Diet, Physical Activity, and Screen Time among School Students in Manipur

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Abstract

Context: Adolescence is a critical time in the development of lifelong healthy eating and exercise habits. The high prevalence of adolescents exposed to excessive screen time is a matter of concern because of its association with several health problems, such as overweight and obesity, alterations in blood glucose and cholesterol, poor school performance, decreased social interaction, and lower levels of physical activity. **Aims:** The aim of this study is to identify the lifestyle behaviors of young adolescents focusing on physical activity, diet, and screen time. **Settings and Design:** A cross-sectional study was conducted among 929 students of Class VII and VIII in schools in Imphal West and Kangpokpi districts of Manipur. **Subjects and Methods:** Data collection was done by questionnaire method. **Statistical Analysis Used:** The data were analyzed using IBM SPSS for Windows, Version 21.0. Armonk, NY, USA. **Results:** Seven in 10 of the students had inadequate physical activity at school and inadequate physical activity outside school. About 56.9% of the students have a smartphone, whereas one-third of them have Facebook and WhatsApp accounts. Only 5.8% were eating a healthy diet. Females and day scholars were less physically active. Males those staying in a nuclear family, less family income, and more number of siblings were found to have unhealthy dietary habits. **Conclusions:** Less than half of the students were physically active and only six out of 100 the students were eating a healthy diet.

Keywords: Healthy diet, physical activity, school children, screen time

Introduction

The World Health Organization defines an adolescent as any person between the age group of 10 and 19 years. Globally, adolescents comprises about two-third of the population.[1] In India, adolescents account for 20% of the country's population.[2] Moreover in the State of Manipur, according to Census report 2011, the adolescent population is 601,000. Adolescence is a critical time in the development of lifelong healthy eating and exercise habits.[3] Poor diet and physical activity are established risk factors of chronic diseases.[4] Screen time refers to the amount of time spent watching TV, including videos and DVDs; playing computer games on video consoles or on computers; and using computers for other purposes.[5] It also refers to using telephones for texting and social networking. The American Academy of Pediatrics recommends that children should watch <2 h of TV per day.[6] The high prevalence of adolescents exposed to excessive screen time is a matter of concern because of its association with several health problems, such as overweight and obesity, alterations in blood glucose and cholesterol, poor school performance, decreased social

interaction, and lower levels of physical activity.[7,8] With this background, the study was conducted to determine the lifestyle behaviors of adolescents in Kangpokpi and Imphal-West districts of Manipur. Till date, hardly any study from this state has been conducted on the lifestyle behaviors of adolescents. Therefore, this study was conducted to identify the lifestyle behaviors among school-going adolescents focusing on dietary habits, physical activity, and screen time and also to determine the association of these lifestyle behaviors with sociodemographic characteristics.

Subjects and Methods

A cross-sectional study was conducted between August 27, 2017 and September 25, 2017 among Class VII and Class VIII

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school students of Kangpokpi and Imphal-West districts of Manipur. Students who were absent on the day of visit to the school and those who refuse to participate were excluded from the study.

The sample size was with a prevalence of adequate physical activity of 29% from a previous study.[9] An absolute allowable error of 5%, nonresponse rate of 10%, and a design effect of 2 with 95% confidence interval was considered. The sample size was found to be 700.

Sampling

Purposive sampling was done based on the geographic spread of the town and number of students in the Imphal West district. The six schools included were Grace Academy, St. Francis School, H. M. Higher Secondary School, Little Flower School, St. Joseph's School and Kendra Vidyalaya School.

Study tool

A pretested, structured questionnaire was used which consisted of two parts-Part A which had questions on sociodemographic characteristics and Part B with questions on lifestyle behaviors, i.e., physical activity (Modified version of Youth Activity Profile questionnaire),[10] screen time and diet (including a 2-day diet chart).

Operational definition
Adequate physical activity
A score of $\geq 75^{th}$ percentile.

Healthy diet
A diet which contains each of the following food groups: Carbohydrate, protein, fats and oils, green leafy vegetables, other vegetables, and fruits.

Data collection
Prior to the study initiation, informed written consent was obtained from the principal and assent was taken from the students. The participants were briefly explained about the study and reassured about their anonymity. Data were collected using a semi-structured questionnaire.

Statistical analysis

Data were collected and checked for consistency and completeness. Data were entered in IBM SPSS for Windows, Version 21.0. Armonk, NY, USA. Descriptive statistics such as mean, standard deviation, and percentage were used. The Chi-square was used to assess association between the lifestyle behavior and the sociodemographic factors. A probability value of < 0.05 was considered as statistically significant.

Ethical issues

Approval was obtained from the Research Ethics Board, RIMS, Imphal. Informed consent was obtained from the principals of each of the schools and assent was taken from the participants before data collection. Data collected were kept secured under lock and key. Data collected were made accessible only to the investigators. Identifiers such as name and address were not collected to maintain confidentiality.

RESULTS

There were 929 participants enrolled in the study with a response rate of 92.10%. Mean age of participants was 12.92 ± 0.842 years.

Among all the participants, 52.3% were male, 87.7% were living at home, 50.3% belonged to the Hindu religion, 59.1% belonged to nuclear family, 58.4% had only 1 or 2 siblings, and 30.6% had family income of Rs. 10001–30000 [Table 1].

Only 29.7% and 28.7% of the students were physically active at school and outside school, respectively.

About 56.9%, 50.4%, 32.9%, and 92.5% of the participants had a smartphone, laptop/computer, videogames, and a television set, respectively. A little more than a third of the children had a Facebook account (38.6%), WhatsApp account (36.2%), and Instagram account (15.6%). About 28.7% of the participants used their laptop/smartphones late at night.

Nearly 29.6%, 36.4%, and 36.4% of the students spent around 61–120 min watching TV, using the laptop/computer, and using the Internet (except for social media), respectively, whereas 50.6% of them used their smartphones for a duration of <60 min.

Only 5.8% of the students were eating a healthy diet.

Male students were found to be more physically active at school than female students and those living in a hostel were more physically active at school than those staying at home, whereas no such significant association was found outside of school [Table 2].

Students who had a higher family income were eating more healthily than those with lower family income. Hence also, those who belonged to a joint family and who had less number of siblings were eating a more healthy diet [Table 3].

Table 4 shows that male students were likely to spend more time in front of the screen at night than their female counterparts and those who stay at home were more likely to spend time in front of the screen late at night than those staying in a hostel. It also shows that those students with inadequate physical activity at school were more likely to spend time in front of the screen late at night than those with adequate physical activity. Type of diet and physical activity outside school had no association with high screen time.

DISCUSSION

The 929 children covered a wide range of sociodemographic characteristics including place of living, religion, type of family, number of siblings, and family income which helps in understanding how such variables could influence lifestyle behaviors. This study utilized purposive sampling method. However, the selection of the schools was done based on geographic spread of the town and number of students in an aim to make it representative of the districts.

Table 1: Sociodemographic characteristics of the study participants (n=929)

Characteristics	n (%)
Gender	
Male	486 (52.3)
Female	443 (47.7)
Place of living*	
Hostel	114 (12.3)
Home	814 (87.7)
Religion*	
Hindu	466 (50.3)
Meitei	133 (14.4)
Christian	298 (32.2)
Others	29 (3.1)
Type of family*	
Nuclear	537 (59.1)
Joint	372 (40.9)
Number of siblings*	
1-2	510 (58.4)
3-4	279 (32.0)
≥5	84 (9.6)
Total monthly income (Rs.)*	
≤10,000	187 (26.9)
10,001-30,000	213 (30.6)
30,001-50,000	157 (22.6)
>50,000	139 (20.0)

*Missing data

Table 2: Association between selected sociodemographic characteristic with physical activity at school and outside school

Characteristic	Inadequate physical activity at school, n (%)	Adequate physical activity at school, n (%)	P
Gender			
Male	314 (64.9)	170 (35.1)	0.000
Female	336 (76.2)	105 (23.8)	
Place of living			
Hostel	44 (38.6)	70 (61.4)	0.000
Home	605 (74.7)	205 (25.3)	

Table 3: Association between selected sociodemographic characteristics with type of diet

Characteristic	Unhealthy diet, n (%)	Healthy diet, n (%)	P
Income (Rs.)			
≤10,000	184 (98.4)	3 (1.6)	0.003
10,001-30,000	200 (93.9)	13 (6.1)	
30,001-50,000	145 (92.4)	12 (7.6)	
>50,000	123 (88.5)	16 (11.5)	
Type of family			
Nuclear	511 (95.2)	26 (4.8)	0.047
Joint	342 (91.9)	30 (8.1)	
Number of siblings			
1-2	474 (92.9)	36 (7.1)	0.022
3-4	269 (96.4)	10 (3.6)	
≥5	83 (98.8)	1 (1.2)	

Table 4: Association between selected sociodemographic characteristics with screen time usage late at night

Characteristics	Screen time usage late at night		P
	Yes, n (%)	No, n (%)	
Gender			
Male	155 (32.2)	327 (67.8)	0.015
Female	109 (24.9)	329 (75.1)	
Place of living			
Hostel	23 (20.2)	91 (79.8)	0.031
Home	241 (29.9)	564 (70.1)	
Type of diet			
Healthy	19 (35.2)	35 (64.8)	0.277
Unhealthy	245 (28.3)	621 (71.7)	
Physical activity at school			
Adequate	61 (22.3)	213 (77.7)	0.007
Inadequate	200 (31.1)	443 (68.9)	
Physical activity outside school			
Adequate	70 (36.0)	194 (74.0)	0.377
Inadequate	192 (29.5)	460 (70.5)	

The prevalence of physical activity at school and outside school was found to be 29.7% and 28.7%, respectively. This is in contrast to a study conducted by Mak *et al.*[11] in China where the prevalence of exercise after school and during holidays was higher in boys (63.8% and 78.7%), but significantly lower in girls (39.6% and 60.0%). As such, the findings suggest that Indian school children were physically inactive. This could be due to the fact that students are so overburdened with academic work that they do not find the time to engage in any form of physical activity. Moreover, in our country, there is the culture of private tuitions where the parents want to provide their children with an extra boost in their academic performance. The Centre for Disease Control and Prevention states that students who are physically active tends to have better grades, school attendance, cognitive performance, and classroom behaviors. Therefore, being physically inactive to focus on academic activities is counter-productive. Another reason may be ascribed to some schools not having adequate resources and facilities for the students to play and engage more in activities related to physical fitness. The finding that boys were more physically active than girls is consistent with the aforementioned study as well as a study by Kelishadi *et al.*[12]

A study conducted by Tamura *et al.*[13] recorded 98.6% of smartphone users and 58.6% of said users spend about 2 h/day with their smartphones. The proportion of students who had a smartphone in this study was found to be only 56.9%. This might be because students in this study were mostly in the age group of 12–13 years. Parents are unlikely to have given them a smartphone of their own at this age. Only 24.4% of the

students were using their smartphone for >2 h. However, this might be attributed to the students giving socially desirable answers and the results might actually be an under estimation.

An association was found between physical activity at school with high screen time. Greca *et al.*[14] also demonstrated a high prevalence of physical inactivity in students with high screen time. This might be owing to spending hours in front of the screen keeps students seated and limits them from getting the physical activity that they need. However, we did not find an association between physical activity outside school with high screen time.

The prevalence of healthy diet was only 5.8% in this study which is very low. This might indicate inadequate information about the constituents of a healthy diet among the guardians of the children. A study by Noh *et al.*[15] found that those who belong to a low-socioeconomic status were 1.2 times more likely to be underweight. This study did not take weight into account, but we found an association between unhealthy diet and low family income. This finding is also supported by the higher prevalence of unhealthy diet among those children with more number of siblings. A healthy diet is not only determined by its quality but also its quantity. As we did not quantify for healthy diet in this study, it can be considered as a limitation.

CONCLUSIONS

Less than half of the students were physically active in our study. Six out of 100 students were eating a healthy diet. Less physical activity was seen more among female students, day scholars and those spending more time in front of the screen at night. Unhealthy diet was more common among male students, those staying in a nuclear family, those with less family income, and those with more number of siblings. Male students and day scholars were associated with more screen time at night.

Recommendations
Increasing awareness among school students regarding the importance of healthy eating is of prime importance. Educating the students about the ill-effects of a sedentary lifestyle will be beneficial in helping them to be more active.

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Conflicts of interest
There are no conflicts of interest.

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