Fast food consumption pattern among postgraduate female student living in hostel of University of Rajasthan, India

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ABSTRACT
A study was conducted to assess nutritional status and consumption pattern of fast food among female students living in a post graduate hostel involving 104 girls aged 20-26 years. The subjects were administered a pre-tested, pre-coded proforma for general demographic information. Anthropometric information was measured for BMI, height, weight, waist and hip circumferences. Two-day 24 hr recall intake and FFQ was used to collect information on dietary intake and fast food consumption. Dietary intake of subjects was low compared to suggested values. Calculated dietary fat was 33 g, above recommended dietary allowances (RDA -20g) and pulses intake was 110% of the RDA. According to BMI, subject categorized were normal (64.4%), over-weight (9.62%) and obesity grade I (10.5 %) category. Fast foods consumption frequency was two to three times in a week. Interestingly Golgappa (38%), Chowmin (34%), Chole Bhatra (36%), Pav Bhaji(42%), Pizza(27%) and Patties (27%) were enjoyed by maximum number of respondents. The habit of fast food consumption is dangerous leading to many diseases. More awareness should be created for increasing physical activities and reducing fast food consumption.

Key word: Fast food, Hostel girls, Junk food, Nutritional status.

INTRODUCTION
Consumption of fast foods has become almost a global phenomenon. India’s fast-food industry is expanding at the rate of 40% every year. India ranked 10th in the fast food per capita spending figures with 2.1% of expenditure in total annual spending (Ferences and Deepthi, 2012).

Eating fast foods for meals or snacks is especially popular with adolescents and young adults. During early adulthood, many changes begin that lead to the development of diseases during later years of life (Stang and Mahan, 2008). Large increases in caloric intake have occurred in the past decade to match longer term shifts in eating patterns (Nielson et al., 2002). Among issues of large concern especially among adolescents has been the greater intake of sugar, fatty foods, and other sweeteners (Ludwig et al., 2001).

Popularity of fast food stuffs in this age of urbanization has been attributed to quick preparation and convenience of finishing a meal within a short time. Great taste along with attractive advertising has played a major role in promoting sales among adolescents (Fister, 2005).

Consumption of high-fat fast foods contributes to higher energy and fat intake and lower intake of healthful nutrients (Paeratakul et al., 2003). It is notable that changes in eating patterns such as incidences of meals eaten away from home, portion sizes, meal-skipping and fast foods consumption are be involved in this trend (Young and Nestle, 2002). A need thus arose to study the consumption pattern of fast food in hostels where they indulge in consuming such food more frequently.

MATERIALS AND METHODS
104 post graduate girl students aged 20-26 (Post Graduate students) residing in Rajasthan University Hostel Campus Jaipur were selected who were willing to participate in the study. Any student with chronic health problem like hypertension and acute illnesses like hepatitis, fever were excluded. The subjects were administered a pre-tested, pre-coded proforma for general demographic information. Anthropometric information was measured for Body Mass Index (BMI), height, weight, waist and hip circumferences. Two-day 24 hr recall other than festive day’s intake and food frequency questionnaire was used to collect information on dietary intake and fast food consumption. It included fast food items like pav bhaaji, gol gappe, chocolate, chips, samosa, kachori, pizza, patties, etc.

RESULTS AND DISCUSSION
In adults, the practice of maintaining weight compels them to restrict their daily diet to stay slim. But unintentionally they consume energy dense fast foods which are easily available almost. Out of 104 girls, majority of the subjects were found in the age group of 21 years (32%) 22 years (31%) and 20 years (22%). Around 21.2% of the respondents were receiving Rs. 5000 and above. Only 25.5%
respondents were spending Rs. 500-800 per month on food besides mess charges of Rs. 900 per month and rest were spending 300-400 rupees per month. The money received from home was also spent on clothes, entertainment, toiletries, transportation etc.

The mean weight of subjects was 55.4±6.13 in kg which was comparable to the ICMR (50 kg) value. The mean height of subjects was 161.3±6.49 when compared to 154 cm for reference women height. The mean BMI of subjects was 21.4±2.4 which again was found to be normal compared with a standard (20.5) for normal BMI category (WHO, 2000). 9.6 percent and 10.5 percent subjects fell in pre-obese and obesity grade I category respectively. The study categorized subjects on basis of BMI, normal (64.4%), low weight but normal (11.54%), CED (Chronic energy deficiency) II moderate (2.88%) under Pre-obese (9.62%) and obesity grade I (10.5%) category. WHR (Waist hip ratio) is an accepted clinical, though, indirect method to identify subjects with abdominal fat accumulation, (Singh et al., 2012) Mean WHR (0.79±0.06) was comparable to standard (0.8) given for female population. Prevalence of abdominal obesity in according to waist circumference was higher (58.95 %) among the women of Raipur (Singh et al., 2012).

The mean intake of cereal in the diet was higher due to dieting or lack of preference towards hostel food or poor quality of chapattis. Rice was consumed less may be because it is considered as fattening food. The mean intake of pulses was higher when compared to balanced diet recommended for adults. The consumption of pulses was more because pulses were provided twice a day in hostel mess menu. Vegetables were less preferred in comparison with pulses. Low quality of green leafy vegetable were eaten without inclusion of salads in diet, consequently lead them to consume only 66% of vegetables than suggested values. The calculated fat in respondent’s diet was 33 g which was above the Reference Daily Intake (20g). Sugar intake was 20g which was proportionate to recommended value. Subjects consumed approximately half liter milk and milk products which was comparatively higher than RDI for milk (Table 1).

Table 2 reveals that subjects consumed maggi (8%), bhujia (23%), and chips (10%) daily. Out of 93 percent of the total subjects had liking towards ice cream but only 33 per cent consumed ice-cream once or twice in a month and 24% reported to have it twice or thrice in a week. The consumption could represent an underestimated figure of ice-cream consumption, as the survey was conducted in winters. Interestingly 96 percent liked chocolates and 31% consumed it twice or thrice in a week and 15% enjoyed it daily.

Out of total subjects, 88% were found to consume chips. Fast food like Golgappa (38%), Chowmin (34%), Pav Bhaji (42%), Pizza (27%), Patties (27%) were enjoyed by

<table>
<thead>
<tr>
<th>Food item</th>
<th>Daily (n=104)</th>
<th>Once a week (n=104)</th>
<th>Within 2-3 week (n=104)</th>
<th>1-2 /month (n=104)</th>
<th>Never (n=104)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ice-cream</td>
<td>15.38 (16)</td>
<td>20.20 (21)</td>
<td>24.03 (25)</td>
<td>33.65 (35)</td>
<td>6.74 (7)</td>
</tr>
<tr>
<td>Pastries</td>
<td>10.57 (11)</td>
<td>24.04 (25)</td>
<td>25.00 (26)</td>
<td>21.16 (22)</td>
<td>19.23 (20)</td>
</tr>
<tr>
<td>Chocolates</td>
<td>15.38 (16)</td>
<td>30.77 (32)</td>
<td>31.73 (33)</td>
<td>18.27 (19)</td>
<td>3.85 (4)</td>
</tr>
<tr>
<td>Candies</td>
<td>25.94 (27)</td>
<td>13.47 (14)</td>
<td>1.93 (2)</td>
<td>3.85 (4)</td>
<td>54.81 (57)</td>
</tr>
<tr>
<td>Chips</td>
<td>9.62 (10)</td>
<td>25.94 (27)</td>
<td>31.73 (33)</td>
<td>16.35 (17)</td>
<td>16.36 (17)</td>
</tr>
<tr>
<td>Golgappa</td>
<td>0.96 (1)</td>
<td>22.12 (23)</td>
<td>36.54 (38)</td>
<td>15.38 (16)</td>
<td>25.00 (26)</td>
</tr>
<tr>
<td>Chaat</td>
<td>-</td>
<td>8.64 (9)</td>
<td>16.35 (17)</td>
<td>18.27 (19)</td>
<td>54.74 (54)</td>
</tr>
<tr>
<td>Samosa</td>
<td>-</td>
<td>22.12 (23)</td>
<td>23.08 (24)</td>
<td>15.38 (16)</td>
<td>34.42 (11)</td>
</tr>
<tr>
<td>Kachori</td>
<td>-</td>
<td>12.5 (13)</td>
<td>26.93 (28)</td>
<td>9.61 (10)</td>
<td>50.96 (53)</td>
</tr>
<tr>
<td>Chowmin</td>
<td>-</td>
<td>9.62 (10)</td>
<td>32.69 (34)</td>
<td>32.69 (34)</td>
<td>25.00 (26)</td>
</tr>
<tr>
<td>Burger</td>
<td>0.96 (1)</td>
<td>3.82 (4)</td>
<td>25.00 (26)</td>
<td>27.88 (24)</td>
<td>42.31 (44)</td>
</tr>
<tr>
<td>Pavbhaji</td>
<td>-</td>
<td>8.64 (9)</td>
<td>40.39 (42)</td>
<td>25.91 (27)</td>
<td>25.00 (26)</td>
</tr>
<tr>
<td>Maggi</td>
<td>7.69 (8)</td>
<td>18.27 (19)</td>
<td>30.78 (32)</td>
<td>12.50 (13)</td>
<td>30.76 (32)</td>
</tr>
<tr>
<td>Bhujia</td>
<td>23.08 (24)</td>
<td>22.11 (23)</td>
<td>19.23 (20)</td>
<td>4.81 (5)</td>
<td>30.77 (32)</td>
</tr>
<tr>
<td>Pizza</td>
<td>-</td>
<td>3.85 (4)</td>
<td>25.96 (27)</td>
<td>26.93 (28)</td>
<td>43.26 (45)</td>
</tr>
<tr>
<td>Patties</td>
<td>7.69 (8)</td>
<td>13.47 (14)</td>
<td>25.96 (27)</td>
<td>18.24 (19)</td>
<td>34.61 (36)</td>
</tr>
<tr>
<td>White bread Sand</td>
<td>-</td>
<td>31.73 (33)</td>
<td>23.08 (24)</td>
<td>10.58 (11)</td>
<td>34.61 (36)</td>
</tr>
<tr>
<td>White Bread and Butter</td>
<td>0.96 (1)</td>
<td>32.69 (34)</td>
<td>40.39 (42)</td>
<td>2.88 (3)</td>
<td>23.08 (24)</td>
</tr>
<tr>
<td>Cold drink</td>
<td>-</td>
<td>12.5 (13)</td>
<td>26.92 (28)</td>
<td>13.47 (14)</td>
<td>47.11 (49)</td>
</tr>
</tbody>
</table>

*Number of subjects is indicated in ()

TABLE 1: Dietary intake of University girl students

<table>
<thead>
<tr>
<th>Food groups</th>
<th>ICMR (g)</th>
<th>Actual Intake (g)</th>
<th>% of RDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereals &amp; grain</td>
<td>300</td>
<td>171±38</td>
<td>57%</td>
</tr>
<tr>
<td>Pulses &amp; legumes</td>
<td>60</td>
<td>66±31</td>
<td>110%</td>
</tr>
<tr>
<td>Vegetables</td>
<td>100</td>
<td>96±23</td>
<td>96%</td>
</tr>
<tr>
<td>Fruits</td>
<td>100</td>
<td>53±20</td>
<td>53%</td>
</tr>
<tr>
<td>Oil</td>
<td>20</td>
<td>33±7</td>
<td>165%</td>
</tr>
<tr>
<td>Sugar</td>
<td>20</td>
<td>20±7</td>
<td>100%</td>
</tr>
<tr>
<td>Milk &amp; Products</td>
<td>300</td>
<td>459±78</td>
<td>153%</td>
</tr>
</tbody>
</table>
maximum subjects and the frequency of consuming was two
to three times in a week. Butter and white bread were reported
to be consumed two or three times in a week by all subjects
where as 75% of the total subjects consumed juice, out of
which 28% had it daily.

Daily consumption of Bhujia was prevalent in
23.08% subjects. Chips were consumed by 9.62% subjects
daily and the average BMI of daily eaters was 21.86±2.3.
Around 15.38% subjects were munching chocolate daily with
average BMI of 21.49 (Table 3). Consumption of patties and
pastry was common among students. The subjects were
eating patties and pastry (8%, 11%) daily and their BMI
was 21.78±2.4, 23.42±2.8 respectively.

<table>
<thead>
<tr>
<th>Variable</th>
<th>No. of subjects (n=104)</th>
<th>% of subject</th>
<th>Average BMI ±SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bhujia</td>
<td>24</td>
<td>23.08</td>
<td>21.19±2.4</td>
</tr>
<tr>
<td>Chips</td>
<td>10</td>
<td>9.62</td>
<td>21.86±2.3</td>
</tr>
<tr>
<td>Chocolate</td>
<td>16</td>
<td>15.38</td>
<td>21.49±2.5</td>
</tr>
<tr>
<td>Patties</td>
<td>8</td>
<td>7.69</td>
<td>21.78±2.4</td>
</tr>
<tr>
<td>Pastry</td>
<td>11</td>
<td>10.58</td>
<td>23.42±2.8</td>
</tr>
</tbody>
</table>

The college students living away from home are
highly vulnerable to obesity. In Bangladesh 426 students
attending established private university were interviewed for
the prevalence of fast food consumption and obesity risk
determined by body mass index (BMI). Approximately 56% of
them went to fast food restaurants at least once per week
and 44 % went regularly (≥2 times/wk). Obesity was found
to be significantly associated with frequency of fast food
consumption (Goon et al. 2014). The intake of food items
bhujia, chips, chocolate, patties and pastry on daily basis
could be due to the monotonous menu being followed in
hostel mess.

In a study conducted by Sidhu and Prabhjot (2004)
in Punjab on 500 girls it was concluded that 51% were
normal, 28.2% overweight and 15% obese. They found that
the Body mass index (BMI) of the maximum subjects was
21.92 kg/m². In a study by Deshpande et al (2013), the burden
of overweight and obesity among college students in 18-25
years age group in Ujjain city was 17.4% underweight
(BMI<18.5), 37.7% normal (BMI-18.5-22.9).

A cross sectional study of 400 college going girls
aged 18-24 years from undergraduate and postgraduate
sections revealed that 23% of the subjects were either
overweight or obese (Thakkar et al., 2011).

Among respondents who reported going to fast-
food restaurants at least once per week, the reason for
choosing this type of restaurant was that it was quick and
convenient (41.9%), followed by taste of the food (30.6%),
sociability, and its good value in terms of cost statistically
highly significant correlation (P=0.01) between frequency
of consumption and BMI level (Goon et al., 2014).

Study conducted by Islam and Ullah (2010)
identified brand reputation, accessibility, taste, cost, quality,
food hygiene, and fat and cholesterol level as the factors
related to fast food preferences by the university students in
Bangladesh.

CONCLUSION

The sedentary lifestyle of modern society results
in of increasing overweight and obesity. Consuming fast food
does not represent its ill effects if the person is physically
active. However, consumption of fast foods should be
restricted as it is a cause of many non communicable diseases
associated with liver diseases, diabetes, cardio vascular
health and arthritis. Awareness should be created for
increasing physical activities in day to day life and reducing
fast food consumption.

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