ORIGINAL ARTICLE

TO ASSESS THE PREVALENCE OF OBESITY AMONG AFFLUENT SCHOOL CHILDREN IN PATIALA, PUNJAB AND IDENTIFY ITS ASSOCIATED RISK FACTORS

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Abstract

Aim: To assess the prevalence of obesity among affluent school children in Patiala, Punjab and identify its associated risk factors.

Study Design: A cross-sectional study was conducted in five private schools in Patiala, India. A total of 1250 school children in the age group of 6-15 years were selected using stratified random sampling. Weight and height of each student was measured using standard measures and body mass index (BMI) was calculated. A semi-structured questionnaire was filled evaluating risk factors like family history of obesity, intake of high calorie including junk foods, physical inactivity and television and/or computer viewing.

Statistical analysis: Chi-square test.

Results: Overall obesity was seen in 95 (7.6%) children with 61 (9.4%) girls and 34 (5.7%) boys affected (p=0.20). Family history of obesity, intake of high calorie foods, physical inactivity and television or computer viewing for more than 3 hours a day were found to be significant risk factors of obesity (p<0.001 respectively).

Conclusion: Obesity as an emerging health problem among affluent children in Patiala, India due to an increasing sedentary lifestyle and faulty dietary habits.

Key Words: Obesity, body mass index, school children

Introduction

Childhood obesity was once considered a problem of affluent countries but the past few years has seen a noticeable increase in overweight and obese children among affluent families in India. The drift towards an urbanized population, industrialization and improved socioeconomic conditions in India has led to an increase in overweight and obese children. (1) The global prevalence of overweight (including obese) children is around 10%. (2) Studies in India have estimated a prevalence of 7 to 9% of children tending towards being overweight to frank obese. (3) Obese children are at an increased risk of turning into obese adults and hence suffering from hypertension, diabetes, coronary artery disease, osteoarthritis leading to increased morbidity and mortality during their adulthood. (4) Early detection of childhood obesity is important as it provides an opportunity to take corrective measures and prevent complications. Punjab being an affluent state of India is at high risk of obesity due to its socioeconomic conditions and dietary habits. Since, the data on prevalence of obesity from Punjab is limited, we, therefore, planned this study with the objective to assess the prevalence of obesity among affluent school children between 6 to 15 years in Patiala city of Punjab, India and identify its associated risk factors.

Methods and Material

The institutional ethics and research committee approval was taken before commencing the study. A cross-sectional study was conducted in five private schools (annual fees > 20,000 Indian rupees) of Patiala city in Punjab, India. Eleven such schools existed in the city out of which five were selected by lottery method. Sample size was calculated keeping in view the prevalence of obesity to be 7% as reported by an earlier study in Delhi.(5) After obtaining a written informed consent from the school authorities and parents, 1250 children from both sexes between 6-15 years of age were selected using a stratified random sampling. A total of 250 children from each school and 25 from each class (from 1st grade to 10th grade) were selected by stratified random sampling till maximum of 25 from each grade were completed. Weight and height were measured using an electronic weighing machine and a stadiometer in an upright posture with head held in Frankfurt horizontal plane, respectively. Body mass index (BMI) was calculated as the ratio of body weight to body height squared, expressed in kg/m2. Cut-off points for overweight and obesity were taken as BMI > 25 but < 30 and > 30, respectively, and prevalence of obesity was then calculated using the international obesity task force (IOTF) recommendations by Cole et al. (6) A semi-structured questionnaire was filled which included details about anthropometry, age and gender of the child, occupation and educational status of the parents, family history of obesity, dietary habits, outdoor physical activity and number of hours of television/computer viewing per day. The data was analyzed statistically using chi-square test and p-value < 0.05 was taken as significant.

Results

Out of the 1250 children (597 boys, 653 girls) studied, 95 (34 boys, 61 girls) were found to be obese with a prevalence of 7.6%. Among the socio-demographic variables studied, age and sex were not significantly associated with obesity (Table 1). Among the risk factors evaluated, family history, intake of high calorie and junk foods (such as soft drinks, burgers, pizza, chocolates and oily products), physical inactivity and television/computer viewing for more than 3 hours a day were found to be significant risk factors for obesity among children (p<0.0001) (Table 2).

Table 1: Prevalence of Obesity by Age and Sex

Variables	Obese (n=95)	Non-Obese (n=1155)	P value
Age 6-9years 9-12years 12-15years	27 29 39	385 (6.5%) 389 (6.9%) 381 (9.2%)	0.27
Gender Male Female	34 61	563 (5.7%) 592 (9.3%)	0.20

Table 2: Risk Factors for Obesity

Variables		Obese (n=95)(%)	Non-obese (n=1155) (%)	P value
Family history of obesity		72 (75.7)	243(21.0)	<0.0001
High Calorie/ Junk food	Daily	36(37.8)	102(8.8)	<0.0001
	Weekly	41(43.1)	142(12.2)	
	Occasional	6(6.3)	359(31.1)	
Physical activity	<2 hours/day	43(45.2)	269(23.2)	<0.0001
	2-4 hours/day	31(32.6)	482(41.7)	
	>4 hours/day	21(22.1)	404(34.9)	
Television/ Computer viewing	<3 hours/day	34(35.7)	762(65.9)	<0.0001
	>3 hours/day	61(64.2)	393(34.0)	

Discussion

In our study, the prevalence of obesity was 7.6%. This was similar to observations made by Sharma et al and Kapil et al who reported a prevalence of 6% and 7.4% in their respective studies from Delhi. (5,7) Aggarwal et al and Khadilkar et al however observed prevalence of 3.4% and 5.7%, respectively which was lower as compared to the index study. (8,9) The differences in reported prevalence of obesity among different studies could be due to regional differences, different age range of children studied, non-uniformity in the criteria to define socio-economic status. In the index study, the prevalence of obesity in girls (9.3%) was more as compared to boys (5.7%) though the difference was found to be statistically non-significant. Similar results were reported by Kumar et al who found a prevalence of 4.42% in boys and 8.82% in girls in affluent schools of Davangere. (10)

Among the risk factors studied, family history of obesity, intake of high calorie/junk foods, lack of physical activity and number of hours of television viewing per day were found to be significantly associated with obesity. Parental obesity may increase the risk of obesity through genetic mechanisms or by shared family characteristics in the environment such as food preferences. A positive family history of obesity in either of the parent was found to be a significant risk factor and was existent in 75.7% of obese children and 21.% of non-obese children. Our observation was supported by Kumar et al and Reilly et al who in their respective studies reported a similar association.(10,11) In index study, intake of high energy and fast foods was present in 92.6%of obese children as compared to 52.2% of non-obese. Similar results were reported by Laxmaiah et al, Kumar et al and Singh et al who also found increased intake of high energy foods to be a significant risk factor among obese children. (3,10,12) Another risk factor found significant in obese children was lack of physical activity. We observed that 77.8% of obese children were physically inactive as compared to 65% of non-obese ones which are similar to the observations of Kumar et al and Bodhare et al. (10,13) Physical inactivity not only has a prime role in the development of overweight and obesity but also in the development of chronic diseases such as diabetes and hypertension in later life. Television and computer watching is a major reason for physical inactivity among children and in our study 64.2% of obese children watched television or used computers for more than 3 hours a day as compared to 34% among non-obese which are similar to the observations of Laxmaiah et al . (3)

Thus, we conclude that low levels of physical activity, consuming high calorie/junk food, increased television watching are significant risk factors in causation of childhood obesity in Patiala and suggests an urgent need to educate urban community on aspects of healthy food habits and desired lifestyle to prevent it.

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