

Physical Activity Levels and Junk Food Intake among School going Adolescents in a North Indian City

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Abstract

Introduction: Physical activity and diet go hand in hand for the maintenance of good health. This becomes even more important in school-going adolescent students as they are readily exposed to a wide variety of junk food items inside or around their school premises and lead increasingly sedentary lifestyles as they progress through their academics.

Aim and Objective: To assess the junk food intake and physical activity level among school-going adolescents.

Material and Method: This cross-sectional study was conducted among 800 school-based adolescents aged 12 to 14 years at AMU High Schools, Aligarh. Students were asked about their physical activity and dietary habits by disseminating a self-reported questionnaire. The data were analyzed in SPSS version 20.0.

Results: The majority of the adolescents had a moderate level of physical activity (53%), while 23% of the students had high and 24% had low physical activity levels. On the analysis of the students' dietary habits, it was found that a staggering 70.75% of students had more than the recommended intake of junk food items. The association between physical activity and junk food intake was found to be significant.

Conclusion: More emphasis should be given to limiting junk food intake, increasing healthy food intake, and motivating the students to be more physically active. This can be done by encouraging the family as well as teachers at the school level and creating more spaces for children to be physically active at the community level.

Keywords: Adolescent, Diet, Junk Food, Physical Activity, School Going.

INTRODUCTION

A balanced diet and sufficient physical activity are essential for the healthy growth of children and adolescents. Unbalanced dietary patterns (with high amounts of highly processed and energy-dense foods) are associated with unfavorable cardiometabolic risk factors (e.g., blood pressure, blood glucose, insulin levels, and lipid profile) among adolescents.^[1,2] A higher level of physical activity is associated with good health of children and adolescents,^[3] including light-intensity activity (LPA). A good balance between physical activity and diet may also help prevent or reduce obesity.^[4] Junk foods are very popular among children these days. They are loaded with trans-fats, sugar and high calorie with low nutrients and adversely affect children's physical strength.^[5] WHO recommends that children and adolescents

aged 5–17 years should do at least 60 minutes of moderate to vigorous-intensity physical activity daily. Physical activity of amounts greater than 60 minutes daily will provide them with additional health benefits. Physical activity can lead to improvements in both long and short-term physical and mental health.^[6-9] Rapidly changing dietary habits and increasing academic load predisposes the students to adopt unhealthy food practices which can lead to multitude of health problems like non-communicable illnesses associated with obesity,

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including insulin resistance diabetes, neurodegeneration, and psychological changes, as well as stroke, headaches and migraine precipitation, the metabolic syndrome, adult-onset diabetes, non-insulin-dependent diabetes, coronary artery diseases, polycystic ovarian syndrome, non-alcoholic fatty liver disease, cancers, autoimmune diseases, and site-specific neoplasms in both children and adults.^[10] There is a research gap regarding physical activity level and junk food intake, particularly in developing countries. This study was conducted to study the same and suggest formulation of guidelines at various levels to improve upon the same.

AIMS AND OBJECTIVES

To study the prevalence of overweight and obesity among school-going adolescents of Aligarh and to study the sociodemographic and behavioral correlates of the same.

MATERIALS AND METHODS

The present study was carried out in high schools affiliated with Aligarh Muslim University (AMU).

The research methodology used a cross-sectional design. Simple random sampling was used to choose the participants from a table of random numbers from which the students may chose. The chosen pupils ranged in age from 12 to 14 years old, had to be present on the exam day, and had to be willing to take the test. Children who weren't interested in participating weren't present on the exam day, weren't cooperative, or were more than 15 years old were excluded. The study was carried out after receiving approval from the Institutional Ethics Committee, Aligarh Muslim University's Faculty of Medicine. D. No. 1006/FM Dated 13.07.2018. Prior to conducting the study, the School Education Directorate of AMU secured the principals of the pertinent schools' written agreement. Upon the consent of parents/guardians, the respondents were verbally asked for their assent to participate in the study. People who refused to assent were not included in the study. During the exam and interview, students received assurance on the privacy of their information and their identity.

The sample size (n) was 709, which was rounded off to 800 using the prevalence of physical inactivity as 21%,^[11] rapid mushrooming of fast food joints, lack of physical activity, and increasing sedentary pursuits in the metro cities are some of the reasons implicated for this. The nutritional changes in small town school children might be following the same pattern of larger cities. A cross-sectional study done in two affluent and two nonaffluent schools in Aligarh, taking 330 adolescents from each group (total-660 absolute allowed error as 3% with a confidence level of 95%, and a non-response rate as 10%. The sample size was determined using simple random sampling with probability proportionate to size (PPS).

The research tool contained pretested questionnaires about specific socio-demographic information, junk food intake, and physical activity-related questions for older kids (PAQ-C) ages 8 to 14 (4–8th grades). It might be applied to

children enrolled in the educational system who got a recess in their regular workday. The tests were done on questionnaires reliability before achieving a high internal consistency for the final PAQ-C is 0.96 score.

Junk foods, according to the Indian Council of Medical Research (ICMR), contain little/no protein, vitamins or minerals but are rich in salt, sugar, fats and high in calories. Eg: chocolates, cold drinks, chips, ice creams, french fries etc.^[13] The PAQ-C questionnaire consists of nine items referring to the physical activity during the past 7 days. Each of these has five response options of frequency scale from 1 (none) to 5 (>7 times/week). Since it can be challenging to assess the exact intensity, frequency, and duration of young people's activities, particularly when using self-report data, one of the PAQs' benefits is its ability to measure broad levels of physical activity. Additionally, PAQ C makes use of memory cues like dinner and lunch items to improve children's and adolescents' recall abilities. The PAQ-C is time and money-effective, simple to administer to huge populations, and has characteristics of a normal distribution.^[14] The physical activity level was determined according to the mean scale of the nine items^[15] as shown in Table 1.

The association between children's junk food intake and physical activity was investigated using the Chi-square test. The threshold for statistical significance (p) was established at 0.05.

RESULTS

Table 2 shows that the majority (42.6%) of the respondents was in the 12 year age group as new academic session just started at the time of study. The mean age of the respondents was between 12 ± 0.81 years. In the present study, 56.6% of the respondents were males, and 43.4% were females. As many as 92.4% lived in urban areas, while 7.6% of students lived in rural areas. Islam was found to be a predominant religion, and the majority of students' fathers were involved in unskilled occupations (30.3%), while the majority of the students' mothers were homemakers (92.5%).

The majority of the adolescents have a moderate level of physical activity (n= 421, 53%), while 23% (183) of the students reported that they had high level of physical activity and 24% (196) had low physical activity level. It can be concluded that students with moderate activity level are meeting the minimum required criteria for physical activity, while students with high physical activity level (PAL) have been availing additional health benefits of being physically active (Table 1).

Table 1: Physical activity Level

Total mean score of physical activity	Level of physical activity
≤2	Low
>2 and ≤3	Moderate
>3	High

Table 2: Socio- demographic characters of study participants

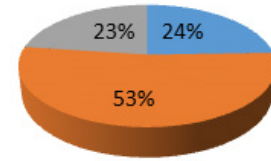
Characteristics	Frequency (N)	Percentage (%)
Age in years		
12	341	42.6
13	244	30.5
14	215	26.9
Sex		
Male	453	56.6
Female	347	43.4
Address		
Urban	739	92.4
Rural	61	7.6
Religion		
Islam	669	83.6
Hinduism and others	131	16.4
Father's occupation		
Unskilled	242	30.3
Semi- skilled	27	3.4
Skilled	164	20.5
Semi- professional	234	29.3
Professional	133	16.6
Mother's occupation		
Home maker	740	92.5
Employed	60	7.5
Total	800	100

As shown in Figures 1 and 2 the highest percentage of adolescents were found to consume at least one or the other form of junk food, at least once a week, either in the form of soft drinks or street food or fast food ($n=234, 29.3\%$). The second highest frequency ($n=217, 27.1\%$) was an intake of about 1–3 times per week, much higher than the recommended intake for adolescents. Among these, street foods were an item that attracted adolescents the most and had the highest frequency of consumption ($n=292, 36.5\%$). This is probably because of the rapid openings of street food shops around the vicinity of a school, while they also function as little ‘meeting points’ among the adolescents to share the gossip from their whole day.

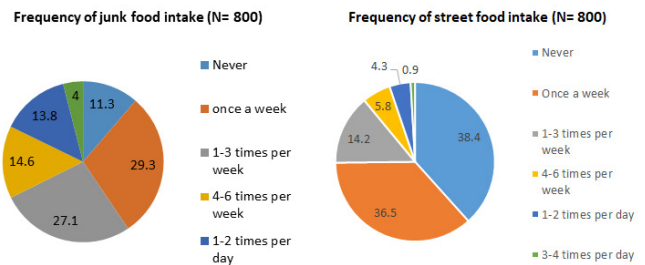
Table 3 shows a highly statistically significant association ($p<0.05$) between physical activity level and junk food. It can be seen that children having lower physical activity levels had reported comparatively higher intake of junk food and vice-versa.

DISCUSSION

In a study, (63%) of adolescents were insufficiently physically active.^[16] A systematic review by listed out various studies which determined the prevalence of insufficient physical activity among adolescents. Out of which, a study by WHO stated that the prevalence of physical activity among 13 year



■ Low ■ Moderate ■ High

Figure 1: Physical activity levels among school children (N= 800)**Figure 2:** Relation between physical activity and junk food intake among school children

old adolescents is 58 to 88%.^[17,18] In a study done in Tamil Nadu, the prevalence of insufficient physical activity among adolescents was found to be 59%.^[19] A statistically significant association was found between insufficient physical activity and the unavailability of playing space.^[15,16,20,21] It could be said that there might be various reasons for students not being physically active enough, and could include reasons like lack of designated space to play or safety of the place, academic pressure, lack of enough time to carry out such activities, etc.

Regarding junk food intake, a study illustrated that 30.8% of students had consumed junk foods on their way home and 24.1% at home.^[22] A study in Brazil also found that food environment in school is one of the major causes of consumption of unhealthy food among teenagers.^[23] A study found that 22.0% of students reported consuming junk food 5–6 times per week while the majority (44.7%) reported consuming junk food sometimes (2–3 times per week).^[24] In another study, students consumed junk food twice a day (42.3%), once a day (40.1%) and 4–6 times within last two days (13.4%)^[25] whereas in a similar study done by Joseph *et al.*, students consumed junk food almost every day. One-third of adolescents consume fast foods three or more times during a week.^[26,27] The data shows in another study that majority of the students eat fast food on a monthly basis 134 (47.3%), while 94 (33.2%) eat fast food on a weekly basis, 39 (13.8%) of the students eat fast food twice weekly and 15 (5.3%) on daily basis.^[28]

With respect to relation between junk food intake and physical activity among students, a previously conducted study reported a significant association between daily recommended intake of food groups and physical activity levels.^[29] It was also reported that almost 40% of the students had a prevalence of junk food intake at least once a week,

Table 3: Association between physical activity level & Junk Food

Junk food intake	Physical activity level						Total
	Low (<2)		Moderate (2- <3)		High (≥3)		
	n	%	N	%	n	%	N (%)
Never	33	16.8	42	10.2	14	7.6	90 (11.2)
Once per week	73	37.2	117	27.9	44	23.9	234 (29.2)
1-3 times per week	35	17.9	124	29.5	58	31.5	217 (27.1)
4-6 times per week	29	14.8	59	14	29	15.8	117 (14.6)
1-2 times per day	11	5.6	67	16	32	17.4	110 (13.8)
3-4 times per day	15	7.7	10	2.4	7	3.8	32 (4)

$\chi^2=45.017$, $df= 10$, $p= 0.000$

which was similar to the present study. Another study reflected that less vegetable intake had higher levels of insufficiently physically active children.^[30]

It is obvious that sedentary behavior is increasing among adolescents around the world. It may be due to electronic games, computer, tablet, and smartphone that competes with active leisure time, culminating in a more inactive lifestyle.^[31-33]

CONCLUSION

Adopting a healthy lifestyle, including a balanced diet and regular PA (physical activity) practice, should be encouraged from childhood since it immediately affects health promotion and risk reduction that could impact the health of future generations.^[34,35] Various forms of physical activity should be implemented in the schedule of students so that they should be encouraged to participate in a high level of physical activity so as to promote good health status. The main role of parents and teachers is to discourage junk foods and encourage them to use a more effective, safe and healthy balanced diet. National policy is urgently needed to promote active living and healthy eating while reducing sedentary behaviors.

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Nil

CONFLICTS OF INTEREST

Nil

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