

## An Evaluation of Parental Socio-Demographic Status in Childhood Obesity

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### Abstract

### Original Research Article

**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 relation of childhood obesity with parental socio-demographic status of the respective children. **Methods:** This was a cross sectional study which was conducted in the Department of Pediatric Endocrinology and Metabolic Disorder (outdoor unit), Dhaka Shishu (Children) Hospital, Dhaka, Bangladesh in the mentioned hospital were finalized as the study population. Study period Feb-2018 to Jan-2019 and Total Study participants was (n=124). More than 18 or less than 3 years' old children were excluded from the study. Data was entered, coded, cleaned, and analyzed by using Statistical Package for Social Science (IBM SPSS), version 20. **Results:** In our study we found, the highest number, 63 (50.81%) fathers of the participants were business among 124. Then 28 (22.58%) were service, 19 were farming holders which was 15.32%, 11 were day laborer which was 8.87% and only 3 were unemployed which was 2.42% among 124 in total. On the other hand, the highest number, 83 (66.94%) mothers of the participants were housewives among 124. Then 11 were businessmen which were 8.87%, 10 were service holders which was 8.06%, 7 were day farmers which was 5.65% and 13 were day laborer which was 10.48% among 124 in total. In analyzing the family income of the participants we found the highest 58, (46.77%) were from such family whose monthly income was 1, 00,000 – 5, 00,000 BDT per month. Besides this, 37 (29.84%) were from the families whose monthly income was 30,000-10, 0000 BDT per month and only 29 (23.34%) were from the families whose monthly income was less than 30,000 BDT per month. Endocrine causes of obesity where Out of 124 participants 4 was endogenous others 120 was exogenous. Out of 124 participants 110 was urban and 14 was rural population. **Conclusion:** In our study we found monthly family income and family history 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 farther related studies.

**Keywords:** Child, Obesity, Socio-demographic, Parental.

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## INTRODUCTION

Overweight and obesity are major risk factors for a number of chronic diseases, including diabetes, cardiovascular diseases and cancer. Obesity in children and adolescents is gradually becoming a major public health problem in many developing countries, including India [1]. 'One-half of obese school children become obese adults. However, whether or not obesity persists into adulthood, obesity in childhood appears to increase the risk of subsequent morbidity [2]. In today's world, the increasing incidence of overweight and obesity is

observed in almost all regions of the world. However, the developed countries are the major ones that are affected by this health issue<sup>3</sup>. The "National Health and Nutrition Examination Survey" (NHANES) in the United States indicated that there is an increasing incidence of childhood as well as adult obesity among the populated countries<sup>4</sup>. Among the children aged between two to five years, the incidence of childhood obesity is reported to be increased from 5% to 18.8% [5]. In 2013, approximately 23.0% and 14.0% of Chinese boys and girls aged 2–19 years were overweight or obese [6]. Moreover, in China, the

childhood obesity is increased from 6.4% in 1991 to 7.7% in 1997 and India from 16% in 2002 to 24% in 2007 [7-9]. As reported in the region of Middle East, the national surveillance in the United Arab Emirates (UAE) indicated that the incidence of overweight and obesity among children has reached up to 21.5% and 13.7%, respectively. All children indicated in this report were aged between 5 to 17 years [10]. Another research among Lebanese children aged between 6 and 8 years indicated the frequency of obesity as 6.5% and overweight as 25.5% [11]. There are very few interventions had been conducted in Bangladesh. So the local data regarding this issue is very limited. Nevertheless, there is still a lack of case reporting on this public health issue. In 1998, a national survey was conducted which figured out that around 27.4% of Saudi children aged 1-18 years were overweight and 10.4% were obese<sup>3</sup>. Approximately, 42 million children under 5 years of age were overweight or obese according to the World Health Organization (WHO) estimates presented in the year 2010 [12]. In general, the overweight or obesity is a foremost risk factor for non-communicable diseases (NCDs), and it is predictable that three-quarter of all deaths in developing countries will be attributed to NCDs by the year 2020 [13]. Although the awareness regarding childhood obesity among parents and respective institution of Bangladesh is not so high but the prevalence of obesity among children in the United States has been well documented [14], less is known about obesity incidence. Prevalence of obesity for a given age group is a composite of preceding and concurrent incidence and remission for children. Along the development of these diseases, obesity may have a negative impact on the personality development of children. Overweight and obese children are at risk of increase in the danger of mortality of teenagers and adolescents. In addition to the chronic diseases, there are other metabolic, hereditary, natural, and behavioral influences and it is additionally linked with financial status; as people in the contemporary world are generally influenced by physical appearance. In this regard, a number of researches have been conducted all over the world, in the course of recent decades recommend that the development of obesity as well as overweight influences self-esteem of school going children. Detailing age-specific obesity incidence is important for elucidating peak periods of obesity onset to identify and maximize intervention opportunities and minimize healthcare costs. Tracking of childhood obesity into adulthood calls for intervention efforts to prevent obesity that are timed to precede onset, and age-specific incidence estimates contribute to this perspective [15, 16]. Estimating incidence for racial, ethnic, and socioeconomic groups may be useful for understanding the disparities in obesity that have been observed across age groups [17]. We present results from a systematic review of studies that have estimated the incidence of obesity among children in the United States.

## OBJECTIVES

### a) General objective:

- To evaluate the socio-demographic status of obese children in Bangladesh

### b) Specific objectives:

- To observe the present status of childhood obesity in Bangladesh

## MATERIALS & METHODS

This was a cross sectional study which was conducted in the Department of Pediatric Endocrinology and Metabolic Disorder (outdoor unit), Dhaka Shishu (Children) Hospital, Dhaka, Bangladesh in the mentioned hospital were finalized as the study population. More than 18 or less than 3 years' old children were excluded from the study. Data was entered, coded, cleaned, and analyzed by using Statistical Package for Social Science (IBM SPSS), version 20. The analysis was done by testing the significance difference of BMI (sds and kg/m<sup>2</sup>) mean among many factors. Firstly, parental factor was emphasized, including parental socio-economic status, occupation, and education. Secondly, with other factors related to children such as child's eating habits, spending hours in front TV, frequency of exercising, age, current health status and issues such as diabetes, and accessibility and frequency of use of internet. Finally, the family history factor was considered. All the relations were tested by one way ANOVA for nominal variable more than two categories and independent sample t-test for the nominal variables with two categories after we assumed that the data followed normal distribution depended on normal curve and excluded some outliers of continuous variable. Simple descriptive statistics are reported as proportions for qualitative variables such as frequencies and percentages of child's eating habits and grads also of prenatal information. In addition, statistics are reported as mean and standard deviation for quantitative variables, such as the mean of BMI  $\pm$  SD ( $25.7 \pm 4.1$ ) kg/m<sup>2</sup>. The results were considered too significant with  $P < 0.05$ . The data were collected by conducting non-interventional clinical interviews with children and their parents after verbal consent been taken. The total time taken to complete the interview was 15-20 minutes. Parents and child demographic data were collected. Monthly household income, occupation, educational status, physical activities and food habit of the children were also reported. Occupation was classified into employed, unemployed, or retired. The child's measurements, including weight and height were measured using weight/height scale and body mass index (BMI) calculated as weight/height<sup>2</sup> (kg/m<sup>2</sup>). According to World Health Organization, it was presented as "Overweight:  $>+1SD$  (equivalent to BMI 25 kg/m<sup>2</sup> at 19 years), Obesity:  $>+2SD$  (equivalent to BMI 30 kg/m<sup>2</sup> at 19 years)" O17. This study also concentrated on collecting information from

participants about what they eat and what are their habits of their food consumption by asking them about the numbers of main meals per day. It includes whether the child eats with the rest of the family, breakfast usually prepared at home or school canteen, number of snacks per day, does the child prefer healthy snacks, type of snacks such as chips, chocolate, ice cream, fruits and vegetables or mixed kinds of snack. It also inquired about the number of times the child's eats fast food per week and asked the parents if they have any concern on their child's appetite and how often do they provide fruits and vegetables at home. The physical activity and type of life style has an important role as other causes of obesity. This study collected information about attitude and behavior related to healthy eating and was assisted through the survey.

#### Inclusion Criteria

- All are follow up patients
- Age between 3-18 years

#### Exclusion Criteria

- Age More than 18 years
- Age Less than 3 year

## RESULTS

In this study 124 children with obesity aged between 3 to 18 years were selected as the total study population. Among the total population 68 (54.84%) were male and 56 (45.16%) were female. The mean age was  $9.88 \pm 0.60$  years. According to the age, the number of children 3-6 years was 12 (9.68%), age from 6-12 years old was 77 (62.10%), and 12-18 years old was 35 (28.23%). The mean height of the participants was  $134.25 \pm 13.62$  cm and the mean weight was  $61.20 \pm 15.25$  Kg. In our study we found the mean body mass index (BMI) of the participants was  $28.25 \pm 2.84$  Kg/m<sup>2</sup>. In our study among the total 124 participants we found the highest number of them were living with their parents and it was 87.10% (n=108). Then 13 (10.48%) were living with their mothers or fathers and only 3 (2.42%) were living with others than parents. On the other hand, in analyzing the educational status of the mothers of the participants we found the highest number 54 (43.55%) of mother were Higher Secondary level educated followed by 36 (29.03%) were Graduations and above and 34 (27.42%) were at least Primary level educated. Besides these, in analyzing the educational status of the Fathers of the participants we found the highest number 52 (41.94%) of father were Secondary level educated followed by 45 (36.29%) were Graduation and above level educated, and 27 (21.77%) were at least primary level educated. In our study we found, the highest number, 63 (50.81%) fathers of the participants were business among 124. Then 28 (22.58%) were service, 19 were farming holders which was 15.32%, 11 were day laborer which was 8.87% and only 3 were unemployed which was 2.42% among 124 in total. On the other hand, the

highest number, 83 (66.94%) mothers of the participants were housewives among 124. Then 11 were businessmen which were 8.87%, 10 were service holders which was 8.06%, 7 were day farmers which was 5.65% and 13 were day laborer which was 10.48% among 124 in total. In analyzing the family income of the participants we found the highest 58, (46.77%) were from such family whose monthly income was 1, 00,000 – 5, 00,000 BDT per month. Besides this, 37 (29.84%) were from the families whose monthly income was 30,000-10, 0000 BDT per month and only 29 (23.34%) were from the families whose monthly income was less than 30,000 BDT per month. Endocrine causes of obesity where Out of 124 participants 4 was endogenous others 120 was exogenous. Out of 124 participants 110 was urban and 14 was rural population. On the other hand, in our study we found 76, (61.29%) cases with family history of obesity and 48, (38.71%) without any family history of obesity. In analyzing BMI scores of the participants we found, there were significant co-relation of childhood obesity with the gender, family income and family history of obesity where the p-value were <0.05.

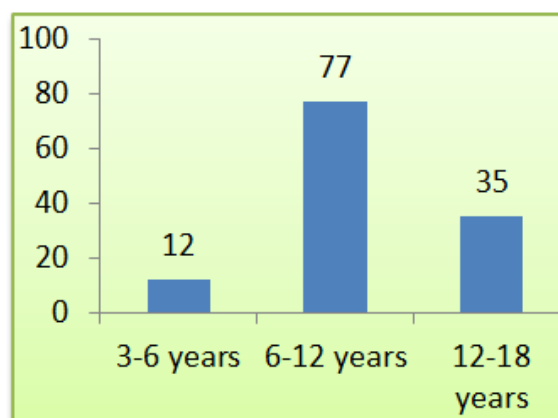


Fig-1: Age distribution of participants in year (n=124)

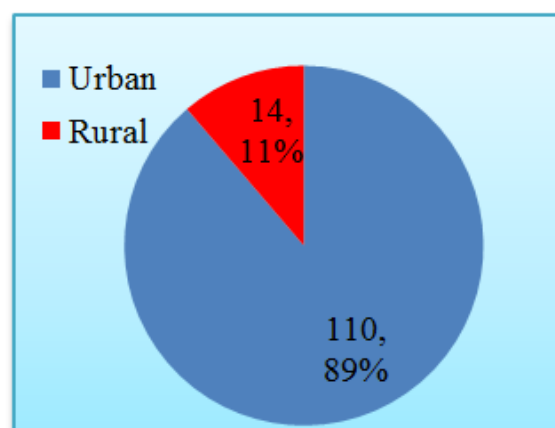


Fig-2: Residential of respondents (n=124)

Table-1: Endocrine causes of obesity (n=124)

Physical parameter	n	%
Exogenous	120	96.77%
Endogenous	4	3.23%

**Table-2: Socio-demographic status of participants (n=124)**

Components	Patterns	n	%
Child living with (n=124)	With Parents	108	87.10
	With Father or Mother	13	10.48
	With others	3	2.42
Mother's education (n=124)	Primary level educated	34	27.42
	Secondary level educated	54	43.55
	Graduating and above	36	29.03
Father's education (n=124)	Primary level educated	27	21.77
	Secondary level educated	52	41.94
	Graduating and above	45	36.29
Father's occupation (n=124)	Business	63	50.81
	Service	28	22.58
	Farming	19	15.32
	Day laborer	11	8.87
	Unemployed	3	2.42
Mother's occupation (n=124)	Business	11	8.87
	Service	10	8.06
	Farming	7	5.65
	Day laborer	13	10.48
	Household works	83	66.94

**Table-3: Family income and history of obesity of participants (n=124)**

Component	n	%
<b>Family income</b>		
<30,000 BDT/Month	29	23.39
30,000-1,00,000BDT/Month	37	29.84
1,00,000-5,00,000 BDT/Month	58	46.77
<b>Family history of obesity</b>		
Yes	76	61.29
No	48	38.71

**Table-4: Association of body mass index with socioeconomic status of the participants (124)**

Characteristics	Groups	Overweight (n=36)		Obese (n=88)		p-value
		n	%	n	%	
Gender	Male	21	58.33	47	53.41	0.031
	Female	15	41.67	41	46.59	
Age	3-6 years	5	13.89	7	7.95	0.154
	6-12 years	17	47.22	60	68.18	
	12-18 years	14	38.89	21	23.86	
Child living with (n=124)	With Parents	30	83.33	77	87.5	0.094
	With Father or Mother	5	13.89	9	10.23	
	With others	1	2.78	2	2.27	
Mother's education (n=124)	Primary level educated	9	25.00	25	28.41	0.087
	Secondary level educated	16	44.44	38	43.18	
	Graduating and above	11	30.56	25	28.41	
Father's education (n=124)	Primary level educated	7	19.44	20	22.73	0.091
	Secondary level educated	13	36.11	39	44.32	
	Graduating and above	16	44.44	29	32.95	
Father's occupation (n=124)	Business	17	47.22	46	52.27	0.127
	Service	8	22.22	20	22.73	
	Farming	7	19.44	12	13.64	
	Day laborer	3	8.33	8	9.09	
	Unemployed	1	2.78	2	2.27	
Mother's occupation (n=124)	Business	3	8.33	8	9.09	0.075
	Service	3	8.33	7	7.95	
	Farming	2	5.56	5	5.68	
	Day laborer	4	11.11	9	10.23	
	Household works	24	66.67	59	67.05	
Family income	<30,000 BDT/Month	8	22.22	21	23.86	0.008
	30,000-1,00,000BDT/Month	12	33.33	25	28.41	
	1,00,000-5,00,000 BDT/Month	16	44.44	42	47.73	
Family history	Yes	23	63.89	53	60.23	0.007
	No	13	36.11	35	39.77	

## DISCUSSION

1. The aim of this study was to assess the relation of childhood obesity with parental socio-demographic status of the respective children. In our study the total study population was 124, including 68 (53.97%) male and 58 (46.03%) female children aged between 3 to 18 years. In this study we found 21 (55.26%) of male children were overweight and 15 (44.74%) of female children were overweight, while 47(53.41%) of male children were obese and 41(46.59%) of female children were obese. Our study was conducted on only the children with overweight and obesity. But among all children the indications of others studies identified that incidence of overweight among male children aged were 3-6 years overweight 5 (13.89%) and obese was 7 (7.95%), 6-12 years overweight was 17 (47.22%) and obese was 60 (68.18%) while the remaining group 12-18 years overweight 14 (38.89%) and obese was 21 (23.86%). This predominance rate is higher than the estimations presented by El-Hazmi and Warsy [18], who led a cross-sectional national epidemiological family unit review in various regions of Saudi Arabia from 1994 to 1998. Their study included 12,071 children (male children 6,281; female children 6,420), with ages ranging from 1 to 18 years. The predominance of overweight among male children aged between 6 to 12 years was 8.6% while the frequency of obesity was 4.9 percent. This clear addition could reflect more degeneration in the public health status in Saudi Arabia with respect to childhood obesity, which demonstrates a requirement for a strong and influential policy reinforcement to solve this health issue [19]. In our study we found, the highest number, 63 (50.81%) fathers of the participants were business among 124. Then 28 (22.58%) were service, 19 were farming holders which was 15.32%, 11 were day laborer which was 8.87% and only 3 were unemployed which was 2.42% among 124 in total.

On the other hand, the highest number, 83 (66.94%) mothers of the participants were housewives among 124. Then 11 were businessmen which were 8.87%, 10 were service holders which was 8.06%, 7 were day farmers which was 5.65% and 13 were day laborer which was 10.48% among 124 in total. In analyzing the family income of the participants we found the highest 58, (46.77%) were from such family whose monthly income was 1, 00,000 – 5, 00,000 BDT per month. Besides this, 37 (29.84%) were from the families whose monthly income was 30,000-10, 0000 BDT per month and only 29 (23.34%) were from the families whose monthly income was less than 30,000 BDT per month. Here family income had shown a significant correlation with childhood obesity where p value was 0.008. But the quantity of studies that has been conducted in most of the developing countries that concentrated on the association between obesity and socioeconomic status is insignificant [20]. Besides these, it has been indicated that the relationship among obesity and

SES is evident, which is also observed according to the past studies as mention in this research [21]. Another examination was done on 1072 children in Saudi Arabia, 14.9% out of them were obese, 95% of the children having high family income [22]. Additionally, in less industrialized nations, for example, Brazil and China, the predominance of overweight and obesity is particularly more noteworthy in families that have high wages [23]. Endocrine causes of obesity where Out of 124 participants 4 was endogenous others 120 was exogenous. Out of 124 participants 110 was urban and 14 was rural population. Although we did not get any co relation of parental education and employment with childhood obesity but in a study they stated, the children with independently employed mothers who work more hours outside their homes may presumably invest less energy with their children [24]. In our study we found monthly family income and family history of the participants as the most potential factors for child obesity.

## 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.

## 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 farther related studies.

## REFERENCES

1. Popkin BM, Doak CM. The obesity epidemic is a worldwide phenomenon. *Nutrition reviews*. 1998 Apr 1;56(4):106-14.
2. Kipping RR, Jago R, Lawlor DA. Clinical Review- Obesity in children. Part 1: Epidemiology, measurement, risk factors and screening. *BMJ CR-print*, 2008; 337(7675):922.
3. Chu NF. Prevalence of obesity and its comorbidities among schoolchildren in Taiwan. *Asia Pacific Journal of Clinical Nutrition*. 2007 Jul 1;16:601-607.
4. Al Shehri A, Al Fattani A, Al Alwan I. Obesity among Saudi children. *Saudi Journal of Obesity*. 2013; 1(1):3.
5. Al-Enazy WH, Al Dahi SK, Al Hariri IM. Prevalence of overweight and obesity among Saudi primary school students in Tabuk, Saudi Arabia. *Saudi journal of obesity*. 2014; 2(1):13.
6. Tremblay MS, Willms JD. Secular trends in the body mass index of Canadian children. *Canadian Medical Association Journal*. 2000; 163(11):1429-

- 1433.
7. Kelishadi R. Childhood overweight, obesity, and the metabolic syndrome in developing countries. *Epidemiologic reviews*. 2007; 29(1):62-76.
  8. Ng M, Fleming T, Robinson M, Thomson B, Graetz N, Margono C, Mullany EC, Biryukov S, Abbafati C, Abera SF, Abraham JP. Global, regional, and national prevalence of overweight and obesity in children and adults during 1980–2013: a systematic analysis for the Global Burden of Disease Study 2013. *The lancet*. 2014 Aug 30;384(9945):766-81.
  9. Wang Y, Lobstein TIM. Worldwide trends in childhood overweight and obesity. *Pediatric Obesity*. 2006; 1(1):11-25.
  10. Malik M, Bakir A. Prevalence of overweight and obesity among children in the United Arab Emirates. *Obesity reviews*. 2007; 8(1):15-20.
  11. Jabre P, Sikias P, Khater- Menassa B, Baddoura R, Awada H. Overweight children in Beirut: prevalence estimates and characteristics. *Child: care, health and development*. 2005; 31(2):159-165.
  12. GAP. Global Action Plan for the Prevention and Control of Non-communicable Diseases Iii who Library Cataloguing-In-Publication Data. 2013 Available from:[www.who.int/about/licensing/copyright\\_for\\_m/en/in dex.h tml](http://www.who.int/about/licensing/copyright_for_m/en/in dex.h tml), 2017.
  13. Brownell KD, Kaye FS. A school-based behavior modification, nutrition education, and physical activity program for obese children. *The American journal of clinical nutrition*. 1982; 35(2):277-283.
  14. WHO Obesity and overweight. WHO Internet from: <http://www.who.int/mediacentre/factsheets/fs311/en>, 2017.
  15. Singh GK, Siahpush M, Kogan MD. Rising social inequalities in US childhood obesity, 2003-2007. *Annals of epidemiology*. 2010; 20(1):40-52.
  16. Ogden CL, Flegal KM, Carroll MD, Johnson CL. Prevalence and trends in overweight among US children and adolescents, 1999-2000. *Jama*. 2002 Oct 9;288(14):1728-32.
  17. Luttikhuis HO, Baur L, Jansen H, Shrewsbury VA, O'Malley C, Stolck RP, Summerbell CD. Interventions for treating obesity in children. *Cochrane database of systematic reviews*. 2009(1).
  18. Singh AS, Mulder C, Twisk JW, Van Mechelen W, Chinapaw MJ. Tracking of childhood overweight into adulthood: a systematic review of the literature. *Obesity reviews*. 2008 Sep;9(5):474-88.
  19. Wright CM, Emmett PM, Ness AR, Reilly JJ, Sherriff A. Tracking of obesity and body fatness through mid-childhood. *Archives of disease in childhood*. 2010 Aug 1;95(8):612-7.
  20. Wang Y. Cross-national comparison of childhood obesity: the epidemic and the relationship between obesity and socioeconomic status. *International journal of epidemiology*. 2001; 30(5):1129-1136.
  21. Al-Nuaim AR, Bamgboye EA, Al-Herbish A. The pattern of growth and obesity in Saudi Arabian male school children. *International journal of obesity and related metabolic disorders: journal of the International Association for the Study of Obesity*. 1996; 20(11):1000- 1005.
  22. Xiao Y, Zhao N, Wang H, Zhang J, He Q, Su D, Zhao M, Wang L, Zhang X, Gong W, Hu R. Association between socioeconomic status and obesity in a Chinese adult population. *BMC public health*. 2013 Dec;13(1):355.
  23. Alam AA. Obesity among female school children in North West Riyadh in relation to affluent lifestyle. *Saudi medical journal*. 2008; 29(8):1139-1144.
  24. Lamerz A, Kuepper-Nybelen J, Wehle C, Bruning N, Trost-Brinkhues G, Brenner H, Hebebrand J, Herpertz-Dahlmann B. Social class, parental education, and obesity prevalence in a study of six-year-old children in Germany. *International journal of obesity*. 2005 Apr;29(4):373-380.