Prevalence Of Overweight And Obesity In A Private School Of Orissa, India

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Citation

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Abstract

Obesity has become a major epidemic causing serious public health concern and contributes to 2.6 million deaths worldwide every year. In developing countries such as India, especially in urban populations and affluent children, obesity is emerging as a major health problem. Objectives: 1. To study the prevalence of overweight & obesity among school children of an affluent school. 2. To assess the risk factors related to obesity. Materials and methods: The present study was a cross sectional study conducted in an affluent English Medium School of Bhubaneswar during Jan. - Feb. 2011. After getting permission from school authorities, the data was collected from students of Class 1 to 10. One section from each class is randomly selected and all the students present during the survey were screened for overweight and obesity. In this way, data was collected from 468 children. Complete data of each child were collected using a pre-designed, pre-tested questionnaire. Result: Out of total 468 school children, 41.9% were boys and 58.1% were girls. 44.4% children belong to 5-10 years age group while the 55.6% children belong to 10-15 years age group. The overall prevalence of overweight and obesity in school children of 5-15 years was found to be 28.63% (overweight – 14.1% and obesity – 14.53%). Maximum prevalence i.e. 36.54% was found in children of 5-10 years age group and 33.65% in boys. Overweight and Obesity was found significantly higher in Children of 5-10 years age group, with family H/O obesity, not playing outdoor games, not doing regular exercise, watching TV, Computer more than 2 hours daily and consuming junk food regularly. Conclusion: Periodic screening for overweight and obesity should be done in schools followed by counseling of parents of overweight and obese children. Counseling of adolescent children on lifestyle modification should be emphasized.

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INTRODUCTION

Obesity has become a major epidemic causing serious public health concern and contributes to 2.6 million deaths worldwide every year.[1] The rates of overweight and obesity among children worldwide have been increasing dramatically in the last few years with similar trends being observed in recent years among children and adolescents from developing countries.[2, 3] Developing countries are undergoing nutrition transition due to increased economic development and market globalization leading to rapid changes in lifestyle and dietary habits.[4]

In developing countries such as India, especially in urban populations and affluent children, obesity is emerging as a major health problem.[5-7] It is observed that 30% of obesity begins in childhood and out of that 50% to 80% become obese adults.[8] Obesity is defined as a condition of abnormal or excessive fat accumulation in adipose tissue, to the extent that health may be impaired (WHO consultation on obesity 2000).[9] A study exploring the trends of disease and economic burden of obesity in youths from 1979 to 1999 with use of a nationally representative population sample of hospital discharges, the National Hospital Discharge Survey (NHDS) conducted by the National Center for Health Statistics had shown that in last two decades of the previous century have witnessed dramatic increase in health care costs due to obesity and related issues among children and adolescents.[10] Similarly a follow up of the Harvard growth study showed that morbidity from cardiovascular disease, diabetes, obesity related cancers and arthritis was 50 -100% higher in obese individuals who were also obese as children.[11]

Childhood obesity is an important public health problem which needs prevention strategies. More so, limited data of

childhood obesity is available in school children of Orissa. So an attempt has been made to know the prevalence of obesity in children in an affluent school with following objectives.

To study the prevalence of overweight & obesity among school going children in an affluent school.

To assess the risk factors related to obesity.

MATERIALS AND METHODS

The present study was a cross sectional study conducted in a private English Medium School of Bhubaneswar during Jan. – Feb. 2011. Ethical clearance from the Institutional ethical committee was obtained. After getting permission from school authorities, the data was collected from students of Class 1 to 10. The total no. of students in the school was 1257. Each class was having 3-4 sections. One section is randomly selected from each class and all the students present during the survey were screened for overweight and obesity. In this way, data was collected for 468 children. After obtaining verbal consent, resident doctors of IMS & SUM Hospital had all performed Standardized anthropometrical measurements of the students in school uniform without shoes. Weight was measured in the upright position without shoe to the nearest 0.1 kg using calibrated electronic weighing machine. Height was measured without shoes to the nearest 0.1 cm using calibrated stadiometer. Children with acute or long standing problem, bony deformities like kyphosis, scoliosis or any other physical abnormality were excluded from the study. Absentees in the day of examination were excluded. Body mass index (BMI) was used to classify the participants according to their weight status using age- and gender-specific cut-points as per CDC (Center for Disease Control) growth charts which uses the 85 th percentile of BMI for the age and sex as a reference point for overweight and the 95 th percentile for obesity in children.[12] The students were interviewed regarding their habits related to playing outdoor games, doing regular exercise, watching TV, Computer in hours per day, frequency of consuming junk food and dietary habits. They were assessed about the family history of obesity. Information thus collected was entered in a spread sheet and analyzed using SPSS version 14.0 software. Waist circumference and W/H ratio are considered better indicators in Indian population. Why was it not done?

The children were assessed for the following parameters as in the questionnaire.

Figure 1

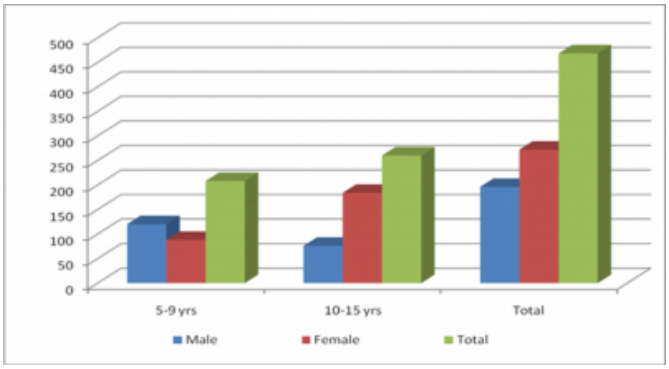
Questions		
Family H/O obesity	Present	Absent
Playing outdoor games	Yes	No
Doing regular exercise	Yes	No
Diet	Veg.	Mixed
Consuming junk food	Often	Occasionally (once/ twice in a month)
Watching TV/Computer	Hours per day	

RESULTS

Results were presented in the form of number, proportions, and percentages. Univariate analysis (Chi-Square test) was carried out to identify possible risk factors associated with overweight and obesity. In the present study, out of total 468 school children, 41.9% were boys and 58.1% were girls. 44.4% children belong to 5-9 years age group while the 55.6% children belong to 10-15 years age group.

Figure 2

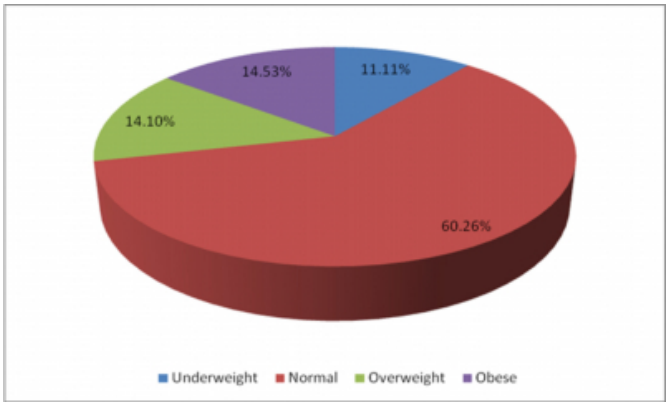
Fig.1: Age and Sex distribution of school children



The overall prevalence of overweight and obesity in school children of 5-15 years was found to be 28.63% (overweight – 14.1% and obesity – 14.53%). Underweight was observed in 11.11% and 60.26% children were in normal range. School children were classified as: underweight (BMI < 5 th percentile), normal (BMI < 5 th -85 th percentile), overweight (BMI between 85 th and 95 th percentile) or obese (BMI > 95 th percentile).[12]

Figure 3

Fig.2: Distribution of school children as per nutritional status



Out of 468 students examined for the study, 28.68% (95% CI= 24.57 – 32.96) were either overweight or obese. Overweight and obesity was 33.65% in boys and 25.73% in girls. Maximum prevalence i.e. 36.54% was found in 5-10 years age group and 22.3% in adolescence period (10 -15 years).

Higher prevalence of overweight and obesity was found in children with family history of obesity (39.79%), not playing outdoor games (40.8%), not doing regular exercise (33.9%), watching TV, Computer for more than 2 hours daily (32.5%), consuming junk food regularly (42.86%) and mixed diet (28.9%). Overweight and Obesity was found significantly higher in Children of 5-10 years age group, with family H/O obesity, not playing outdoor games, not doing regular exercise, watching TV and Computer more than 2 hours daily, and consuming junk food regularly. The prevalence is higher among boys but no significant difference is found between boys and girls (P=0.102). The difference is not significant between veg. and mixed diets (P=0.747%).

Figure 4

Table -1: Prevalence of overweight and obesity among the study subjects and Factors associated with it

Factors	Total No. of Children	Prevalence Overweight/ Obese (Percentage)	95% Confidence Interval	Remarks
Age				
5-10years	208	36.54%	29.9 -- 43.44	X^2= 11.38
10-15 years	260	22.3%	17.39 – 27.86	P= 0.001
Sex				
Male	196	32.65%	26.14 – 39.69	X^2=2.68
Female	272	25.73%	20.64 – 31. 36	P=0.102
Family history of obesity				
Present	98	39.79%	32.91 – 54.19	X^2=7.5
Absent	370	25.67%	21.29 – 30.44	P=0.006
Outdoor games				
No	257	40.8%	34.78 – 47.13	X^2=41.63
Yes	211	13.7%	09.40 – 19.13	P = 0.000
Regular exercise				
Not doing	366	33.9%	29.04 – 38.98	X^2=22.61
Doing	102	9.8%	04.80 – 17.29	P =0.000
Diet				
Mixed	387	28.9%	24.46 – 33.73	X^2=0.105
Veg.	81	27.16%	17.86 – 38.18	P =0.747
Consuming junk food				
Often	196	42.86%	35.82 – 50.10	X^2=33.43
Occasionally	272	18.38%	13.96 – 23.50	P=0.000
Watching TV, Computer				
≥2 hours	344	32.5%	27.63 – 37.89	X^2=9.78
< 2 hours	124	17.74%	11.46 – 25.62	P =0.002

DISCUSSION

The overall prevalence of overweight and obesity in the private school children of 5-15 years was found to be 28.63% (overweight – 14.1% and obesity – 14.53%). Studies among school children in different parts of the country have demonstrated increasing prevalence of overweight and obesity, with great disparity between rural and urban parts of country. In a study by Ramachandran et al, 2002 in Chennai, the prevalence of overweight (including obese) in adolescents was 22% in better off schools.[13] In a study by Kapil U et al, 2002 in a Delhi school with tuition fees more than Rs.2,500 per month, the prevalence of overweight was 31%, of which 7.5% were frankly obese.[14] Maximum prevalence i.e. 36.54% was found in 5-10 year age group and 22.3% in adolescence period (10 -15 years). Valen C et al, 2009 found similar findings as our study i.e. the highest prevalence of overweight and obesity was found within the 7 to 10 years old group.[15] In the present study, prevalence of overweight and obesity was 33.65% in boys and 25.73% in girls. Valen C et al, 2009 reported similar results that males registered a higher prevalence of obesity than females (P < 0.0001).[15] But Kumar S et al, 2007 reported higher

prevalence in girls (8.82%) than boys (4.1%), (P<0.001).[16] Sood A et al, 2007 in their study in affluent adolescent school girls found that prevalence of overweight and obesity according to CDC BMI-for-age criteria was found to be 13.1% and 5.0% respectively.[17]

Overweight and Obesity was found significantly higher Children in 5-10 years age group (P=0.001), with family H/O obesity (P=0.006), not playing outdoor games (P=0.000), not doing regular exercise (P=0.000), watching TV, Computer more than 2 hours daily (P=0.002), and consuming junk food regularly (P=0.000). In the study by Jain S et al, 2010 they found overweight and obesity in adolescents in an affluent school was significantly associated with TV watching > 2 hours, not playing outdoor games daily and frequently eating junk foods.[18] Kotian MS et al, 2010 in their study among school children of 12-15 years, reported higher prevalence obese children with physical activity of < 1 hour and watching TV, computer > 2 hours daily.[19] Amin TT et al, 2008 in their study reported a significant difference between obese and overweight children and the lean children with regard to the frequency of consumption of fast food.[20] In the study by Kumar S et al, 2007 they found significant association between overweight and obesity with family history of obesity, lack of physical activity and snacking of high energy foods (P<0.001). They do not found significant difference between veg. and mixed diet which is comparable to the present study.[16]

The study was conducted only in a private school. So the data could not be compared with non affluent schools of Bhubaneswar. The study is not representative of all school going children. Most importantly, it is a cross-sectional study and there can be temporal ambiguity. Hence causal claims cannot be made.

To conclude, considering the burden of overweight and obesity among the school children there is a need for periodic screening for overweight should be done in schools followed by counseling of parents of overweight children. Counseling of adolescent children on lifestyle modification should be emphasized. School health programmes with special focus on educating students and teachers regarding possible adverse effect of overweight and obesity should be carried out.

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