

Fast Food Consumption Patterns and Childhood Overweight/Obesity in Dhaka City, Bangladesh

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Abstract

A descriptive cross-sectional study was carried out among 106 school going overweight and obese children (fifty boys and fifty-six girls) selected from four schools of Dhaka city. The aim of this study was to assess the overweight or obesity pattern among the children and their fast-food eating behavior. Samples were selected by simple random sampling during the time frame of September, 2017 to April, 2018. Data Analysis was conducted by using IBM SPSS 16.0. The average weight of the school children was 41.54 ± 9.65 kg, average height was 132.2 ± 10.82 cm and average Mid Upper Arm Circumference (MUAC) was 24.83 ± 2.8 cm. It was found that about 28.3% children were overweight, 55.7% children were obese and rest of the children were severely obese. The study revealed that about 21.7% children had consumed fast food every day in a week, about 40.6% children had fast-food 2-3 days weekly and 28.3% children had fast food 4-5 days in a week. Among the fast food items, Cake/Noodles/Pastry were consumed by 76.4% respondents, Chocolate/ Ice-cream by 67.9% respondents, Chips was consumed by 67.0% of the respondents and Burger/Pizza/Sandwich were consumed by 62.3% of the respondents. About 23.6% children preferred having nuggets, 17.9% children sweets, 12.3% children chicken ball and 7.5% children biriyani. It was also shown that about 36.8% children had fast-food as tiffin and at evening as snacks. It was observed that fast food eating pattern is highly prevalent among the overweight and obese school going children and this food habit need to be changed in order to prevent diabetes, high blood pressure, arthritis, high cholesterol level at adulthood.

Keywords: Childhood overweight/obesity, Fast food, Dhaka city, Bangladesh

Introduction

The world is facing over-nutrition or obesity, which is a part of double burden of malnutrition. Over the last decades, overweight and obesity have augmented extensively. It has been assessed that 170 million children are overweight¹. There has been a hasty socio-economic development and increased urbanization and westernization which have shifted the life styles and dietary patterns of population within the Asia and Pacific region. In children, the development of obesity is associated with the simultaneous deteriora

tion in chronic diseases risk profiles. The prevalence of overweight and obesity is associated with various factors like birth weight, parents' BMI, child's nighttime sleep duration, early solid foods initiation, lifestyle that includes decreased physical activity, increased media use, sedentary behavior in general and unfavorable changes in eating habits²⁻⁵.

Obesity is extremely common in high-income countries, and it has been declared as epidemic in many countries^{6,7}. Obesity is regarded as a major public health issue in the United States. Prevalence of

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overweight is about 60% among adults, and obesity prevalence is more than 30% among adults. Among children, prevalence of obesity is more than 17% in US^{8,9}. Obesity affects 23% of men and 25% of women in the United Kingdom. 5.5 percent of boys and 7.2 percent of girls between the ages of 2 and 15 are obese, while 22 percent of boys and 28 percent of girls are overweight¹⁰.

The prevalence of childhood obesity was found to be 10.8 percent in the most prosperous urban region in Thailand¹¹. The prevalence of obesity and overweight were found to be 6 percent and 8 percent respectively in Pakistan. Higher socio-economic status group was found to possess 70% of all obese children¹². It was also found in the literature that more than 22% of obese schoolchildren in India were from a higher socioeconomic status group¹³. In one study from Dhaka city, it was seen that among the school children and adolescent, 17.9% were obese and 23.6% overweight who belonged to an affluent family.¹⁴.

In Dhaka city, school going children eat a large amount of fast foods daily leading to develop childhood obesity. This study aims to determine the prevalence of childhood overweight and obesity along with other factors associated, in order to inform researchers and various decision makers about the double burden of disease in Dhaka. This study will make a significant contribution to the development of preventive measures for childhood overweight and obesity. The overall goal of this study was to determine the relationship between childhood obesity and overweight and fast-food intake along with other associated factors in elementary school children of Dhaka city. This study has determined the nutritional status of the young girls and boys through anthropometric measurement, to assess the consumption of the fast food and other food consumption score by using standard method, to determine the prevalence of obesity among different elementary school children in Dhaka city, to identify associated factors of overweight and obesity among elementary school children in Dhaka city.

Materials and methods

A descriptive cross-sectional study among the school going children was design during the time frame of September, 2017 to April, 2018. The four elementary schools such as Udayan High School (Fular Road), Bangladesh Bank High School (Motijheel), Rayhayn High School and College (Azimpur), and Mirpur Govt. High School (Mirpur) were selected as primary study locations. From each school, overweight and obese children were screened in every class from 1 to class 5. A total 208 students were screened as overweight or obese children. An informed verbal consent was obtained from the parents and class teachers prior to screening the children.

Sampling technique

Small sample size = n^f

$$\begin{aligned} n^f &= \frac{n}{1 + n/N} \\ &= \frac{217}{1 + 217/208} \\ n^f &= 106 \end{aligned}$$

Here,

$$n = Z^2 pq / d^2$$

N = Small sample population

p = the prevalence of overweight and obesity = 0.17

q = the prevalence of the well-nourished individual, = 0.83

Z = the value associated with 95% confidence interval = 1.96

d = 5% level of significance = 0.05

Therefore, 106 of class 1 to class 5 students were selected from different selected schools, among them 50 were boys and 56 were girls.

Inclusion and exclusion criteria

All of the respondents who were selected for the study were regular students attending class one to class five who were either overweight or obese regarding their nutritional status. On the other hand, subjects having following conditions were excluded: night time students,

any chronic disease, physical disability and mental illness. Students from class 6th - 10th were excluded.

Data collection tools and analysis

A semi-structured questionnaire was used to collect the data consisting of both open-ended and close-ended questions. All statistical analysis was conducted by using IBM SPSS statistics 16.0. Both descriptive statistics (frequency, percentage) and inferential statistics (Pearson Chi-square test) were used to obtain the results and findings.

Results and discussion

Table 1 shows the socio-demographic and socio-economic information of the respondents. It can be

seen that majority of the school children were Muslims. About 14% children were selected from class 1, about 19% from class 2, about 28% from class 3, about 10% from class 4 and rest of the students were from class 5. It was also observed that about 41% of the respondents' family size was only three, about 53% of the respondents' family size was four. Socio-economic information of the respondents shown that almost half of the respondents' father was wage earner, about 34% was involved in businesses and rest of them were involved in other types of occupational activities. In case of their mothers' occupation, majority of them was housewife (66%) and about 20% was wage earners. It was also observed that about 34% of the households' monthly income was twenty thousand BDT to forty thousand BDT.

Table 1. Percent distribution of the socio-demographic information of the respondents

| Variables | | Frequency (n) | Percentage (%) |
|---------------------------------------|------------------|---------------|----------------|
| Religion | Islam | 99 | 93.3 |
| | Hindu | 7 | 6.6 |
| Sex | Male | 50 | 47.16 |
| | Female | 56 | 52.84 |
| Class | One | 15 | 14.15 |
| | Two | 20 | 18.87 |
| | Three | 30 | 28.30 |
| | Four | 30 | 28.30 |
| | Five | 11 | 10.37 |
| Family Size | Three | 43 | 40.56 |
| | Four | 56 | 52.83 |
| | Five | 7 | 6.6 |
| Fathers' occupation | Business | 36 | 33.96 |
| | Wage earner | 55 | 51.89 |
| | Others | 15 | 14.15 |
| Mothers' occupation | Housewife | 70 | 66.04 |
| | Wage earner | 21 | 19.81 |
| | Business | 12 | 11.32 |
| | Others | 3 | 2.83 |
| Monthly household income (BDT) | < 20,000 | 24 | 22.64 |
| | 20,0001 - 40,000 | 36 | 33.96 |
| | 40,001 - 60,000 | 31 | 29.25 |
| | >60,000 | 17 | 16.03 |

Table 2 shows the average weight of the school children was 41.54 ± 9.65 kg, average height was 132.2 ± 10.82 cm and average Mid Upper Arm Circumference (MUAC) was (24.83 ± 2.80 cm). It was also found that about 28.3% children were overweight, 55.7% children were obese, and 16% children were severely obese among the screened children. This prevalence of overweight and obesity was found with a different figure such as 10% and 5%, respectively in a previous study¹⁵. Another study found that the prevalence of overweight and obesity was 9.5% and 3.5%, respectively¹⁶.

Figure 1 reveals that about 21.7% children had eaten fast food every day in a week, about 40.6% children had eaten fast-food 2-3 days weekly and 28.3% children had eaten fast food 4-5 days in a week. On the other hand, Figure 2 depicts that among the fast food items, Cake/Noodles/Pastry was consumed by 76.4% respondents, Chocolate/ Ice-cream was consumed by 67.9% respondents, Chips was consumed by 67.0% respondents and Burger/Pizza/Sandwich was consumed by 62.3% respondents.

Table 2. Anthropometric measurements and nutritional status of the selected children

| Anthropometric measurements | Mean | Standard Deviation |
|-----------------------------|---------------|--------------------|
| Weight (Kg) | 41.54 | 9.65 |
| Height (cm) | 132.2 | 10.82 |
| MUAC (cm) | 24.83 | 2.80 |
| Nutritional Status | Frequency (n) | Percentage (%) |
| Overweight | 30 | 28.3 |
| Obese | 59 | 55.7 |
| Severely Obese | 17 | 16.0 |

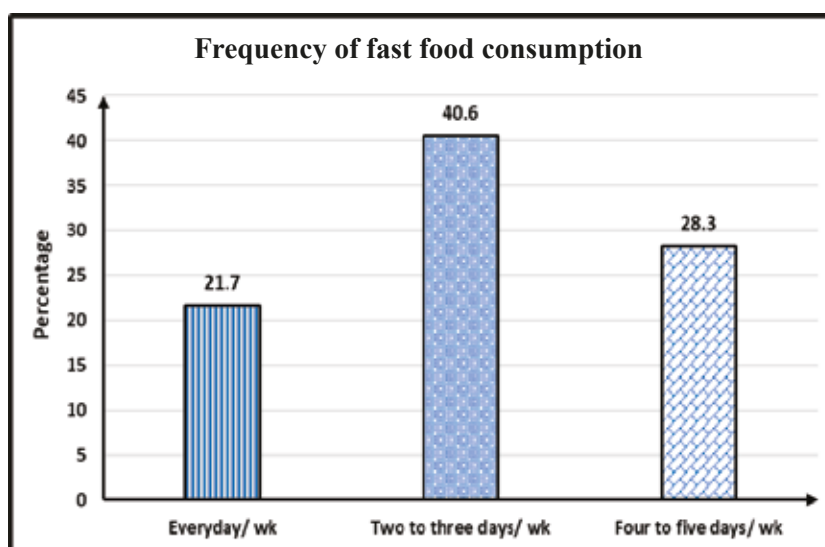


Figure 1. Frequency of fast food consumption among the children at last week

Figure 3 illustrates the preference of fast food items by the respondents. About 23.6% children preferred eating nuggets, 17.9% children preferred sweets, 12.3% children preferred chicken ball and 7.5% children preferred having biriyani. The present study also showed that about 36.8% children had taken fast-food both at tiffin in school and at evening snacks, whereas, 28.3% children had eaten fast food at tiffin, 25.5% children had eaten eat fast food at evening.

Table 3 shows the association between the obesity grade and the fast food eating place of the respondents. Pearson Chi-square test was conducted to see the association between the two categorical variables. It shows that among the three grades of obese respondents (85th - 95th percentile, >95th - 99th percentile, >99th percentile), the percentage of eating fast food outside the home were higher than that of eating at home.

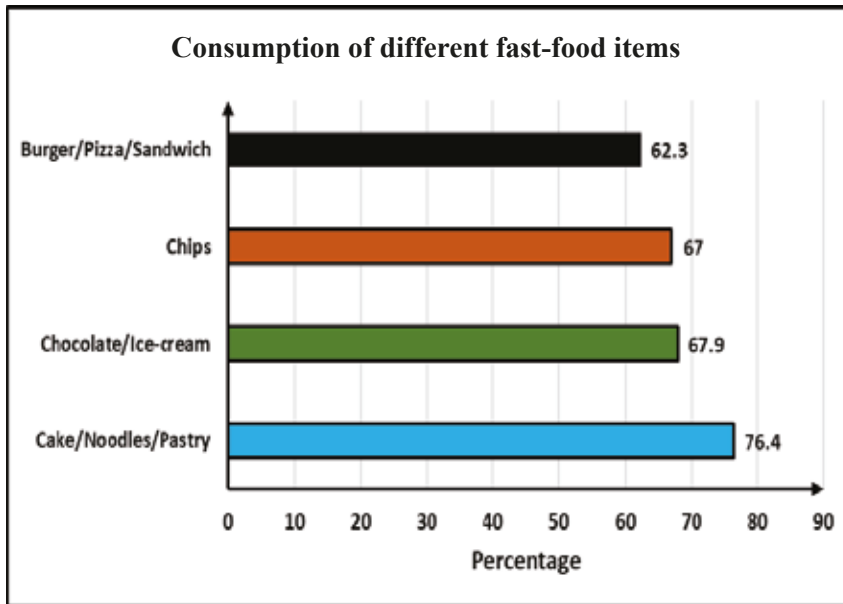


Figure 2. Consumption of different fast-food items during last week

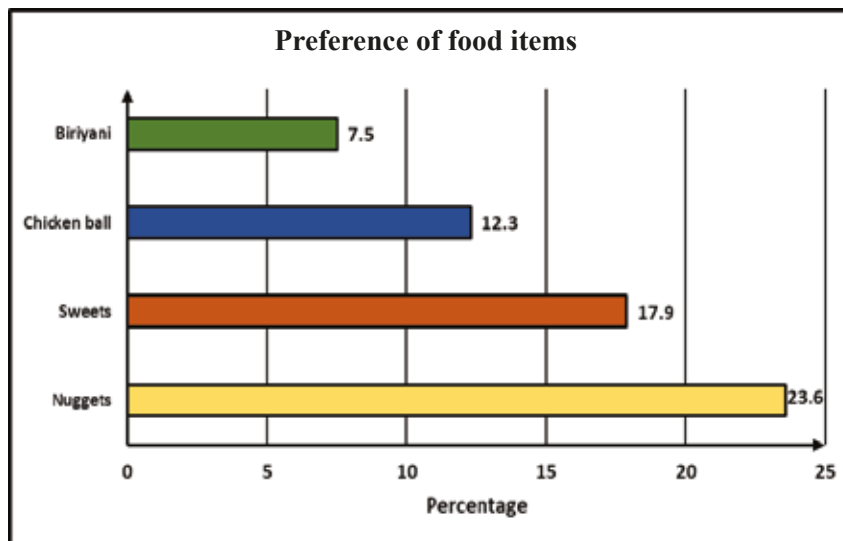


Figure 3. Preference of fast food items among the respondents

Table 3. The association between obesity grade and fast food eating place of the respondents

| Obesity Grade | Fast Food Eating Place | | p- value* |
|---|------------------------|------------------|-----------|
| | At home | Outside the home | |
| 85 th - 95 th percentile | 10 (33.3%) | 20 (66.6%) | <0.05 |
| >95 th - 99 th percentile | 24 (40.6.%) | 35 (59.3%) | |
| >99th percentile | 4 (23.5%) | 13 (76.4%) | |

*p-value was obtained from Pearson Chi-square test

In this study about maximum children eat fast-food 2-3 days in a week. The present study also displayed that maximum children eat fast-food both at tiffin & at evening snacks. Children generally eat fast-food from shop more than homemade fast-food. Results similar to this study were found in various studies¹⁷⁻²¹.

Limitations and strengths

Although sample size was estimated with a standard formula but larger sample size could be more nationally representative and could yield more statistically significant result. Further research with a larger sample size is highly recommended. Respondents were selected by following strict inclusion and exclusion criteria. Data

collectors were properly trained and data quality was ensured vigorously. Since data was limited regarding the current research topic, findings from this study might be useful for future research.

Conclusion

It was seen that fast food eating pattern was highly prevalent among the overweight and obese school going children and this food habit need to be changed to prevent diabetes, high blood pressure, arthritis, high cholesterol level and other complications of adulthood.

Conflict of interest

The authors declare that no conflict of interest exist.

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