



An assessment of characteristics of obese children: A review study in a tertiary care hospital

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Abstract

Introduction: Childhood obesity is a serious medical condition that affects children and adolescents. Children who are obese are above the normal weight for their age and height. The frequency of obesity has been differed potentially from country to country according to the socio-demographic levels. In reducing the increasing incidence of childhood obesity environmental approaches and population-based social strategies should be considered as effective initiatives.

Aim of the study: The aim of this study was to assess the characteristics of school going obese children of Dhaka metropolitan city.

Methods: This was a cross sectional study which was conducted in the Department of Pediatrics, Sir Salimullah Medical College & Mitford Hospital, Dhaka and some metropolitan school in Dhaka city, Bangladesh during 1 June 2009 to 28 February 2010 (9 months) on school going obese children (age 6 years to 18 years) of Dhaka metropolitan city. Sample size was 110 (one hundred and ten) and schools were selected first by purposive sampling and then students were selected by random sampling. Data were entered, coded, cleaned, and analyzed by using Statistical Package for Social Science (IBM SPSS), version 12.

Results: In analyzing the socio-demographic risk factors we found, among the participants 18(16.4%) were girls and 92(83.6%) were boys. 78.2% students lived with both parents (father and mother) and 21.8% students lived only with mother. Fifty percent parents have parents have education above graduation, 40% were Graduate, 6.4% has college education and 3.6% has secondary education. More than half of the families (56.4%) has income >20000/- and 43.6% income 10000-20000/.

Conclusion: In our study we found gender and food habit of the participants as the most potential factors for child obesity. The findings of this study may be helpful for the physicians in treating obese children and in further related studies.

Keywords: child, obesity, parental, risk factors

1. Introduction

Obesity is of concern because of adverse consequences in the short term and long term. The identification of risk factors is the key to prevention. Evidence on risk factors for childhood obesity is limited at present, although awareness is increasing for the importance of the environment in early life. Almost all recognized risk factors are potential rather than confirmed. The sustained economic growth and increasing stability in the Asian region over the last three decades has been accompanied by changing lifestyles, leading to significant changes in the food and nutrition issues facing Asian countries. The chronic diseases associated with excessive consumption of nutrients, especially fat, are becoming increasingly apparent. Effective data collection and analysis are essential to formulate and implement intervention programs to address the changing nutrition problems in Asia. Most previous studies on risk factors for obesity were carried out in abroad who failed to investigate the potential risk factors applicable for Bangladeshi obese children. To the best of our knowledge, there is no published study examining the risk factors of obesity among Bangladeshi obese children. An assessment of these risk factors will assist in understanding the factors that contribute to the obesity epidemic, and may lend support to certain intervention strategies. Therefore, the purpose of this study is to assess the risk factors of overweight/obesity among Bangladeshi obese children. These are the rationale which compelled me to carry out the proposed study.

2. Objectives

a) General objective

- To assess the characteristics obese school going children of Dhaka metropolitan city.

b) Specific objectives

- To identify the several risk factors of childhood obesity

3 Materials & methods

This was a cross sectional study which was conducted in the Department of Department of Pediatrics, Sir Salimullah Medical College & Mitford Hospital, Dhaka and some metropolitan school in Dhaka city, Bangladesh during 1 June 2008 to 28 February 2009 (9 months) school going obese children (age 6 years to 18 years) of Dhaka Metropolitan city. Sample size 110 (one hundred and ten) and Schools were selected first by purposive sampling and then students were selected by random sampling.

Inclusion criteria

- Children of either sex of >95th percentile of BMI chart
- Age-6-18 years
- Habitants of Dhaka Metropolitan city.

Exclusion criteria

- Child unwilling to give informed consent or parents/head of the institute unwilling to give consent.
- Child taking systemic steroid or diuretics for any cause
- Child suffering from any of the following diseases.

At first 10 (ten) schools with primary and secondary wings in Dhaka metropolitan city were selected purposively. 3 obese students who fulfilled the inclusion and exclusion criteria were recruited from each class with a total of 30 students per school. 11 students were further selected from these 30 students by random sampling (lottery method). By this procedure total 110 students were recruited from 10 schools. Informed written consent was taken from parents/head of the institute for their children/students to participate. In case of students above the age of 12 years consent were also taken from the regarding participating in the study. History was taken and full physical examination was done to exclude or include the participants. Data regarding different putative risk factors were collected from a pre-structured questionnaires completed by the parents or student himself. We measured standing height by a stadiometer to the nearest 0.1 cm after the removal of the students' shoes. We measured body weight of the child with minimum clothing on calibrated digital weight machine to the nearest 0.1 kg. We also measured waist circumference with a measuring tape. From these values body mass index were calculated [BMI=weight (kg)/height (M)²]. We defined obesity as a body mass index equal to or greater than the 95th centile. This definition has high specificity and moderate sensitivity for identifying the children with highest body fat percentage. The structured questionnaire gathers information on both dietary intake and habits pertaining to meantime behaviors. It also included validated questions on the frequency of physical activities and the number of hours of sedentary activities (watching television, working on computer, playing video games). Information on socio-demographic factors was taken from structured questionnaires with income and maternal educational status. We classified risk factors into 4 groups- dietary habits, physical activities, socio-demographic and school-based factors. After collection data were checked meticulously. Then data were analyzed by computer based program SPSS (Statistical Package for Social Science) 12 for windows.

4 Results

The mean (±SD) age of the total participants was 12.6 (±2.5) years as well as the mean (±SD) height and weight of the total participants was 146.9 (±15.45) cm and 64.17 (±18.28) kg respectively. On the other hand, the mean (±SD) BMI of the total participants was 28.67 (±3.2). According to the gender, the mean (±SD) age of the girls was 11.2 (±2.9) years whereas the mean (±SD) height and weight of the girls were 142.4 (±12.2) cm and 59.7 (±16.7) kg respectively. Besides these, the mean (±SD) BMI of the girls was 27.8 (±3.4). On the other hand, the mean (±SD) age of the boys was 12.7(±2.5) years whereas the mean (±SD) height and weight of the boys were 147.8(±15.9) cm and 65.1(±18.5) kg respectively. Besides these, the mean (±SD) BMI of the boys was 28.8 (±3.2) with a minimum of 21 and maximum of 34. In this study, according to the gender distribution we found, 83.6% were male whereas 16.4% were female. The mean (±SD) waist circumference of the children was 84.1(±11.99) cm. According to the food habit of the participants we found, almost three-quarters of children (74.5%) took egg and 2/3 of children took sugar (64.5%). Almost half of the participants took bread (52.7%) and butter (50.9%). Jam, jelly and parata were taken by 40%, 45.5% and 29.1% of participants respectively. Only 16.4% children ate meat and 3.6% ate rice

in breakfast. In this study we found, most of the children (80%) brought lunch from home, 15.5% brought lunch from school canteen and 4.5% did not eat lunch. Almost half of the children 48.2% took 3-4 times family supper in a week. 30% children took family supper 1-2 times a week and rest (21.8%) of them took ≥5 times a week. In total 42,7% children took 3-4 times supper in front of television in a week. 30.9% and 26.4% took ≥5 times and 1-2 times per week respectively. Almost half of the children had fast food 1-2 time/wk (49.1%) and ≥3 times/wk (47.3%). Only 3.6% took fast food less than once a week. On the other hand, almost three-quarter of participants (73.6%) attended in physical activity less than twice a week and only 25.5% attended 3-7times a week. 1 child (0.9%) participated more than 7 times a week. About half of the participants (52.7%) spent 4-6 hours, 36.4% spent >6 hours a day in sedentary activity. 10.9% children wasted ≤hours/day in sedentary activity. Fifty percent students traveled to school by driven <30 min 27.3% driven ≥30min and rest (22.7%) traveled to school by walking or by ridding on a bike. In analyzing the socio-demographic risk factors we found, among the participants 18(16.4%) were girls and 92(83.6%) were boys. 78.2% students lived with both parents (father and mother) and 21.8% students lived only with mother. Fifty percent parents have parents have education above graduation, 40% were Graduate, 6.4% has college education and 3.6% has secondary education. More than half of the families (56.4%) has income>20000/- and 43.6% income 10000-20000/-.

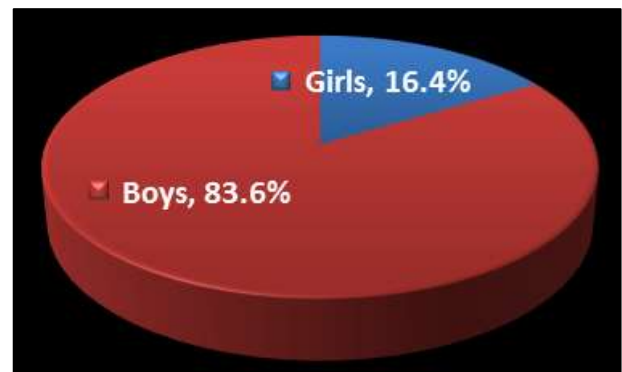


Fig 1: Gender distribution (n=110)

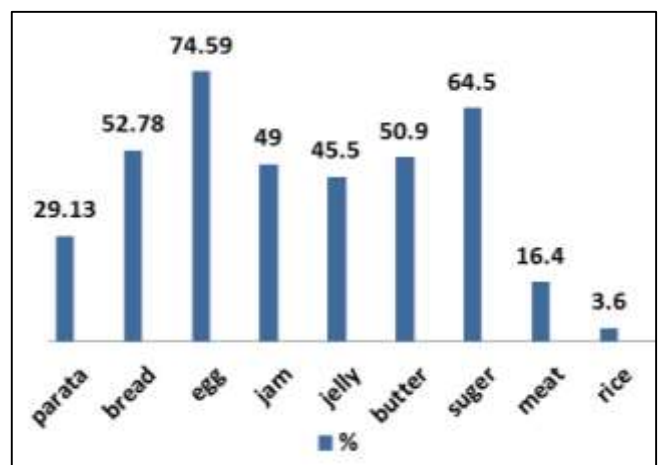


Fig 2: Showing menu in breakfast taken by the participants (n=110).

Table 1: Distribution of children by dietary habit related risk factors (n=110)

Table 1

Food habit		n	%
Lunch	Bring from home	88	80
	Buy at school	17	15.45
	Does not eat	5	4.55
Family supper	1-2 times/ wk	33	30
	3-4 times/ wk	53	48.18
	≥5 times/ wk	24	21.82
Supper in front of television	1-2 times/ wk	29	26.36
	3-4 times/ wk	47	42.73
	≥5 times/ wk	34	30.91
Fast food	<Once/ wk	4	3.64
	1-2 times/ wk	54	49.09
	≥3 times/wk	52	47.27

Table 2: Distribution to the children by activity related risk factors for obesity (n=110)

Physical activity		n	%
Participation in physical activity	≤twice/wk.	81	73.6
	>2 and 7 times/wk.	26	25.5
	>7 times /wk.	1	0.9
Participation in secondary activity	≤ 3hr/d	12	10.9
	>3 and 6 hr./d	58	52.7
	>6 hr./d	40	36.4
Travel to and from school	walk or bike	25	22.7
	Driven<30min	55	50
	Driven≥30min	30	27.3

Table 3: Distribution of children socio-demographic risk factors for obesity (n=110)

Socio-demographic factors		n	%
sex	Girls	18	16.36
	Boys	92	83.64
Live with	Both Parents	86	78.18
	Mother	24	21.82
Paternal education	Secondary education	4	3.64
	College education	7	6.36
	Graduation	44	40
	Above	55	50
Paternal income	10000-20000	48	43.64
	>20000	62	56.36

5. Discussion

The present study intended to find out the risk factors for obesity in childhood. The study evaluated four groups of risk factors; they are: a) dietary habit related factors which included menu of family suppers, uppers in front of television, and fast food. b) Activity related risk factors including participation in physical activity, in sedentary activity and transformation to the school either by walking or driven. c) Socio demographic related risk factors like gender, paternal education and income. d) School based risk factors including provision of lunch from school, frequency of physical education classed and financial restraints for equipment. The present study revealed that most of the children took egg in their breakfast and substantial number of them also took sugar, bread, jam, jelly. Almost half of the children had family supper 3-4 times a week in front of television, took fast food ≥3 times a week. Only a quarter of children took part in physical activity twice a week. Only 22, 7% students traveled to school by walking or riding on a bike.

About half of the participants spent 4-6 hours in sedentary activity. The comparative study among boys and girls showed that boy took butter more in breakfast than girls, whereas girls took jam & jelly more (p<0.05). The comparative study among low and high income group parents that high income group of parents had significantly higher educational status than low income group parents. The findings of the present study are supported by Tremblay and Williams (2003) Veugelers and Fitzgerald (2005) [5] and Kelishadi (2007) [2]. A study by Tremblay and Williams (2003) described that automated labour saving devices and inexpensive and easy access to calorie-dense food create an environment conducive to obesity. Obese children may be prone to living a more sedentary style and to participating in less physical work.⁵ Geographic and socioeconomic gradients and children life type, including physical and sedentary activities are risk factors for overweight and obesity. Most recently Swinburn and colleagues identified risk factors significantly related to parents, family and school [3]. Encouraging physical activity and healthy dietary habits, such as increasing fiber intake reducing the consumption of junk foods and saturated fat and increasing levels of physical activity starting in childhood, may have important effects on public health [2]. The present study found that the children of high income group parents participate significantly less in physical activity and traveled less to & from school by walking (p>0.05), though taking part in sedentary activity were similar in both the groups. This observation in supported by Kopelman and Grace (2004) [12], Pietainen *et al* (2008), and Reily *et al* (2005) [4]. Kopelman and grace (2004) [12] reported that physical exercise three or more times each week had on average lost weight. By contrast, those who undertook little physical activity gained weight and had twice the risk of gaining 5 kg or more. Among children in USA, the relative risk of obesity is 5.3 times greater for children in the USA, the relative risk of obesity is 5.3 times greater for children who watch television for five hours or more each day compared with those children who watch for less than two hours [12]. Pietainen *et al* (2008) described that physical inactive life style triggers with gain and vice versa independent of genetic effects [16]. Reily *et al* stated that more than 8 hours of watching per week is one of the putative factors of obesity⁴. One important finding is that almost fifty percent of parents of obese students had education above graduation and income >20000/-. This finding is not consistent with Plourde (2006) [1]. He described that risk factors for pediatric obesity are lower socio-economic status, uneducated parents, single mother household and low income families [1].

7. Limitations of the study

This was a cross-sectional single centered observatory study with a small sample size of sample. So the findings of this study may not reflect the exact scenario of the whole nation.

8. Conclusion and recommendations

The increasing incidence of overweight and obesity has become a global epidemic. Children in families of high income have high prevalence of obesity. Besides this, Father’s occupation as well as family history is also some potential factors we found. The findings of this study may be helpful for the physicians in treating obese children and in further related studies.

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