

ORIGINAL ARTICLE

Proportion, Patterns, and Determinants of Junk Food Consumption among Adolescent Students

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ABSTRACT

Background: Junk foods seem to have engulfed every age and the newest entrants are adolescents. This is a time of rapid growth; good nutrition is a high priority. Junk food consumption has both direct and indirect relationship in the chain of natural history of most of the non-communicable diseases thereby giving us a window of opportunity to break these weak links to arrest the disease processes. **Methods:** A cross-sectional study was undertaken in schools and colleges of urban field practice area of medical college. Stratified random sampling technique was adapted to select schools/colleges. From selected school/college, all students from one section of 7th–12th class were enrolled for the study after taking consent. Data were collected using pretested and validated, close- and open-ended, and self-administered questionnaire. **Results:** A total of 700 adolescent students were included in the study. About 60.14% adolescents consumed junk food more than 3 times/week. Cakes (males-32.5% and females-26.2%) and chocolates (males-27.4% and females-38.4%); and Chips (males-17.9% and females-18.8%) and street foods (males-17.5% and females-23.9%) were the most preferred sweet and salted junk food respectively. Influence of friends (odds ratio [OR]: 5.49; 95% confidence interval [CI]: 3.79–8.03), family members (OR: 1.58; 95% CI: 1.12–2.23), advertisements (OR: 2.66; 95% CI: 1.87–3.81), and easy accessibility (OR: 17.35; CI: 11.2–27.3) had a statistically significant association with consumption of junk foods. **Conclusions:** To conclude nearly two-third adolescent students consumed junk food on regular basis. Factors such as friends, family members, and easy accessibility nearer to schools or colleges were associated with junk food consumption. Even having adequate knowledge did not prevent them from having junk foods.

Key words: Adolescent students, Junk foods, patterns, prevalence

INTRODUCTION

Junk food is foods containing little or no proteins, vitamins or minerals but are rich in salt, sugar, and fats and are high in energy (calories).^[1] These foods fill up with empty calories making it difficult to obtain nutrients from healthier foods such as cereals, pulses, fruits, and vegetables. Junk-food consumption is associated with overweight and obesity. More than just a superficial issue, childhood and adolescent obesity increases the risk for several lifestyle diseases such as cardiovascular diseases and type 2 diabetes.^[2] Children who regularly ate diets rich in processed foods have an

average IQ five points lower than the kids who ate healthier foods.^[3]

Junk food seems to have engulfed every age; every race and the newest entrants are adolescents. Adolescents suddenly seem to have stepped into a world of fast foods and vending machines, totally unaware of the havoc they are creating for themselves. The adolescent period is a time of rapid growth; and appropriate nutrition is a high priority. The vast majority of working parents, living in nuclear families with school age

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children are labored with exhausting commutes, upswings in the households, and stress, leading to a situation where parents get to spend limited time with their children. Hence, traditional food cultures are not passed on automatically from parent to child.

Junk food consumption has both direct and indirect relationship in the chain of natural history of most of the non-communicable diseases thereby giving us a window of opportunity to attack these weak links to arrest the disease processes, for which first we have to understand the patterns and determining factors for junk food consumption among the adolescents.

METHODS

Study Design, Study Setting, and Study Period

A cross-sectional study was done in the setting of schools and colleges of urban field practice area of Vijayanagara Institute of Medical Sciences, Ballari, Karnataka, during the period of January to August 2012.

Study Subjects, Sample Size, and Sampling Technique

Adolescent students in the age group of 11–19 years studying the selected schools and colleges were included in the study. Considering the prevalence of junk food consumption 66.8%,^[3,4] with absolute precision of 5–95% confidence interval, the minimum sample size was calculated at 335. The sample size was doubled to make it more representative and to counter the design effect and the sample size was worked to be 670. A total of 760 students participated and out of which 60 (7.9%) questionnaires were not included, due to more than 10% unanswered questions and thus our final sample size was 700, giving an overall response rate of 92.1%. Stratified random sampling technique was adopted where the schools and colleges were stratified into Government and Private and within each stratum one school/college was selected randomly. In the selected school/college, all students from one section of 7th class to 12th class were enrolled for the study after taking due ascent/consent.

Method of Data Collection and Study Variables

Data were collected using pretested and validated, close-and open-ended, self-administered, and anonymous questionnaire. The questions were based on 1 week recall method. The study variables consisted of four parts, namely, (i) socio-demographic variables, (ii) patterns of junk food consumption such as preferred junk foods, time, and reason for consuming junk foods, (iii) knowledge about junk foods and its harmful effects, and (iv) factors influencing the junk food consumption such as pocket money, peer pressure, advertisements, and accessibility of junk foods.

An operational definition of regular consumers of junk food was defined as those consumers whose consumption of any type of junk foods was more than or equal to 3 times a week and occasional consumers whose consumption of junk foods was <3 times a week.

Ethical Clearance

For the study was issued by Institutional Ethical Committee of VIMS, Ballari.

Statistical Analysis

The collected data from the study variables were entered into an Excel sheet and after appropriate data filtration, the data sheet was transferred and analyzed using SPSS software version 20.0. Appropriate descriptive statistics such as percentages, mean, and standard deviation was used to describe the study variables. The prevalence was expressed in percentage along with 95% confidence limits. Appropriate inferential statistics like Chi-square test was used to find the association between regular consumption of junk food and the study variables. Odds ratio (OR) along with 95% confidence limits was used to measure the strength of association for the same. *P*-value of <0.05 at 95% confidence limits was considered to be statistically significant.

RESULTS

A total of 700 adolescent students were included in the study where in nearly two thirds of them were in the age group of 14–16 years (60.9%) and a quarter of them were in 11–13 years age group (26.1%). The mean age of the students was 15.22 ± 2.61 years. Nearly two thirds of the students were males (63.5%) and remaining were females (36.5%) [Table 1].

Majority of the students were from urban areas (83.7%) and day scholars (86.4%) and most of them was Hindu by religion (78%), were studying in high school (77.7%), and from nuclear families (77.4%). On eliciting the dietary history, it revealed that 36.6% of them were vegetarian and remaining 63.4% of them had mixed diet [Table 1].

The overall prevalence of regular junk food consumption was 60.14% (95% confidence interval [CI]: 56.5–63.7) among the study subjects in our study [Table 2].

The patterns of junk food consumption were studied which revealed that - Cakes (males-32.5% and females-26.2%) and chocolates (males-27.4% and females-38.4%); and Chips (males-17.9% and females-18.8%) and street fast foods (males-17.5% and females-23.9%) were the most preferred sweet and salted junk food, respectively [Table 3].

Usually the students preferred having junk food during watching television (males-61.1% and females-60%), movies (males-36.9% and females-42.7%), and outings with friends

(males-24.9% and females-35.3%). It was found that these junk foods were consumed as side dish along with meals (males-10.8% and females-7.5%) and while reading (males-9.7% and females-10.2%) [Table 3].

Reasons for having junk foods were also elicited among the students which revealed that the predominant reason for having junk foods was for its taste (males-76.4% and females-81.2%), followed by for time pass (males-23.4% and females-26.3%), for a change (males-16% and females-23.1%). Some of the other less common reasons were easy availability, time saving, to gain weight, being fashionable, and low cost [Table 3].

Table 1: Socio-demographic profile of the study subjects (n=700)

Variable	Frequency (%)
Age in years	
11 to 13	183 (26.1)
14 to 16	426 (60.9)
17 to 19	91 (13.0)
Gender	
Males	445 (63.5)
Females	255 (36.5)
Religion	
Hindu	546 (78.0)
Muslim	120 (17.1)
Christian	34 (4.9)
Native place	
Urban	586 (83.7)
Rural	114 (16.3)
Class	
Higher primary	34 (4.9)
High School	544 (77.7)
PU college	122 (17.4)
Residence	
Day scholar	605 (86.4)
Hosteller	95 (13.6)
Type of family	
Nuclear	542 (77.4)
Joint	158 (22.6)
Type of diet	
Vegetarian	256 (36.6)
Mixed	444 (63.4)

Table 2: Prevalence of Junk food consumption among adolescent students

Variable	Frequency	Percentage	95% CI
Regular consumers	421	60.14	56.5–63.7
Occasional consumers	279	39.86	36.3–43.5
Total	700	100	

A univariate analysis was done to find out an association between socio-demographic variables and regular junk food consumers which revealed that irrespective of the student's sex, religion, region, residence, course, type of diet, and type of family, the proportion of regular consumers of junk food did not show much variation [Table 4].

However, it was found that as the age of the student increased the proportion of regular junk food consumers also increased where in the students in the age group of 14–16 years had 1.99 times (95% CI: 1.36–2.90) higher odds of being regular consumers compared to 11–13 years group. Similarly 17–19 years students had 2.13 times (95% CI: 1.19–3.91) higher odds of becoming regular consumers compared to other groups and this association between age group and junk food consumption was found to be statistically significant [Table 4].

Table 3: Patterns of junk food consumption among the adolescent students

Patterns	Males (n=445) n (%)	Females (n=255) n (%)
Preferred sweet junk foods		
Cakes	145 (32.5)	67 (26.2)
Chocolates	122 (27.4)	98 (38.4)
Ice creams	90 (20.2)	43 (16.8)
Sweets (Indian)	27 (6.0)	21 (8.2)
Preferred salted junk foods		
Chips/Kurkure/others	80 (17.9)	48 (18.8)
Street fast foods*	78 (17.5)	61 (23.9)
Indian deep fried foods**	68 (15.7)	33 (12.9)
Noodles	63 (14.1)	42 (16.4)
Preferred leisure time of having junk foods		
Watching TV	271 (61.1)	153 (60.0)
Movies	164 (36.9)	109 (42.7)
Picnics/Outings	111 (24.9)	90 (35.3)
Chitchatting	73 (16.4)	43 (16.9)
As a side dish with meals	48 (10.8)	19 (7.5)
Reading	43 (9.7)	26 (10.2)
Reasons for having junk foods		
Tasty	340 (76.4)	207 (81.2)
Time pass	104 (23.4)	67 (26.3)
For a change	71 (16.0)	59 (23.1)
Hang out with friends	69 (15.5)	43 (16.9)
Attractive	63 (14.2)	44 (17.3)
Easily available	51 (11.5)	16 (6.3)
Time saving	33 (7.4)	14 (5.5)
Lack of good food	30 (6.7)	11 (4.3)
To gain weight	28 (6.3)	03 (1.2)
Cheap	22 (4.9)	13 (5.1)
Fashionable/Modern	18 (4.0)	11 (4.3)

*Street fast foods include – Panipuri/Sevpuri/Dahipuri/masala puri/bhelpuri, etc., **Indian deep fried foods include – Samosa/Kachori/Mirchi/Vadapav/Pavbhaji/Puri, etc.

External influencing factors such as influence of friends (OR: 5.49; 95% CI: 3.79–8.03), family members (OR: 1.58; 95% CI: 1.12–2.23), and advertisements (OR: 2.66; 95% CI: 1.87–3.81) had a statistically significant association with increased consumption of junk foods among the students. Apart from these external influencers, even having adequate knowledge about harmful effects of junk foods did not prevent adolescents from junk foods (OR: 2.72; 95% CI: 1.91–3.88) and easy accessibility of junk foods (OR: 17.35; CI:11.2–27.3) had a strong association with the increased

consumption of junk foods among the adolescent students and this was found to be statistically significant [Table 5].

DISCUSSION

India has a rich food culture; most adolescents are fond of local street foods such as panipuri/golgappa, chats with this, the popularity of western fast foods and instant foods are also increasing. Hence, adolescents are in a transition period enjoying traditional street foods with parents or other family members and also trying other types of junk foods with friends.

In the present study, a total of 700 students were included, out of which nearly two-third 426 (60.9%) were in the age group between 14 and 16 years. Majority of them were females 444 (76.2%), Hindu by religion 546 (78.0%), and from urban areas 586 (83.7%). The details of parents were also noted whereas more than two-third 504 (72.0%) mothers were housewives and all fathers were working. The average monthly family income reported was more than Rs. 10,000 in 46% of the adolescents while, in about 25%, it was between Rs. 10,000 and 20,000/month. Students food pattern varied, as 256 (36.6%) of them followed vegetarian style and 444

Table 4: Socio-demographic determinants of junk food consumption among adolescent students (*n*=700)

Determinants	Regular consumers <i>n</i> (%)	95% CI	OR (95% CI)	<i>P</i> -value
Age in years				
11 to 13	117 (63.9)	56.7–70.6		
14 to 16	332 (77.9)	73.8–81.6	1.99 (1.36–2.90)	0.000
17 to 19	72 (79.1)	69.8–86.5	2.13 (1.19–3.91)	0.009
Sex				
Male	339 (76.2)	72.1–79.9	1.28 (0.90–1.81)	0.081
Female	182 (71.4)	65.5–76.6		
Religion				
Hindu	398 (72.9)	69.5–76.5		
Muslim	95 (79.2)	71.2–85.7	1.41 (0.88–2.31)	0.514
Christian	28 (82.4)	66.8–95.5	1.73 (0.73–4.68)	0.229
Course				
Higher primary	27 (79.4)	63.4–90.5	1.33 (0.61–3.50)	0.465
High school	400 (73.5)	69.7–77.1		
PUC	94 (77.0)	68.9–83.8	1.2 (0.76–1.94)	0.427
Region				
Urban	434 (74.1)	70.4–77.4		
Rural	87 (76.3)	67.8–83.4	1.12 (0.71–1.82)	0.623
Residence				
Day scholar	449 (74.2)	70.6–77.5		
Hotelier	72 (75.8)	66.4–83.6	1.08 (0.66–1.82)	0.755
Diet				
Vegetarian	183 (71.5)	65.7–76.6		
Mixed	338 (76.1)	71.9–79.9	1.27 (0.89–1.80)	0.177
Type of family				
Nuclear	403 (74.4)	70.5–77.9		
Joint	118 (74.7)	67.4–81.0	1.01 (0.67–1.51)	0.941

Table 5: External determinants of junk food consumption among adolescent students (*n*=700)

Determinants	Regular consumers <i>n</i> (%)	95% CI	OR (95% CI)	<i>P</i> -value
Pocket money per month in Rupees				
<500	402 (72.8)	69.0–76.4		
>500	119 (80.4)	73.4–86.2	1.53 (0.98–2.42)	0.058
Influence of friends				
Yes	358 (87.5)	84.0–90.4	5.49 (3.79–8.03)	0.000
No	163 (56.1)	50.2–61.6		
Influence of family members				
Yes	321 (78.1)	73.9–81.9	1.58 (1.12–2.23)	0.008
No	200 (69.2)	63.7–74.3		
Influence of advertisements				
Yes	302 (83.1)	79.0–86.7	2.66 (1.87–3.81)	0.000
No	219 (64.9)	84.4–95.2		
Correct Knowledge about harmful effects				
Yes	314 (83.1)	79.3–86.6	2.72 (1.91–3.88)	0.000
No	207 (64.2)	58.9–69.3		
Easy Accessibility to junk foods				
Yes	452 (92.1)	89.4–94.2	17.35 (11.2–27.3)	0.000
No	69 (33.0)	53.9–71.9		

(63.5%) of them followed mixed pattern with occasional non-vegetarian food such as chicken or mutton [Table 1].

It was observed that nearly two-third adolescents (74.42%) consumed junk food more than 3 times/week. Other studies done in Pakistan, South Africa, Kuwait, USA, and Indian state of Himachal Pradesh showed similar results.^[5-9] However, studies done in Gujarat^[10] and South India^[11,12] showed lower rate of consumption of nearly one-third with frequency 2 times/week. This difference in proportion of consumption of junk foods may be attributed to the varying definitions of junk food and fast food, duration of study, methodologies adopted such as 24 h recall or 1 week recall, age, and gender of participants.

In the present study, most liked sweet junk foods were cakes 145 (32.5%) among males and chocolates 98 (38.4%) among females. It was consistent with other studies where adolescent girls had more liking for girls specially chocolates.^[13,14] Among salted junk food; Chips/Kurkure; and Indian deep fried items (Samosa/Kachori/Mirchi/Vadapav/Pavbhaji) were liked by males 148 (33.6%). However females had more likings for street available foods such as Panipuri/Sevpuri/Dahipuri 61 (23.9%) [Table 2]. Study done in Pakistan^[5] revealed that males had preference for local fast foods whereas females liked western fast foods.

The most preferred place of buying these junk foods were bakeries (64.9%), hotels/restaurants (49.75%). In a multicenter study done in North India^[15] showed nearly half of them consumed bakery items on regular basis. Common time of having junk foods been evening hours (63.25%), which was observed in other studies.^[16,17] The reason being after school/college hours students went directly to tuitions or other extracurricular activities. Other reason being adolescent's food habits were governed by opportunities they had of eating with peers away from their families. Most of them enjoyed junk foods while watching television (60.55%), some also enjoyed as a side dish with regular meals (9.15%).

The main reason for getting attracted to these kinds of foods was their taste (75.8%), other important reasons being to hang out with friends (16.2%) or just to pass time in between classes (24.85%). However, an important finding was trying to gain weight (3.75%) especially by boys. Similar results were also documented in other studies,^[5,7,11,16,18] as taste being the important factor for getting attracted, availability in different forms and busy schedule.

Study subjects in mid (OR = 1.99 [CI = 1.36–2.90]) and late (OR = 2.13 [CI = 1.19–3.91]) adolescents, had higher chance of being regular consumers compared to early period (63.9%). This may be because high school and college attending students have busy schedules and attending multiple tuition classes and have a tendency of socializing with friends outside their homes. Association of fast-food consumption

with age was seen in a study done in USA.^[19] Mid and late adolescence represents a time of increasing autonomy and can directly purchase more fast food with their own money.

In our study, males had a higher proportion of junk foods, which was statistically not significant. Similar results were seen in a study done in Pakistan^[5] and Kuwait.^[7] However, contrasting results were seen in a study done in Kashmir, India,^[18] may be because the study subjects were university students and also study in Himachal Pradesh of India^[9] showed no gender difference. There was no significant association between religion, area of residence, type of diet, and pocket money amount with junk food consumption.

However, influence of advertisements (OR = 2.66 [CI = 1.87–3.81]), friends (OR = 5.49 [CI = 3.79–8.03]), and family members (OR = 1.58 [CI = 1.12–2.23]) played an important role for having junk foods. Similarly study done in USA,^[8] advertisements and friends played a role in preference of junk foods. Advertisements attract children and adolescents using their known cartoon characters. Easy accessibility to these foods (OR = 5.49 [CI = 3.79–8.03]) nearer to schools or colleges made adolescent get attracted to junk foods. Even having knowledge about harmful effects of junk foods did not prevent adolescents from having junk foods, which was consistent with a study done in Gujarat, India.^[10] Hence, there was a large gap between knowledge and practice.

CONCLUSIONS

To conclude nearly two-third adolescent students consumed junk food on regular basis. Factors such as friends, family members, and easy accessibility nearer to schools or colleges were associated with junk food consumption. Even having adequate knowledge did not prevent them from having junk foods.

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