

Prevalence of Overweight and Obesity in Relation to Socio-economic Conditions in Two Different Groups of School-age Children of Udaipur City (Rajasthan)

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Abstract

The present investigation was undertaken to make a comparative assessment of overweight and obesity in two different socio-economic groups of school-age children from Udaipur city (Rajasthan), ranging from 12 to 17 years, on the basis of 85th and 95th percentile of body mass index (BMI). One group of children belonged to the affluent upper middle class of society, while the other group was not so affluent. The first group consisted of 268 children, and the second one comprised of 250 children. Result showed a significant increase in overweight (3.25%) in the affluent group as compared to the non-affluent group. Obesity in the affluent group was 3.73%, but no case of obesity (0%) was observed in the non-affluent group. Hence, the comparative data clearly delineates that obesity is an increasing malady of affluent populations.

Key words: Overweight, Obesity, Body mass index (BMI), Mid-arm circumference (MUAC), waist-hip ratio (WHR).

Introduction

Paediatric obesity is a public health problem of increasing concern in the developed world and in populations undergoing cultural transition¹. The World Health Organisation, in 1998 designated obesity as a global epidemic². India, is also facing the epidemic of obesity and its associated diseases, especially in children and adolescents³. Childhood obesity is associated with an increased mortality and morbidity in form of coronary artery disease, diabetes mellitus hypertension, and dyslipidaemia⁴⁻⁹.

There is growing evidence that in present conditions, perhaps due to decreased physical activities, sedentary lifestyle, altered eating patterns, and increased fat content of the diet, children and adolescents of affluent families are overweight as compared to their contemporaries in the past^{4, 10}.

Centers for Disease Control and Prevention (CDC) of the United States of America suggests that BMI is the most appropriate and easily available method to screen for childhood obesity. Age and gender cut-offs for BMI are readily available. Obesity is increasing globally taking an epidemic significance, with nearly half-a-billion of the world's population now considered to be overweight or obese. Obesity has significant co-morbidities, and these are

associated with substantial health care and social costs; of particular concern is the fact that obesity is increasing among children and adolescents. Obesity in childhood is becoming a major public health concern all over the world²²⁻²⁴.

Since very limited data is available from India regarding this malady, the present study was undertaken to compare the prevalence of overweight and obesity among school-age children of two different socio-economic groups.

Subjects and methods

This is a comparative cross sectional study conducted in 2002 in Udaipur city. The two different types of schools were selected: (1) convent school (affluent group) and (2) government school (non-affluent group). The school fee of affluent group was nearly Rs. 500 - 1,000 per month, while the school fees of non-affluent group was much less. The exact age of the children was verified from the school records. A semi-structured, pre-tested questionnaire was administered to each child to collect data on socio-demographic profile (age, sex, and socio-economic status), dietary pattern, and nutrient intake. Anthropometric measurements of weight, standing height, mid-arm circumference (MUAC) and WHR were measured by utilising standard methodology^{13, 14}. Weight was determined using weighing balance nearest to 100 grams; for height, erect

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scale was used up to an accuracy of 1 mm. The MUAC was measured with the help of a non-stretchable tape. The international cut-off points for body mass index were used for classifying children as overweight and obese. According to this classification (i) if BMI analogue for age and sex is 25 kg/m² and more, but less than 30 kg/m², then the child is overweight and; (ii) if BMI analogue for age and sex is 30 kg/m² and more, then the child is obese¹⁵.

Results

There were 268 children in affluent group and 250 in non-affluent group between ages of 12 to 17 years. The prevalence of overweight and obesity was 4.85%, and 3.73% respectively in affluent group (Table I). On the contrary, in non-affluent group 1.6% of total children were found to be overweight while obesity was calculated as 0% (Table II).

Table I: Prevalence of overweight and obesity in affluent children.

Age (years)	No.	Overweight	Obese
12	12	-	-
13	57	2	1
14	67	5	1
15	27	1	-
16	56	3	3
17	49	2	5
Total	268	13 (4.85%)	10 (3.73%)

Table II: Prevalence of overweight and obesity in non-affluent children.

Age (years)	N	Overweight	Obese
12	31	-	-
13	32	1	-
14	55	-	-
15	52	1	-
16	54	1	-
17	26	1	-
Total	250	4 (1.6%)	0 (0%)

Discussion

Lifestyle transition and economic improvement have

contributed to the problem of adolescent obesity. Published data regarding this aspect, from India is scarce. A study conducted in 1990 amongst 3,861 school children reported the prevalence of obesity as 7.5%¹⁰. A total of 870 school children were included in a cross-sectional study conducted in one public school of Delhi catering to the affluent segment of population, and the overall prevalence of obesity was found to be 7.4%²⁸. Another study from Jaipur showed that among 237 children (13 - 17 years of age) from middle and upper middle class, 24 (10.1%) were obese – as defined by BMI – above the 95th percentile¹¹. These values are much higher than our reported values viz., 4.8% and 3.73% for overweight and obesity respectively, as Udaipur in Rajasthan is not yet a metropolitan city, and is not exposed to big city culture. In this city, not many fast food avenues are present – which might be one of the factors that overweight and obesity levels are less here than in the children of Jaipur. However, still a lurking danger is evident.

A study from Madurai reported 202 children (121 boys, 81 girls) were referred for endocrine evaluation over a seven-year period for obesity¹².

Similar studies based on relationship between obesity and socio-economic status have been conducted the world over. A rapid increase in the prevalence of obesity in children has been seen in England, the United States of America, and around the world¹⁶⁻²¹.

Wang (2001) reported that the prevalence of obesity and overweight was 11.1% and 14.3% respectively in the USA; 6.0% and 10.0% in Russia; and 3.6% and 3.4% in China. The relationship between obesity and socio-economic status varied across countries. Higher socio-economic status subjects were more likely to be obese in China and Russia, but in the USA, low socio-economic status groups were at a higher risk²⁷.

Furthermore, in two large longitudinal studies from England, childhood socio-economic status predicted the development of obesity in adult life^{25, 26}.

In our present study, it was observed that there has been a significant increase in overweight (4.85%) and obesity (3.73%) in children belonging to affluent and upper middle class income group. In affluent group children, prevalence of overweight was relatively higher in the age group 14

and 16, but obesity was greater in 16 and 17 years age group. Hence, the present study has highlighted that obesity is an emerging health problem in adolescent children belonging to affluent families in Udaipur.

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