, and whole grains. **Objective:** To compare the association between screen time and eating habits among the students of 11 to 25 years. **Methodology:** A cross-sectional study was conducted to evaluate eating habits and screen time of 150 students from different schools, colleges and universities of Lahore. Participants were selected through non-probability convenient sampling. Data were collected using a self-constructed questionnaire. In exclusion criteria, students off the selected age group, having no screen time and non-cooperative individuals were excluded. SPSS version 25.0 was used for data analysis. **Results:** Total participants of study were 150. Few of them were obese (8%) and more were overweight (26%). Some of them were spending 3-5 hours on screen (23%) while more were spending greater than 7 hours (32%). Mostly skipped breakfast (54%), delayed meals (45%), ate above planned limit (57%). Majority consumed fried food (56%) and sweets (44%) while using electronic gadgets. **Conclusions:** High prevalence of screen time had negatively affected student's eating patterns. Students with longer screen time usually consumed fast food, junk food, sugary desserts, salty snacks and caffeinated beverages as snacks.

## INTRODUCTION

Screen Time (ST), defined as the amount of time spent watching TV and using a computer, accounts for a significant portion of sedentary behavior [1]. Kelishadi R et al., in 2017, investigated the relationship between Screen-Time (ST) (total time spent watching TV and using a computer in leisure time) and snack eating frequency. The subjects were 13,486 of the 14,880 invited children, with 50.8 percent of them being boys. The average (standard deviation) age of the subjects was 12.47 years. Students who had more than four hours of screen time per day had a lower likelihood drinking milk on a daily basis than those who had less than four hours. Fast Food and overeating while watching TV can cause a disruption in dietary habits, which can lead to obesity [2]. Recent studies have shown a

prevalence of sedentary behaviour above 70% in young people [3-5]. Screen Time (ST), or time spent in sedentary behaviour is limited to no more than 2 hours per day for all age groups above 2 years. Obesity is more likely to develop later in life if early intervention is not taken [6]. According to studies, children and adolescents spent the most time with media in a day, other than sleeping, with an average of 7 hours per day [7]. Children watch much TV during school days and at the weekend their average screen time was about 5 hours [8]. People with different age groups and races had different ST [9]. Moreover, people in higher socioeconomic groups spend more time on screen and video games than people in lower-class communities [10]. Screen-based activities (such as entertainment, gaming,

and other screen-based activities) are more prevalent in typical nuclear families [11]. The effects of ST on a number of health-related behaviors, notably eating behaviors, may play a role in these outcomes. Long periods of ST have been linked to poor adult dietary patterns, including increased sugar consumption, particularly from soft drinks; increased consumption of low nutritional quality foods, such as French fries, refined grain products, snacks, and desserts; and decreased consumption of fiber, fish, vegetables, fruits, and whole grains [12, 13]. The media provides viewers with a varied choice of entertainment alternatives, which has been demonstrated to negatively affect adolescents [14]. Advertisements on electronic media have an impact on the nutritional quality of meals consumed by teenagers [15]. In other words, watching TV is associated with eating more junk food because junk food commercials on TV are targeted at children's programmes [16]. As eating fast, research has been conducted on the association between TV viewing time and children's and adolescents' dietary habits [17]. Many reviewed studies have found that watching television is associated with poor dietary habits in children and adolescents [18, 19]. Eating while at the same time sitting in front of the TV is related to terrible eating routine quality among youngsters, including successive utilization of sugar-improved drinks and food varieties high in fat and sugar, and diminishing products of the soil [20, 21]. Similarly, a small number of studies have lately revealed a link between computer use and ST, as well as bad food patterns in children and adolescents. Children and teenagers nowadays spend a large amount of their spare time watching television and playing video games [22-24]. The majority of earlier research focused on the effects of watching TV on snack intake rather than overall ST [25, 26]. A cross-sectional study was performed in Japan by Tsujiguchi H et al., in 2018 to examine the association between screen time and nutrient intake in children and adolescents. Data were collected from children and adolescents aged 6 to 15 in Shika. This study included 1414 students. Longer TV viewing periods in boys were associated with or appeared to be associated with lower protein, potassium, calcium, iron, vitamin K, vitamin B-2, and total dietary fibre intakes, according to the findings of this study. Longer TV viewing durations in females were associated with reduced protein, salt, calcium, , vitamin D, and vitamin B-2 intake. In girls, more extended TV viewing periods were associated with higher consumption of n-6 fatty acids [27]. The study was aimed to assess the eating patterns of adults in relation to their daily screen time. Because when people consume their meals in front of the screen, they mostly binge eat and do not perform physical activity, which leads to weight gain and other health-related issues. Their eating speed and

timing is also effected. If this issue is not addressed, it might lead to an increase in morbidity & mortality rates. As higher ST can increase unhealthy food consumption which leads to chronic diseases like obesity, diabetes, hypertension, depression and many others.

## METHODS

A cross-sectional research was conducted to evaluate eating habits and ST of 150 students from Bahria Town School, Divisional Public School, Punjab College, Bahria Town Campus Lahore, The University of Lahore, The Punjab University, Lahore Garrison University, Lahore. Participants were selected through non-probability convenient sampling. The duration of study is 4 months. A self-structured questionnaire was used to collect data. Data were collected using a self-constructed questionnaire. Exclusion criteria included students who were not in the target age group, had no ST, and were uncooperative. The data were analyzed using SPSS version 25.0. In this study, all data were collected randomly through a survey using a detailed self-constructed questionnaire after approval from experts. All the questions were based on different sections including demographic information, anthropometric measurements, screen time, their knowledge about its effect on lifestyle, eating habits & food preferences in front of the screen. The ethical approval was signed by the ethical committee, Head of the department of the University Institute of Diet and Nutritional Sciences. The consent was taken from the participants before data collection. Questionnaires were distributed among participants, and they were asked to fill them.

## RESULTS

According to table 1 total of 150 participants, 94 were females and 56 were males. Majority of the participants were females. 21 were between 11 -15years, 56 were between 16 - 20years and 73 were between 21 - 25years. Out of all participants, 31 weighed between 25 - 45kg, and 72 were between 46 - 65kg. While 42 were between 66 - 85kg. Only 5 of them were above 86kg. 9 belonged to lower class, 116 belonged to the middle class and 25 were from the upper class. That showed majority of the participants belonged to middle-class. 106 had nuclear families, and 44 had joint families showing the majority of them lived in nuclear families. BMI of 29 were underweight, 70 were within the normal weight, and 39 were overweight, whereas 12 were in the obese category as shown in table 1.3

Demographics		
Variables	Category	Frequency (%)
Gender	Female	94 (62.7%)
	Male	56 (37.3%)
Age	11-15 years	21(14.0%)
	16-20 years	56(37.3%)
	21-25 years	73(48.7%)
Weight	25-45kg	31(20.7%)
	46-65kg	72(48%)
	66-85kg	42(28%)
	86-96kg	5(3.3%)
Socio economic status	Lower class	9(6.0%)
	Middle class	116(77.3%)
	Upper class	25(16.7%)
Family type	Nuclear	106(71%)
	Joint	44(29%)
BMI	Underweight	29(19.3%)
	Normal	70(46.7%)
	Overweight	39(26.0%)
	Obese	12(8.0%)

**Table 1:** Demographics of the participants

From the table 2 out of 150 participants, 74 were eating slowly while watching TV or using mobile, 30 were eating quickly, 46 had normal eating habit. 81 skipped breakfast due to whole night mobile / laptop usage while 69 did not skip breakfast. 68 delayed their meals while working, while 44 did not delay their meal. Only 38 were not sure about delaying meals. 54 used to eat once a day in front of the screen, 41 were eating twice a day and 37 ate three times a day, whereas 18 participants did not eat in front of the screen. 86 were eating more than planned in front of screen, whereas 64 did not agree.

Eating Habits While Using Screen		
Variables	Category	Frequency (%)
Do you think you're eating habits are affected while watching TV or using mobile phone?	Eat slowly	74(49.3%)
	Eat quickly	30(20.0%)
	Normal eating	46(30.7%)
Do you miss your breakfast due to whole night using mobile/ laptop?	Yes	81(54%)
	No	69(46%)
Do you delay your meals when you are working on a screen?	Yes	68(45%)
	No	44(29%)
What is the frequency of your meals intake in front of screen	On and off	38(25%)
	Once a day	54(36.0%)
	Twice a day	41(27.3%)
	Thrice a day	37(24.7%)
	None of these	18(12.0%)
Do you think that when you start eating certain foods, you end up eating much more than planned?	Yes	86(57.3%)
	No	64(42.7%)

**Table 2:** Frequency Distribution of eating habits while using screen

According to the results of table 3, showed that 48 preferred eating fast food in front of a screen while 52 were

eating junk food, 11 were drinking beverages, 11 were eating fruits, 13 were eating desserts, and 15 consumed regular meals. This showed that mostly people preferred junk food in front of the screen. 110 consumed fried food during the usage of electronic gadgets while 40 did not consume fried food showing that majority of the participants were consuming fried foods. 72 were consuming sweets (chocolates, candies) while 78 were not consuming during the usage of electronic gadgets.

Food Choices While Using Screen		
Variables	Category	n (%)
Which type of food do you mostly consume while using screen?	Fast food(pizza, burgers, sugar/ carbs,fat/oil, processed food)	48(30.0%)
	Junk food(nimko, chips/ fries, crackers/lays/ pastries)	52(34.7%)
	Beverage's (soda drinks)	11(7.3%)
	Fresh fruits and veggies	11(7.3%)
	Dessert	13(8.7%)
	Regular meal	15(10.0%)
	Consumption of fried food while using electronic gadgets?	Yes
No		40(26.7%)
Consumption of sweets (chocolate, candies) while using electronic gadgets?	Yes	72(48.0%)
	No	78(52.0%)

**Table 3:** Distribution of food choices while using screen

According to the results of table 4 showed that there was an association between skipping and frequency of meals during screen usage was p-value <0.05, Table 4.

Skipping meals during screen usage	Frequency of meals during screen usage				Total	p-Value
	Once a day	Twice a day	Three times a day	None of these		
Yes	20	23	19	6	68	0.004
No	23	3	13	5	44	
Seldom	11	15	5	7	38	
Total	54	41	37	18	150	

**Table 4:** Association between skipping and frequency of meals during screen usage

There was an association between BMI and consumption of fat (chips, snacks, nuts etc.)while using screen was p-value <0.05, Table 5.

Consumption of fats (chips, snacks, nuts etc.) during screen time	BMI of the respondent				Total	p-Value
	Under weight	Normal	Over weight	Obese		
1/day	5	14	8	4	31	0.034
2/day	2	7	13	2	24	
3/day	3	7	1	1	12	
4/day	11	15	6	4	36	
2/week	0	3	4	0	7	
None	8	24	7	1	40	
Total	29	70	39	12	150	

**Table 5:** Association between BMI and consumption of fats among participants while using screen

## DISCUSSION

The study results of current study showed that out of 150 participants, 48 claimed that they mostly choose fast food in front of a screen while 52 eat junk food, 11 prefer beverages, 11 eat fruits, 13 crave desserts, and 15 consume regular meals. This shows that most people prefer junk food in front of the screen. Another study carried out by Delfino et al., in 2017, to analyze the relationship of the screen-time with the eating habits and physical inactivity of the adolescents concluded that the excessive use of display gadgets is related to excessive intake of snacks, fried foods, chocolates and bodily inactivity in adolescents. A similar study by Delfino LD et al., in 2017 included students of age group 10- 17 years [1]. In the present study socioeconomic status of students was also evaluated to see its effect on increased screen usage time and eating patterns. Out of 150 respondents, 9(6%) were from the lower class, while 116(77%) belonged to the middle class and 25(16.6%) were from the upper class. It showed that most of the respondents were from a middle-class community. A similar study conducted by Ghobad Moradi et al., concluded that people in higher socioeconomic groups spent more time on screen and video games than the people who are in lower-class communities [10]. In current study 106(71%) had nuclear families and had more ST, while 44(29%) participants were living in joint families and had comparatively less screen time. A similar study by Langoy et al., in 2019 proved that children living in lone families had more screen time than those living in blended families and were less likely to take part in outdoor activities [11]. The current study showed that out of 150 participants, 21(14%) were in the age group 11-15 years, 56(37.3%) were between 16-20 years, and 73(48.7%) lied in the age group 21-25 years. In a study conducted by Pinho, MG students of age 11-14 years were analysed [28]. A similar study performed by Benaich S et al., in 2021 among the university students used the age group of 18-26 years [29]. In the current study, the number of total respondents taken was 150, out of which 94(62.7%) were females, and 56(37.3%) were males. All

were taken from different schools, colleges and universities. A similar study performed by Nastaskin et al., included 136 college students [30]. Another study conducted by Alghaider et al., to know the association of screen time with food preferences and physical activity included a total of 214 students who participated and filled questionnaires [31]. In recent study out of 150 participants, 29(19.3%) were underweight, 70(46.7%) were of healthy weight, 39(26%) were overweight, and 12(8%) were found to be obese. A similar study was done by Hicks K et al., to determine the relationship between ST, beverage and snack consumption 2% were underweight, 51% were healthy weight, 21% were overweight, and 26% were obese. Both studies had great similarity [32]. In current study 56(37.3%) were known to be eating slowly while watching TV or using mobile, 30(20%) were eating quickly, 46(30.7%) had normal eating speed, while 18(12%) said their eating was not affected with the use of the screen. An interesting study conducted by Mathur & Stevenson RJ discovered that people eat 14% less when they watch different and engaging content. Eating speed might be normal while watching the same boring content [33]. The study concluded that 81(54%) agreed on skipping breakfast because of spending the whole night on screen and not being able to wake up the next morning for breakfast, while 69(46%) did not agree. A similar study, conducted by Tambalis et al., in 2015 revealed that insufficient sleep duration was linked to unhealthy dietary habits such as skipping breakfast, eating fast food, and bingeing on sweets on a regular basis. Furthermore, insufficient sleep duration was linked to poor dietary habits, increased screen time, and being overweight/obese [34]. In recent study 54(36%) ate meals once a day in front of the screen, 41(27.3%) ate twice a day while 37(24.6%) ate thrice a day, and only 18(12%) claimed they did not eat in front of the screen. According to a similar study conducted by Melissa L Jensen et al. to determine the frequency of eating while watching television, 87.5 percent of participants consumed at least one meal or snack per day while watching television [35].

## CONCLUSION

It was conducted that there was a high prevalence of increased screen time had negatively affected students' eating patterns and food choices. Most of them had more than 7 hours screen usage on daily basis, which is above the recommended screen time limit. Majority of them were skipping breakfast, delaying their meals or eating much more than planned due to high screen usage. Mostly fat consumption, junk food, fast food, and sweet were the most selected snack items while using screen which were badly effecting their overall health.

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