

Original Research Article

Food choices of the young minds: a study among adolescents in urban slum area of Ludhiana

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ABSTRACT

Background: Adolescence is a critical period of growth during which dietary habits strongly influence health and nutritional status. Unhealthy eating practices contribute to both undernutrition and overweight/obesity among adolescents. This study assessed the dietary habits and nutritional status of adolescents in an urban slum area of Ludhiana.

Methods: A cross-sectional study was conducted among adolescents in an urban slum area of Ludhiana. Data on dietary habits were collected using a pretested questionnaire and anthropometric measurements were recorded to assess their nutritional status.

Results: Among 202 adolescents, 51.5% were girls and the mean age was 14.99 ± 1.09 years. Overall, 50.0% had normal BMI, 37.6% were thin and 12.4% were overweight/obese. Thinness was significantly higher among boys (48.0%) than girls (27.9%), while girls had a higher prevalence of normal BMI (61.5%) ($p=0.003$). More than half (52.0%) of the adolescents skipped breakfast, with significantly higher prevalence among girls ($p=0.001$). Junk food consumption was reported by 84.2% and carbonated drink intake by 68.3% of participants. Fruit and vegetable intake was higher among younger adolescents ($p=0.043$), while carbonated drink consumption increased with age ($p=0.016$).

Conclusions: Unhealthy dietary habits, particularly junk food consumption and breakfast skipping, were common among adolescents. These behaviors may contribute to malnutrition and future health risks. School-based nutrition education and healthy food policies are needed to encourage healthier dietary practices.

Keywords: Food preferences, Junk food, Skipping meals, School going children, Undernutrition

INTRODUCTION

WHO defines 'adolescence' as a stage of life bridging childhood and adulthood, from 10 to 19 years of age. It is a special period of human growth and vital for establishing the foundation for long-term health.¹ Rapid physical, cognitive and behavioral growth characterizes the crucial stage of adolescence.² For understanding the present and future health of adolescents, there is need to know about prevalent dietary practices among them. Adolescents' food preferences and eating habits can have an impact on their physical development. Nutritious and

healthy dietary practices among adolescents supports rapid growth and development. As per WHO data in 2022, around 390 million children and adolescents in the age of 5-19 years were overweight and 190 million were thin or underweight.¹ In India, NFHS-5 (2019-21) survey reported that 39.7% girls and 40.8% boys were thin; 5.4% girls and 6.6% boys were overweight and obese respectively.³ In state of Punjab, 53.3% girls and 59.1% boys were having normal body mass index (BMI).³ Micronutrient deficiencies and malnutrition during adolescence result in impaired growth, lower immunity and poor cognition, which in turn affects their performance in schools. Adolescent malnutrition if not

addressed on time can cause worsening of adolescent health. High prevalence of malnutrition can be attributed to unhealthy dietary practices of teenagers.⁴ Adolescents need to take care of their dietary habits for sake of their own growth and development. In recent years there has been a shift from traditional diet to modern western diet, more processed food and added sugar and fat. Due to gradual shift from traditional home-cooked meals to ready-to-eat, processed foods, there has been increase in the occurrence of chronic diseases in urban Indians.⁵ The intake of more saturated fat, high sugary and salty diet and lack of physical activity is the main cause of obesity among adolescents. Children who consume foods high in calories, fat, salt and carbohydrates may also develop dyslipidemia, hypertension and impaired glucose tolerance.⁶

Among the eating habits that seem to be quite prevalent among teenagers are frequent usage of fast food; poor consumption of fruits and vegetables meal skipping, especially breakfast or irregular meals and snacking, mainly on items high in energy.⁶ A study done by Kanjilal et al also identified that, adolescents who have poor eating habits are at risk for undernutrition, overnutrition and micronutrient deficiencies.⁷

These unhealthy dietary habits, if not taken care of during adolescence, would continue in adulthood and can cause significant health problems in their lives. These patterns are probably also prevalent among adolescents in urban slum areas in India, but not much is known about them. To date, few studies have been done on the dietary habits of adolescents in urban slum area of North India. Therefore, this study was carried out among urban adolescents, with the objective to assess the dietary habits and nutritional status among adolescents in urban slum area of Ludhiana.

METHODS

Type of study

This cross-sectional study was conducted in the urban slum area of Ludhiana, which is field practice area of Department of Community Medicine, among adolescents aged 13–17 years.

Sample size and study duration

There are 10 private schools in field practice area, out of which three private schools were selected using simple random sampling by lottery method from a total of ten schools. The study included 202 students studying in classes 8th to 11th and was carried out in the month of May 2026.

Inclusion and exclusion criteria

All students studying in 8th to 11th standard were included in the study and those who refused to participate

and absent at that time of interview were excluded from the study.

Data collection

Data were collected using a predesigned and pretested questionnaire after obtaining informed consent from parents/guardians. Information regarding socio-demographic profile and dietary habits was recorded. Frequency of intake of junk food and carbonated drinks during last 15 days was asked. Questions regarding physical activity was also asked. Anthropometric measurements were taken using standard procedures and BMI was calculated and classified according to WHO guidelines for adolescents.⁸ Weight was measured by using a standard digital weighing scale and height was measured by using a narrow, non-stretchable and flexible measuring tape.

Ethics approval and informed consent

The study was duly approved by Institutional Ethics Committee wide letter no: DMCH/IEC/2026/577. Written informed consent was obtained from each parent/guardian after explaining about the study in detail. Oral assent was obtained from adolescents.

Statistical analysis

Data was entered into a MS Excel and analyzed using SPSS version 25.0 (IBM SPSS, Chicago, Illinois, USA). Descriptive statistics (mean±SD) for continuous variables, frequencies and proportions (percentage) for categorical variables were computed. The association between different variables was assessed through Chisquare (χ^2) test and p value less than 0.05 was considered statistically significant.

Working definition

Junk food

A food readily available, mostly affordable, may or may not be nutritious, containing more of calories, salt, saturated fat and less of iron, calcium and dietary fiber. Common junk food includes fast food, carbonated drinks, chips, desserts, chocolates etc.⁹

Recommended physical activity by adolescents

Children and adolescents should do at least an average of 60 minutes per day of moderate-to vigorous intensity, mostly aerobic, physical activity across the week.¹⁰

RESULTS

There were 202 adolescents out of which 51.5% (104) were girls and 48.5% (98) were boys. Maximum i.e., 141 (69.8%) subjects were from the age group of 13-15 years and 52% belonged to Sikh religion (Table 1). The mean

age of the adolescents was 14.99 ± 1.09 . Mean BMI of girls was 18.93 ± 4.23 kg/m² while it was 18.30 ± 4.15 kg/m² for the boys (Table 2). Among study subjects, 52.5% in the age group of 13-15 years were having normal BMI and 12% were overweight/obese. There was no significant association of BMI with age (Figure 1). Regarding the nutritional status, 48% of boys were thin and 14.2% overweight/ obese. Among girls, 27.9% were thin and 10.6% overweight/ obese. In this study, 61.5% girls were having normal BMI and 48.0% boys were underweighting while 10.6% girls were overweight /obese. The study found a statistically significant association between gender and BMI ($p=0.003$) (Figure 2).

Intake of carbonated drinks were more common in boys as compared to girls. There was no significant difference between unhealthy eating habits, such as junk food and carbonated drinks among boys and girls. Energy drinks were consumed by 12.3% of the adolescents. Majority of the adolescents were taking fruits and vegetables but frequency was not more than once or twice a week. The habit of taking regular meals (≥ 3 /day) was seen among 64.4% adolescents. The intake of less than three meals per day was significantly higher among girls as compared to boys. ($p=0.001$) (Table 3).

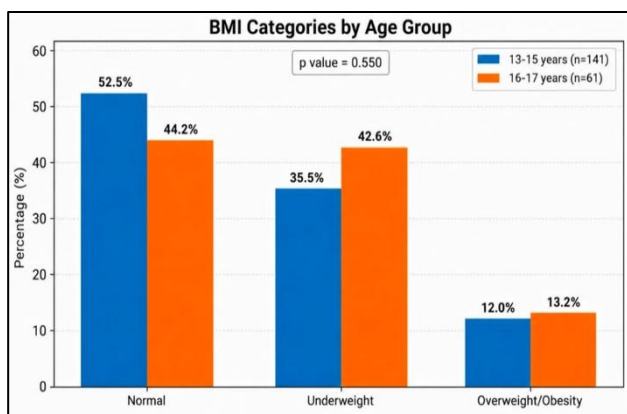


Figure 1: Association of BMI with age among adolescents.

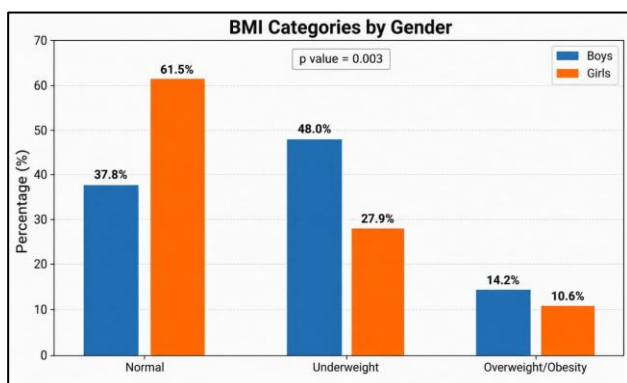


Figure 2: Association of BMI with gender among adolescents.

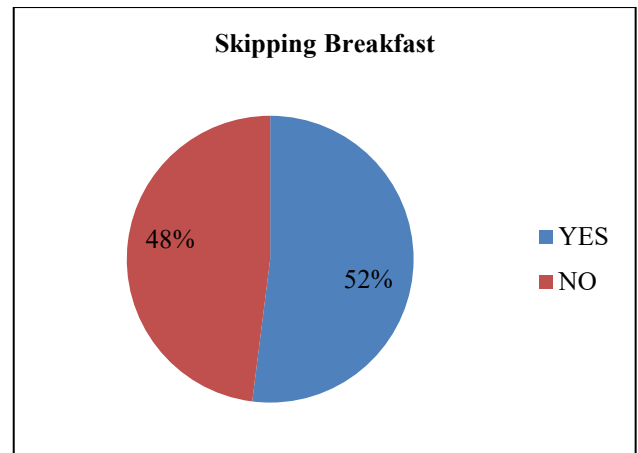


Figure 3: Distribution of study subjects as per skipping breakfast.

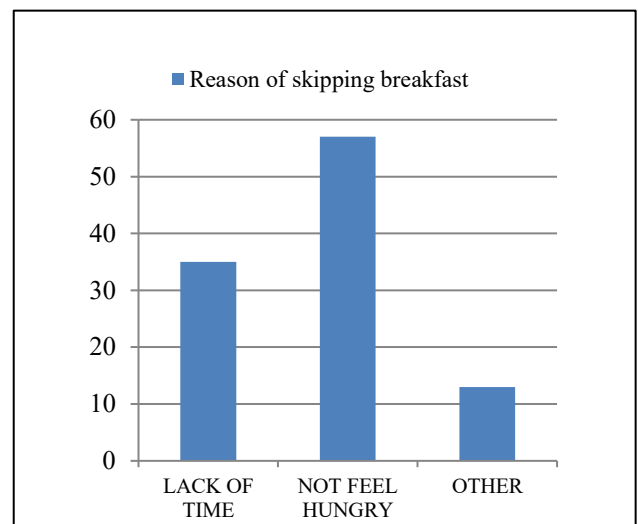


Figure 4: Reasons of skipping breakfast.

The analysis showed that intake of junk food was higher among adolescents aged 13–15 years (86.5%), while carbonated drinks consumption was more among 16-17 years adolescents (78.7%).

There was significant association between consumption of carbonated drinks and age of adolescents ($p=0.016$). The intake of fruits/vegetables was significantly higher among 13-15 years adolescents as compared to 16-17 years ($p<0.05$). Physical activity as per recommendation was more among adolescents aged 13-15 years as compared to 16-17 years (Table 4).

There was no significant association between intake of junk food, carbonated drinks and fruit intake with respect to gender.

However, physical activity was higher among boys (76.5%) compared to girls (63.5%), showing a statistically significant association with gender ($p<0.05$) (Table 5).

Table 1: Distribution according to socio-demographic profile.

Variables	Category	Frequency	%
Age (in years)	13-15	141	69.8
	16-17	61	30.2
Gender	Boys	98	48.5
	Girls	104	51.5
Religion	Sikh	105	52
	Hindu	94	46.5
	Muslim	3	1.5

Table 2: Mean±SD of age, height, weight & BMI of adolescents.

Variables	Boys (Mean±SD)	Girls (Mean±SD)	Total (Mean±SD)
Age (in years)	14.90±1.03	15.06±1.12	14.99±1.09
Height (in cms)	164.13±9.10	151.93±11.09	157.85±11.85
Weight (in Kg)	49.76±12.88	43.55±12.48	46.57±12.89
BMI	18.30±4.15	18.93±4.23	18.64±4.24

Table 3: Pattern of food habits among adolescents.

S. no.	Variables	Yes	Boys	Girls	Odds ratio (CI)	P value
1	Do you skip breakfast	105 (52%)	38 (36.5%)	66 (63.5%)	0.381 (0.216-0.672)	0.001
2	Do you take junk food	170 (84.2%)	86 (87.8%)	84 (80.8%)	1.706 (0.785-3.708)	0.174
3	Do you eat fruit and vegetables	187 (92.6%)	93 (94.9%)	94 (90.4%)	1.979 (0.651-6.011)	0.221
4	Do you drink carbonated drinks	138 (68.3%)	70 (71.4%)	68 (65.4%)	1.324 (0.729-2.402)	0.356
5	How many meals do you take	<3	72 (35.6%)	21 (21.4%)	0.283 (0.153-0.525)	<0.001
		≥3	130 (64.4%)	53 (51.0%)		

Table 4: Association of variables with respect to age group.

Variables	Intake of junk food				
Age group	Yes n (%)	No n (%)	Total	Odds ratio	P value
13-15	122 (86.5)	19 (13.5)	141	1.73 (0.79-3.79)	0.16
16-17	48 (78.7)	13 (21.3)	61		
Total	170 (84.2)	32 (15.8)	202		
Intake of fruits/vegetables					
13-15	134 (95.0)	7 (5.0)	141	2.88 (0.99-8.33)	0.043
16-17	53 (86.9)	8 (13.1)	61		
Total	187 (92.6)	15 (7.4)	202		
Intake of carbonated drinks					
13-15	89 (63.1)	52 (36.9)	141	0.41 (0.2-0.85)	0.016
16-17	49 (80.3)	12 (19.7)	61		
Total	138 (68.3)	64 (31.7)	202		
Physical activity					
13-15	101 (71.6)	40 (28.4)	141	1.32 (0.69-2.5)	0.38
16-17	40 (65.6)	21 (34.4)	61		
Total	141 (69.8)	61 (30.2)	202		

Table 5: Association of variables with respect to gender.

Variables	Intake of junk food			Odds ratio	P value
Gender	Yes n (%)	No n (%)	Total		
Boys	86 (87.5)	12 (12.2)	98	1.7 (0.78-3.7)	0.17

Continued.

Variables	Intake of junk food				
Girls	84 (80.8)	20 (19.2)	104	0.97 (0.65-6.01)	0.22
Total	170 (84.2)	32 (15.8)	202		
Intake of fruits/vegetables					
Boys	93 (94.9)	5 (5.1)	98	1.32 (0.72-2.4)	0.35
Girls	94 (90.4)	10 (9.6)	104		
Total	187 (92.6)	15 (7.4)	202		
Intake of carbonated drinks					
Boys	70 (71.4)	28 (28.6)	98	1.87 (1.01-3.4)	0.043
Girls	68 (65.4)	36 (34.6)	104		
Total	138 (68.3)	64 (31.7)	202		
Physical activity					
Boys	75 (76.5)	23 (23.5)	98	1.87 (1.01-3.4)	0.043
Girls	66 (63.5)	38 (36.5)	104		
Total	141 (69.8)	61 (30.2)	202		

DISCUSSION

The present study was conducted among 202 adolescents in the urban slum area of Ludhiana. The findings of the present study highlighted the overconsumption of junk food and carbonated drinks among the study subjects. In this study, the mean height of girls was 151.93 ± 11.09 cms and boys was 164.13 ± 9.10 cms. Mean weight of girls and boys were 43.55 ± 12.48 Kg and 49.76 ± 12.88 kg respectively. Vijayalaxmi et al, in a study in rural area reported that mean height of boys and girls were 154.56 ± 9.78 cms and 150.28 ± 5.0 cms respectively, while mean weight of boys were 47.63 ± 7.21 kg and girls were 45.63 ± 7.86 kg.¹¹ Similarly, Rakshita et al a study on adolescents reported that mean height was 151.95 ± 10.29 cm and mean weight was 53.02 ± 16.41 kg.¹² In the present study, half of the adolescents were having normal BMI. Out of which, 61.5% girls were having normal BMI. Our findings were concurrent with NFHS-5 survey in Punjab and study done by Vijayalakshmi in Bangladesh reporting 53.3% and 64% girls having normal BMI respectively.^{3,11}

In the present study, 48.0% of boys were underweight and 14.2% were overweight/obese, while among girls, 27.9% were underweight and 10.6% were overweight/obese. Almost similar findings were observed in National Family Health Survey-5, for Punjab, where among adolescents aged 15–19 years, 34.2% of boys were underweight and 6.7% were overweight/obese, while 38.5% of girls were underweight and 8.2% were overweight/obese.³ However, Kanjilal et al reported that 55.8% of boys were underweight and 62.9% were overweight/obese, whereas among girls, 62.9% were underweight and 37% were overweight/obese.⁷ Breakfast is an important meal of the day, as it effects the cognitive performance and academic achievements among school going adolescents. In the present study, more than half of adolescents used to skip breakfast and it was seen almost twice among girls as compared to boys ($p=0.001$). Reasons of skipping breakfast were either lack of time or not feeling hungry. Skipping breakfast might be the

reason of unhealthy dietary practices of taking junk foods and carbonated drinks. Various studies also reported the trend of skipping breakfast by adolescents in different regions of India indicating that it is a widespread habit among teenagers.^{2,6,7,13} Hence, it is a point of concern and needs priority dealing. In this study, majority of adolescents used to take junk food and boys consumed junk food and carbonated drinks 3 to 4 times/week but mostly girls consume only once a week. Intake of carbonated drinks were more common in boys as compare to girls. Energy drinks were taken by 12.5% of the adolescents. A study done by Shukla et al reported that, half of the girls consumed junk foods.⁴ Rath et al in their study found that energy-dense snacks were the most commonly consumed food group among adolescents in Kolkata.⁵ Rakshita et al found that junk food was consumed twice weekly among school children in Mysuru.¹² However, Islam et al, Kotecha et al and Grace et al found that consumption of fast food among adolescents was 26%, 25% and 40% respectively in their studies.^{2,6,14}

In the present study, inadequate intake of fruits and vegetables was seen among the adolescents. Less intake of fruits and vegetables is indirect indicator of micronutrient related malnutrition among teenagers. Similar findings were reported by Meenakshi et al and Kanjilal et al in their studies.^{7,15} In the present study it was observed that, girls had significantly less tendency to take 3 meals in a day. This may be due to the fact that girls desire to be thin and more concerned about body image. Similar findings were reported by studies done by Kotecha et al and Kanjilal et al that girls were more likely to consume less than three meals per day compared to boys.^{6,7} In this study, physical activity was significantly higher in boys as compared to girls. This was due to the reason that girls have to assist in domestic chores in the evening and also the safety concerns in public space for outdoor activities. Similar findings were observed by Nazneen et al in their study done in southeast Delhi, where higher proportions of boys were having adequate physical activity.¹⁶ The present study concluded that

adolescents' dietary habits include more intake of junk food and carbonated drinks and less intake of fruits and vegetables. This study also found that underweight was more prevalent than obesity among adolescents. This may be due to increased urbanization, easy availability of low-cost unhealthy food (street vendors), dietary practices such as skipping breakfast and intake of less than three meals and unawareness regarding the risk associated with unhealthy dietary practices.

Limitations

The study is done in a specific location with limited number of schools. Hence, the findings cannot be generalized. Quantitative estimation of food portion was not done in detail. History of dietary practices was taken for last 15 days, but it was done to avoid recall bias.

CONCLUSION

The finding of the study reveals the craze among the school going children towards junk foods which puts them at risk of developing chronic degenerative diseases. This emphasizes the need for a multipronged strategy involving media, advertisement sector, parents, school, policy makers to aware the young generation about the potential harms of junk foods and unhealthy dietary habits. The schools should immediately adopt healthy school food policies and food literacy curricula.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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