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Fast food consumption among affluent adolescent school girls in Jaipur and Bhunas

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Abstract
Introduction: Diet plays a very significant role in growth and development of adolescents, during which the development of healthy eating habits is of great importance. There is a dual burden of under-nutrition and over-nutrition in this age group.

Objective of the study: The research study was planned to find out the food practices and fast food consumption among adolescent school girls in urban and semi-urban areas.

Methodology: A sample of 240 subjects (120 urban and semi-urban each) aged 15-17 years were selected purposively from two schools, namely the Maharani Gayatri Devi School, Jaipur and Vinayak Vidhya Peeth School, Bhunas in Bhilwara District of Rajasthan. Data collection was carried out by using a semi-structured, pre-coded questionnaire schedule regarding food practices; and consumption of fast food was assessed by using food frequency questionnaire.

Results and conclusion: Regarding their food habits, 47.0% of semi-urban girls were having only milk in their breakfast whereas 54.2% were reported to miss their breakfast 1-2 times in a week. Eighty percent of urban girls had their breakfast regularly. It was also found that in semi-urban areas subjects were used to have early lunch instead of breakfast. About 23.0% semi-urban and 34.0% urban subjects had canteen snacks in recess time. More urban subjects (45.0%) were reported eating outside on weekly basis as compared to semi-urban subjects (20.0%). Chocolates, instant noodles, kachoris/samosas and golgappas were the items consumed most frequently by semi-urban subjects. Urban subjects reported the frequent consumption of burger, pizza, chowmein, pav-bhaji, cholabhatura also along with the items as reported by semi-urban subjects.

Keywords: Adolescents, fast food, eating pattern, growth, nutrition

Introduction

Food is an important part of our life. It is something everyone needs, every day. Life can be sustained only with adequate nourishment. Man needs food for growth, development and to lead an active and healthy life (George, 2009) [2]. Adolescence is the time of rapid growth and development in life. Nutrient needs are at the peak. Diet in this age has repercussions on the future health. High intake of fat, cholesterol and salt is associated with heart disease, cancer, osteoporosis and diabetes. Improper intake of nutrients and inactivity may even lead to lifelong obesity. Adolescents are least bothered about what they eat, so adults around them have to keep a watch on what, where and with whom they eat because it determines their eating patterns. Urban adolescents tend to enjoy soft drinks, breads, potato chips, popcorn and ready to eat meals. These foods are rich sources of carbohydrates but have low nutrient density (Vaida, 2013) [12].

Fast food culture is an emerging trend among the younger generation. The ready availability, taste, low cost, marketing strategy and peer pressure makes them popular among children and adolescents. Fast food is the term given to food that is high in calories but low in nutritional content. Oxford dictionary defines fast food as "easily prepared processed food served in snack bars and restaurants as a quick meal or to be taken away". Junk foods have no or very less nutritional value and irrespective of the way they are marketed, they are not healthy to consume. The eating pattern of adolescents first gained attention in Western countries claiming that they have a poor diet. Owing to globalization and urbanization in developing countries, adolescent eating behaviour is also coming under the spot light in India too (Puri *et al*., 2008) [9]. Also, fast foods are one of the main agents responsible for many diet related non-communicable diseases and disorders like obesity, hypertension, and cardiovascular diseases later on in adulthood. Moreover fast food related concerns have alarmed people all over the globe and countries like India too. Children are especially vulnerable to current food environments because they have a biological preference for salty and sweet foods

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(Mennella, 2014) [7]. Adolescents living in urban areas have been known to have higher consumption of fast foods because of easy availability and accessibility (Heidal *et al*., 2012) [5]. Conversely semi urban and rural areas are supposedly less influenced and have lesser consumption frequency of fast foods. With the bombardment of media and advertisements about various fast foods, awareness about fast foods and the consequent demand has trickled and infiltrated down to the semi urban areas too. Such foods have also become a way of life in semi urban areas; the quality and branding may differ but they are available and accessible (Goel *et al*., 2013) [3]. The urban adolescents may be consuming burgers and pizzas of international brands whereas their counterparts in semi urban areas would be getting lesser brands or locally made products. Nonetheless, the health risks are the same. Considering this new revolution in the food consumption scenario, the present study was undertaken to find out eating pattern and consumption of fast foods among the adolescent girls studying in schools in urban and semi-urban areas of Jaipur and Bhunas, respectively.

Methodology
Selection of subjects: The study was undertaken to assess the prevalence of fast food intake among urban and semi-urban adolescent girls. A sample of 240 (120 each from urban and sub-urban areas) aged 15-17 years were selected purposively from the Maharani Gayatri Devi School, Jaipur and Vinayak Vidhya Peeth School, Bhunas in Bhilwara District of Rajasthan.
Vinayak Vidhyapeeth School is a residential school which caters to girls from affluent families in Bhilwara and nearby areas. Maharani Gayatri Devi Girls' school, the first public school in India for girls, today has a formidable reputation. Due to their fee structures, most students belong to affluent families in both the schools. The reason for selecting these schools was that both schools provide residential premises and have canteen offering varieties of fast foods and beverages. Both schools are considered as one of the best educational institutions in their respective areas, i.e. Bhunas and Jaipur.

Background information: A semi-structured, pre-coded interview schedule was developed to obtain the desired information regarding general profile, educational and socio-economic status of the subject's family.

Anthropometric measurements: Anthropometry was conducted which included height (using non-stretchable tape), weight (using Omron HN-286 digital weighing scale), waist and hip circumference (using non-stretchable tape). Body–

mass index (BMI) was then further calculated by using observed measurements of height and weight and interpreted as per cutoff given by World Health Organization (2004) [13].

Food consumption pattern: The food frequency questionnaire (FFQ) based on the identified food items were used to assess the food pattern (general as well as fast food) over three months. The frequencies in the questionnaire were scored from 1-2 times/ month, 2-4 times/ week, daily and never. Thereafter, mean frequency scores were calculated for each food item consumed by each subject.

Statistical analysis: The data were tabulated and statistically analyzed (Gupta, 2012) [4].

Results and Discussion
Background information about the subjects
General profile: The mean age of urban and semi-urban adolescent girls was recorded as 15.8± 0.63 and 16.3± 0.89 years, respectively. Table 1 showed that 73.3 % urban and 44.2 % semi-urban subjects were belonging to nuclear families. Most of the girls (57.5% in Jaipur and 65.0 % in Bhunas) were day scholars.

Table 1: General profile of the subjects

Demographic Profile		Semi-urban n =120	Urban n = 120
Age (Year)	15	25 (20.83)	41 (34)
	16	38 (31.67)	56 (47)
	17	57 (47.5)	23 (19)
Residence	Day scholar	78 (65)	69 (57.5)
	Hosteller	42 (35)	51 (42.5)
Type of Family	Nuclear	53 (44.17)	88 (73.33)
	Joint	67 (55.83)	32 (26.67)

*Figure in parentheses denote percentage

Educational and socioeconomic status of the subjects' family
Regarding education, most of fathers, whether urban or semi-urban (67.5 and 49.2% respectively), had college education. Urban mothers (72.5%) too had college education in comparison to semi-urban mothers (59.0%) who were educated up to school level only.
The distribution of subjects according to the occupation of mothers revealed that majority of the semi-urban mothers (65.8%) were housewives as compared to urban mothers (57.5%). Further, it was observed that the major occupation of majority of the urban families (53.3%) was business as compared to 51.7% of semi-urban families. A small segment of semi-urban families was engaged in farming.

Table 2: Education status of parents of the subjects

Variables	Semi-Urban n = 120		Urban n = 120	
	Father	Mother	Father	Mother
Illiterate	2 (1.67)	16 (13.33)	0 (0.0)	0 (0.0)
School Education	50 (41.67)	59 (49.16)	4 (3.33)	5 (4.17)
College Education	59 (49.17)	41 (34.17)	81 (67.5)	87 (72.5)
Technical	4 (3.33)	2 (1.67)	20 (16.67)	12 (10)
Diploma	5 (4.16)	2 (1.67)	15 (12.5)	16 (13.33)

*Figure in parentheses denote percentage

Anthropometric measurements
Regarding weight and height of the subjects, a significant difference was found between urban and semi-urban subjects

in 16 and 17 years of age. Using observed measurements of weight and height, BMI was calculated and interpreted as per classification given by WHO Expert Consultation (2004) [13].

Mean BMI of the overall subjects was 20.94 kg/m2 vs 20.53 kg/m2 for Jaipur and Bhunas adolescent school girls, respectively. Mean BMI of the subjects was found to be significantly different in all age groups, nevertheless the mean WHR of the subjects was non-significantly different.

Table 3: Mean anthropometric measurements of the subjects

Parameters	Age Group	Urban	Semi-urban	t value	p value
Weight (kg)	15 years	54.6±7.56	48.3±6.10	3.43	0.001[NS]
	16 years	52.4±8.83	49.4±5.08	1.90	0.60*
	17 years	49.5±5.23	48.2±5.2	1.02	0.310*
Height (cm)	15 years	159.5±10.41	150.8±11.09	3.12	0.002[NS]
	16 years	159.5±5.34	156.4±10.04	1.91	0.60*
	17 years	156.5±9.95	154.8±9.2	0.701	0.486*
BMI	15 years	21.6±3.56	21.5±3.86	0.113	0.910*
	16 years	20.6±3.45	19.9±4.35	0.292	0.771*
	17 years	20.5±3.30	20.3±3.54	0.118	0.906*
WHR	15 years	0.86±0.05	0.89±0.043	3.06	0.002[NS]
	16 years	0.86±0.05	0.89±0.043	3.09	0.002[NS]
	17 years	0.86±0.03	0.90±0.036	4.408	0.000[NS]

Mean±SD.
*Significant at 0.05 level of significance.
NS: Non significant.

A WHO expert consultation reviewed scientific evidence that suggests that Asian populations have different associations between BMI, percentage of body fat, and health risks than do European populations. The consultation concluded that the proportion of Asian people with a high risk of type 2 diabetes and cardiovascular disease is substantial at BMIs lower than the existing WHO cut-off point for overweight (≥25 kg/m2) (WHO, 2004) [13]. Studies from northern parts of India (Dudeja *et al*., 2001: Singh *et al*., 1992) [1, 10] had also shown that the normal BMI for an Indian was 22 kg/m2 and supported the view that a BMI of 23.0 kg/m2 might be ideal for the Asian Indian population. Thus, the same was interpreted on the basis of cut off given for Asians. As per their percentage distribution (Table 4) according to BMI classification, it was observed that 19.2% and 32.5% of adolescent girls from Bhunas and Jaipur were found to be in normal category as per additional classification specifically given for Asians. As per principal cut-off points, 55.0 % of adolescent girls from Bhunas and 54.2% of adolescent girls of Jaipur city were falling in the normal category. Almost 19.0% and 21.0% of subjects were found to be in pre-obese Grade I category. When the data was classified as per additional cut-offs, 7.5% and 5.83% of girls were found to be pre-obese in Bhunas and Jaipur, respectively. According to NFHS-3 report (2005) [8], both women and men in India suffer a dual burden of over nutrition and under nutrition. More than one third of women were too thin, while 13.0% were overweight or obese.

Table 4: Percent distribution of subjects on the basis of their BMI category

Classification	BMI (kg/m²)			
	Principal cut-off points	Additional cut-off points	Semi-urban (n-120)	Urban (n-120)
Underweight	<18.50	<18.50		
Severe thinness	<16.00	<16.00	5 (4.2)	4 (3.3)
Moderate thinness	16.00-16.99	16.00-16.99	8 (6.7)	0 (0.0)
Mild thinness	17.00-18.49	17.00-18.49	29 (24.2)	25 (20.8)
Normal Range	18.50-24.99	18.50-22.99	23 (19.2)	39 (32.5)
		23.00-24.99	32 (26.6)	26 (21.7)
Overweight	≥25.00	≥25.00-27.49		
Pre-obese	25.00-29.99	25.00-27.49	7 (5.8)	9 (7.5)
		27.50-29.99	16 (13.3)	17 (14.2)

*Figure in parentheses denote percentage

Regarding WHR, most of the subjects (96.7% in Jaipur and 84.2% in Bhunas) had WHR more than standard value (Table 4) i.e. 0.80 for Asian women (WHO, 2011) [14]. This is despite the fact that both schools were the residential ones and offering lots of physical activities and games to their students.

Food consumption pattern
In the recent years, the use of dietary pattern analysis has become popular for characterizing the whole diet in combination because this approach captures complex behaviour and potentially interactive and antagonistic effects among nutrients that might impact health outcomes.

Table 5: Food consumption pattern of urban and semi-urban adolescent school girls

Variables		Urban (n=120)	Semi-urban (n=120)	Chi square value	p values
Eat in Morning	Breakfast	96 (80.0)	56 (46.7)	28.71	0.000[NS]
	Only milk	18 (15.0)	57 (47.5)	29.5	0.000[NS]
	No food	6 (5.0)	7 (5.8)	0.08	0.776*
Miss Breakfast	Everyday	6 (5.0)	15 (12.5)	4.22	0.040[NS]
	1-2 times/week	42 (35.0)	65 (54.2)	8.92	0.003[NS]

	1-2 times/month	72 (60.0)	40 (33.3)	17.14	0.000[NS]
Eat out at least once	Week	54 (45.0)	24 (20.0)	17.5	0.000[NS]
	Month	62 (51.7)	85 (70.8)	9.28	0.002[NS]
	Never	4 (3.3)	11 (9.2)	3.48	0.062*
Eat as a treat to celebrate at least once a month	With friends	74 (61.7)	51 (42.5)	2.88	0.089
	With family	44 (46.7)	57 (47.5)	8.83	0.003[NS]
	Never	2 (1.7)	12 (10.0)	7.58	0.006[NS]
Food during recess time	Home/hostel snacks	59 (49.2)	71 (59.2)	2.41	0.120*
	Canteen snacks	41 (34.2)	27 (22.5)	4.02	0.045[NS]
	Do not eat anything	20 (16.6)	22 (18.3)	0.11	0.734*

Figures given in parentheses denote percentages.
NS: Non significant.
*Significant at 0.05 level of significance.

Meal pattern
The meal pattern (Table 5) of the subjects showed that 46.7 % of semi-urban and 80.0 % of urban subjects had early morning breakfast as most of the subjects were early risers and they generally preferred to have something before go to school. Thirty five percent of urban and 54.2% of semi-urban subjects reported to miss their breakfast 1-2 times/week. The data further showed that 96.7 % of urban as compared to 90.8% of semi-urban adolescents reported eating out either weekly or monthly. Ninety percent of Bhunas and 98.3% of Jaipur adolescent school girls were used to treat with family or friends. Thirty five percent urban and 22.5% semi-urban subjects reported to had canteen snacks during recess. The greater availability of variety of snacks in a more attractive setting in urban area and greater awareness among urban adolescent girls, led to higher consumption of canteen snacks. On other hand, only 16 -18 % of subjects reported not to have anything during recess. Puri *et al*. (2008) [9] also reported that a large number of government (63.3%) and private (53.2%) school students were not bringing tiffin in the schools. The data (Table 3) further revealed that majority of both urban (49.0%) and semi-urban (59.0%) subjects used to have home/hostel packed lunch during the time. A lot of students were not eating their tiffin boxes during recess and taking them back home.

Fast food consumption pattern
Fast foods were found to be more frequently consumed by majority of the urban than the semi-urban adolescent girls, since availability of fast foods was more in urban areas.
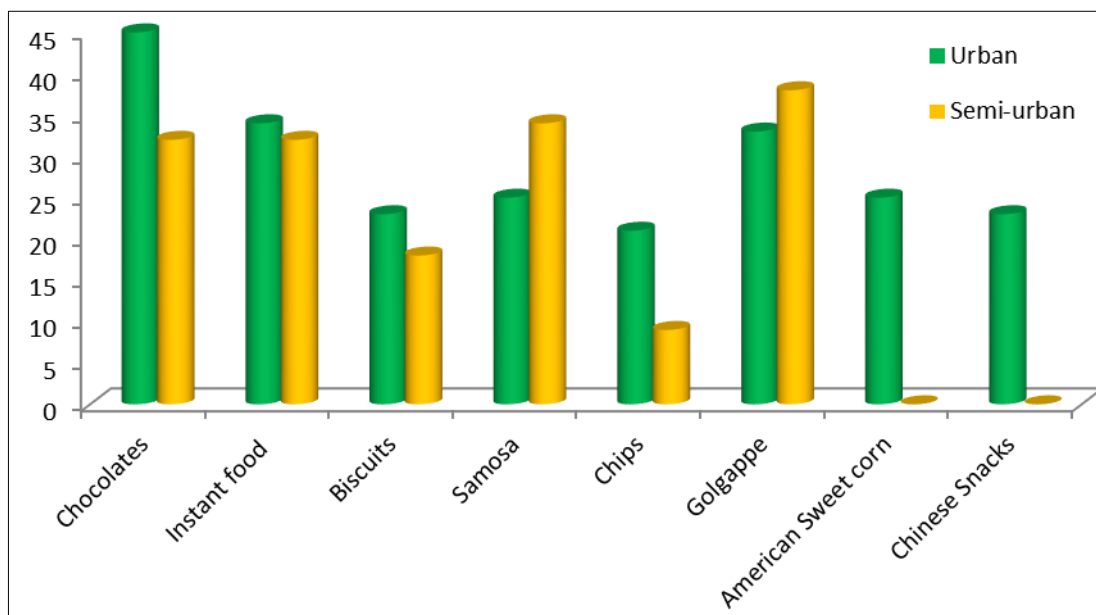

Fig 1: Percent of subject consuming fast foods three or more times per week

As seen in Fig.1, chocolates and instant noodles were the favorite foods of subjects from both areas. Fast foods were found to be more frequently consumed by majority of the urban than the semi-urban adolescent girls, since availability of fast food was more in urban areas. Various fast food outlets have been established in attractive settings in urban areas. Ice tea, cold coffee, American sweet corns, kathi rolls, canned juices, cheese were the few food items for which semi-urban girls were unaware and thus very few or none of the subjects reported their consumption. Some traditional fast food items like aloo tikki, bhelpuri, samosa, chole kulche, chola bhatura, Bikaneri bhujia, golgappe were consumed more in semi-urban areas too. Puri *et al*. (2008) [9] reported that among junk food items, samosa (42.4%), tikki/chat (39.7%), noodles (25.4%), burger (24.5%) and pizza (23.3%) were preferred most by a large number of government and private school students. Mahajan *et al*. (2012) [6] reported that the frequency of consuming sweet biscuits, sandwiches and namkeens was observed to be high among urban subjects as compared to only sweet biscuits among semi-urban subjects.

Conclusion
Both urban and semi-urban adolescent girls were consuming fast foods. The frequency of consumption of majority of such foods was twice a week to once or twice a month, however the number and frequency of fast food consumption was

higher among urban adolescents. Some of the traditional fast food items like biscuits, namkeen, samosa, bread pakora, kurkure, cream roll, tikki, chola bhatura, kulchas, vegetable pakore and gol gappas were also frequently consumed by semi-urban adolescents. The subjects in both kinds of different areas were consuming fast foods, only the kind of foods differed.

Therefore, school and community based intervention measures as nutrition counseling, education camps and campaigns are necessary to develop a healthy lifestyle during adolescence in both urban and semi-urban area. Availability of unhealthy foods in the school premises needs to be discouraged and monitored (The Hindu, 2012) [11].

There is a need and scope of behavioural modification in this regard. However, individual approach alone is unlikely to treat the powerful forces responsible for promotion of fast food. Comprehensive approach involving legislative, service and educational inputs are needed to curtail the menace of consumption of fast foods by the younger generations.

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