

Fast food is not the only junk food: Consumption pattern of different types of junk food in adolescents of Aligarh

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ABSTRACT

Background: Junk food is a term that is used for many types of food including the predominantly western - fast foods, as well as for local - street foods and instant foods. **Objectives:** The objectives of this study were to assess the consumption pattern of fast food, street food, and instant foods among adolescents and their correlation and to determine the preferred food among these, if there were no cost constraints. **Materials and Methods:** A cross-sectional school-based study was conducted in 13–15 years old adolescents from two schools of Aligarh. The study used pictorial examples to ascertain the prevalence of different types of food. Data were analyzed using SPSS-20. Spearman's rho was applied to find correlations among the different food categories. **Results:** The consumption rate of fast food, street food, and instant food for twice or more times a week was 57.7%, 55.7%, and 46.1%, respectively. Furthermore, if money was not a restraint, the most favored food was fast food (44%). There is a significant correlation of consumption patterns of these foods. **Conclusion:** The unhealthy junk foods consumption includes not only the western fast foods which are ultra-processed but also Indian street foods rich in trans fats as well as instant foods. A more nuanced and comprehensive approach is needed to counter the hazards of the current junk food environment.

Key words: *Adolescents, Fast food, Instant food, Junk food, Nutrition, Street food*

Nutritional transition is underway in developing countries like India and the food system and preferences are changing [1]. The cultural hybridization increase in junk food intake and adverse dietary behavior has penetrated the smaller cities of India, often quite visibly in adolescents [2]. Amidst other nutritional changes, rise in junk food intake has been remarkable, in parallel with globalization and urbanization of countries like India. The term junk food, in general, is used to identify food with little nutritional value but high in fats, salt, and/or sugar, having a tempting taste and an addiction potential. The current food environment is dominated by junk food having artificially high levels of sugar and fat, with some providing an energy density in excess of twice the recommended daily allowance contributing to the obesity epidemic [3,4].

Junk food is a term that is used for many types of food including the predominantly western - fast foods, as well as predominantly local - street foods and instant foods. Due to important differences in cost, availability, marketing, and popularity, a more precise estimate for different types of junk food consumption is needed to counter this epidemic. In this context, the current Brazilian guidelines have divided junk food according to the types of processing into naturally and minimally processed foods, culinary preparation products extracted from natural foods, salt/sugar added natural/minimally processed foods, and ultra-processed foods [5].

In India, the traditional street foods are very popular among school-going adolescents as the hawkers and vendors sell them outside the schools and playgrounds. The street foods comprise deep-fried foods such as samosa, chat, tikkis, and jalebis which have high amount of trans fats. Therefore, putting the onus of the growing burden of obesity entirely on fast foods is naïve and could be misleading. On the lines of previous research [6], in the Indian food environment, the junk food consumption can be better understood in terms of subgroups. We propose three subgroups - (1) predominantly western “fast foods” comprising rapidly prepared food in a restaurant or store such as McDonald's, KFC, Subway, and others, (2) predominantly traditional “street foods” comprising ready to eat food prepared and sold by hawkers/vendors in streets and public places, and (3) especially processed “instant foods” that can be served instantly after cooking in boiled water. As different as they are in terms of procurement, selling, and modes of consumption, they are common in terms of their addiction potential, poor nutritive value, and “unhealthiness” or “junkiness” as each of them provide fat/oil/sugar/salt in excess.

Adolescence, as a phase of life, is known as a habit-forming and strengthening stage. As the child starts his/her pubertal and adolescent transition, the diminishing parental influence is coupled with peer influences and risk-taking behaviors. Adolescents are a clear target of the fast food market [7], and

incidentally, the period when their new found independence leads to increased consumption of street foods in India. Therefore, this study was conducted with the objectives of assessing the consumption pattern of fast food, street food, and instant foods and their correlation among adolescents, and to determine the preferred food among these in adolescents, if there were no cost constraints. This midadolescent age group of 13–15 years was chosen as it coincides with late middle and high school years, which is associated with acquiring new habits and is, therefore, the target age group for the World Health Organization-Global School-based student Health Survey (WHO-GSHS) and Global Youth Tobacco Survey [8,9].

METHODS

This cross-sectional study was conducted as a part of Short Term Studentship research project funded by Indian Council of Medical Research on adverse dietary behavior of adolescents in Aligarh. The data collection was done in 2 months, from July to August 2017. The study was held in two different schools of Aligarh, after prior permission from the school authorities. The schools were randomly selected from the list of public and private schools, one each. The study population comprised 400 students aged between 13 and 15 years enrolled in these schools.

The sample size of the study was calculated using the formula, $n = z^2 p (1-p)/d^2$, where z was taken as 1.96, p stood for prevalence, and d stood for absolute error of 5%. Since there is a paucity of studies that have surveyed the consumption pattern of these three food types in India previously, p was taken as 50% to get the maximum sample size. Thus, the sample size came out to be 384.16–385, to which 15 more were added in anticipation of partial/incomplete responses in the pro forma, taking the sample size to 400.

A detailed list of students of 13–15 years, in the two schools, was prepared using the school register, and on the basis of classes, a probability proportionate to sampling technique was used. The technique ensured that the number of students selected from each class is relative to the size of the class. For each class, the number of students selected was found by this formula: Total students in the class/total strength of students \times sample size = Number of students from that class. The students were called on the basis of roll numbers for the survey interview. If any roll number was absent, the next roll number from the same class was chosen for the study.

The pro forma was based on an extended version of the WHO-GSHS questionnaire for the larger study with modifications on the questions for the assessment of fast foods, street foods, and instant foods. We adjusted our definitions for fast food, street food, and instant foods to reflect our primary intention of assessing the consumption of unhealthy/junk food in them. Three important concerns were considered during framing the questions - (1) not all fast foods are junk food, for example, salad, (2) though fast foods are predominantly western, many fast food chains serve the Indian street foods like samosa, and (3) the street foods are also

served by Indian food chains, which may serve burgers and other western fast food. Therefore, we used vivid examples of the kinds of available food in and around the schools in these categories for appropriate responses. For fast foods, we asked about the usual weekly intake frequency of fast foods such as burgers, pizza, roasted chicken/paneer, French fries, chips, and ice creams. Whereas for street foods, we asked about roadside stalls for foods such as samosas, aloo tikki, bhel puri, chaat, pakodas, bhaturas, puris, and gulab jamun, for instant foods, we used the examples of noodles, corn flakes, ready to eat mixtures and vegetable packets, etc. The list of the food items was presented to the interviewer with photos of the dishes to avoid any confusion.

The study was approved by the multidisciplinary Institutional Ethics and Research Advisory Committee. Appropriate counseling, health education, balanced diet and breakfast, and nutrition advice were offered to all the participants. Those who were in need of referral were referred to the concerned hospital in Aligarh. The data entry was done in MS Excel and data analysis was done in SPSS-20. The categorical data were expressed in percentages and 95% confidence intervals, calculated through modified Wald's method. Spearman's rho was applied to find correlations among the different food categories, as they were ordinal in nature.

RESULTS

Of 400 participants, a total of 395 adolescents completed the survey from different selected schools. The baseline characteristics of the adolescents are shown in Table 1.

The consumption rate of two or more times/week was found to be highest for fast foods at 57.7% (228/395), followed by street foods at 55.7% (220/395) and instant foods at 46.1% (182/395) (Table 2). We found that a fair-to-moderate correlation is present between fast food and instant food ($r_s=0.49$, $p<0.001$), fast food

Table 1: Baseline characteristics of the adolescents in the study population

Variable	n (%)	95% confidence interval
Age (year)		
13	135 (34.2)	29.67–38.99
14	139 (35.2)	30.64–40.02
15	121 (30.6)	26.29–35.35
Religion		
Hinduism	382 (96.8)	94.40–98.12
Islam	11 (2.8)	1.50–4.98
Others	2 (0.5)	0.01–1.95
Family Type		
Nuclear	171 (43.3)	38.49–48.22
Joint	224 (56.7)	51.78–61.51
Standard of living index*		
High	357 (90.4)	87.04–92.94
Medium	32 (8.1)	5.77–11.24
Low	6 (1.5)	0.62–3.36

*The standard of living index was based on weighted scores of the relative significance of the ownership of items as used in NFHS (National Family Health Survey)

Table 2: Consumption pattern of different types of junk food

Variable	n (%)	95% confidence interval
Fast food		
4 or more times/week	84 (21.1)	17.51–25.58
2–3 times/week	144 (36.4)	31.86–41.31
Once/week	114 (28.8)	24.61–33.52
Do not consume every week	53 (13.4)	10.39–17.15
Street food		
4 or more times/week	71 (18.0)	14.49–22.08
2–3 times/week	149 (37.7)	33.08–42.60
Once/week	123 (31.1)	26.67–35.87
Do not consume every week	52 (13.2)	10.16–16.88
Instant food		
4 or more times/week	52 (13.2)	10.16–16.88
2–3 times/week	130 (32.9)	28.46–37.69
Once/week	147 (37.2)	32.59–42.09
Do not consume every week	66 (16.7)	13.34–20.72

and street food ($r_s=0.46$, $p<0.001$), as well as instant and street food ($r_s=0.49$, $p<0.001$). We also asked about the preferred type of food, if there were no money constraints on buying them. The most popular junk food choice was fast food 44% (174/395), followed by street food 42% (166/395) and instant food 14% (55/395).

DISCUSSION

This study was conducted with the objective of finding out the consumption pattern and popularity of different types of junk food in the diet of adolescents. We found that 57.7% of adolescents ate fast food for 2 or more times/week, followed by 55.7% for street foods and 46.1% for instant foods. In addition, the consumption of fast food, junk food, and instant food was found to be significantly correlated with each other. As far as the popularity of these foods is concerned, about 44% of adolescents preferred fast foods, followed by 42% preferring street foods, if there were no money constraints.

A high frequency of junk food consumption was found in our study. In addition, the consumption pattern indicates that unhealthy foods are consumed in many shapes and sizes in India. While western fast foods have gained popularity due to globalization and marketing, street foods in India are ubiquitous. A straightforward comparison between the western fast food and the Indian street food in terms of their nutritional effects is difficult to generalize. Although the western fast foods often have a high energy and fat content, trans fats have been found to be higher in the street foods - 9.5% in bhatura and 7.6% in puris, as compared to 4.2% in French fries [10]. Some argue that by greening and careful choice of oil, Indian samosas or tikkis can be made healthier than the fast foods - burgers, fries, etc., as they are usually processed with addition of preservatives [11].

Apart from the health concerns, there are two important points in the fast food versus street food argument that affects consumption - (1) effect of a far more aggressive form of

marketing of fast foods in India and many other developing countries [12] and (2) given the popularity of street foods, many fast food chains are adding Indian street foods like samosas to their menu, further gaining a foothold in Indian market. Apart from the fast foods and street foods, instant foods such as noodles, popcorn, and ready to eat foods are also getting popular, pointing toward the impact of the transitioning culinary culture in India combined with aggressive marketing of these products.

Correlation of the consumption patterns of fast food with street food and instant food is another pointer toward the overall drift of adolescents toward junk food, increased frequency, and popularity of eating out and the transitioning nature of culinary skills in Indian homes. This is also worrisome because obesity-related eating behaviors such as increased junk food intake, decreased fruit and vegetable intake, as well as breakfast skipping frequently cooccur together [2,13]. Since adolescent lifestyle profile serves as an early warning system for threats such as obesity and junk food epidemic, ultimately engulfing bigger populations [14,15], a comprehensive understanding of the different types of junk food is important. Furthermore, due to the known association of unhealthy eating behavior with psychological morbidities in adolescents, this calls for a more nuanced and focussed attention to these consumption patterns.

An additional finding of the present study is the preference of fast food if there are no money constraints. With increased economic growth, this indicates that the consumption frequency of fast foods may increase furthermore in future. A similar preference has been noted in China, where adolescents reported that if money was not a problem, they would consume hamburgers, soft drinks, milk, yogurt, shrimp, and ice cream more often [17]. This is of particular concern, as India is rapidly growing economically with a huge adolescent population. Interestingly, the fast food in India is not as cheap as in the western countries and is consumed more by adolescents belonging to a higher socioeconomic stratum [15,18,19]. On the other hand, the street foods are still cheap and consumed at a high frequency.

The WHO also reports that “processed, energy dense, nutrient-poor foods, and sugar-sweetened beverages, in increasing portion size, at affordable prices have replaced minimally processed fresh foods” in schools and families [20]. In a country, where coronary artery disease occurs earlier and is more fatal, an in-depth inquiry into the nature and quality of these foods is pertinent. The study also has a few limitations; the first limitation is that only two schools were selected and the findings may not be generalized; therefore, we have added the confidence intervals to our results. Another limitation is the selection of only a part of the wide adolescent age group.

CONCLUSION

The consumption of junk food in Indian adolescents comprises both western fast foods and Indian street foods, and is correlated. It is important to conclude that both the fast food and street foods are unhealthy and should be restricted in diet, especially among adolescents - as adolescence is a habit-forming stage.

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