

Prevalence of Obesity and Overweight in Urban School Children in Kerala, India

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Received: December 20, 2011; Initial review: December 28, 2011; Accepted: December 31, 2011.

The objective of this study was to examine the prevalence of obesity and overweight in urban school children in Kochi, Kerala, South India. Three schools from the city were selected representing upper, middle and lower socioeconomic groups and the children aged 6-15 years of age were interviewed. The prevalence of obesity was 3.0% for boys and 5.3% for girls. The prevalence of obesity (7.5%) and overweight (21.9%) were highest among high income group and lowest (1.5% and 2.5%) among low income group. Prevalence of obesity and overweight was found to be higher in the high income group and among girls.

Key words: Obesity, Overweight.

Childhood obesity is a problem that has reached epidemic proportions in the developed world [1-3]. Obesity and overweight among children have significant long term health consequences such as adult obesity, higher levels of cholesterol, higher future incidence of coronary artery disease. [4-9]. In India, the emergence of childhood obesity presents a cause for concern because of recent changes in lifestyle and economic development [10,11]. Nationally representative data on this subject from India is lacking [10,11]. The objective of this study was to examine the prevalence of obesity and overweight among urban school children among different socio-economic status.

METHODS

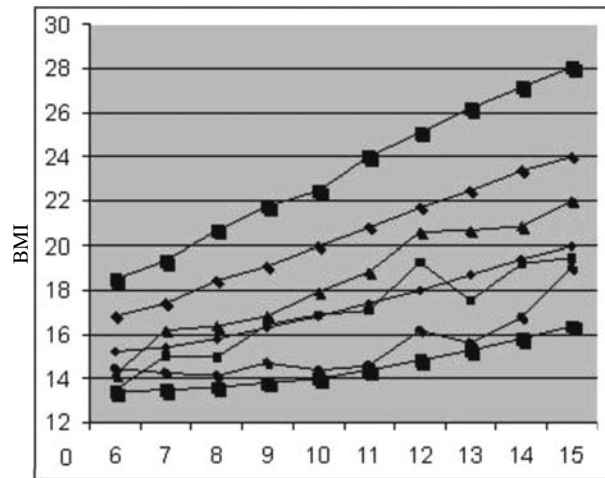
The sample population was selected from three different schools in the city of Kochi, Kerala in South India. Schools A, B, and C represent the upper, middle and lower groups, respectively. A total of 1634 children were included from all three schools, with 265 boys and 263 girls from School A, 326 boys and 262 girls from School B, and 265 boys and 253 girls from School C. The ages ranged from 6 to 15 years and they were studying in grades I to X. Data were collected on regular working days during the school year 2009-10. The data collection team had a medical student, post-graduate student, and a nurse. The height and weight of the students were measured, and they were interviewed by team members regarding parental occupation. The data were collected from all the three schools in the same manner using the same equipment. BMI was calculated for each child

according to WHO approved CDC age-specific BMI charts, and the data was analyzed using appropriate statistical methods [12, 13].

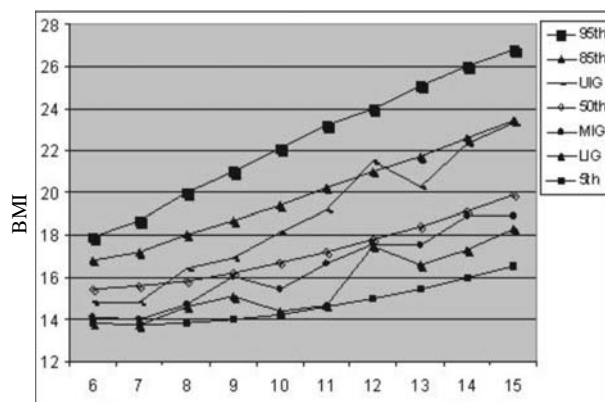
RESULTS

The body mass index (BMI) curves for boys and girls according to age are given in **Fig. 1**. The average age-specific BMI for boys of upper income group (UIG) was greatest and the lower income group (LIG) had the lowest average age-specific BMI. Similar to boys, the average age-specific BMI for girls was highest among UIG girls and lowest in the LIG girls. When compared with the CDC standard chart, the average age-specific BMI for UIG girls was greater than the 50th percentile and even reached above 85th percentile for girls over 11 years of age. The average age-specific BMI of girls of middle income group (MIG) was lower than the 50th percentile of CDC charts among girls under 10 years of age. However, girls above 11 years of age in MIG were comparable with the 50th percentile.

Of the total of 856 boys, 3% were obese and 10.2% were overweight. Of the total of 778 girls, 5.3% were obese and 12.1% were overweight, which was statistically significant when compared to boys ($P=0.028$). Prevalence of obesity and overweight among UIG, MIG and LIG boys was 5% and 16%, 3% and 12%, and 1% and 2%, respectively ($P<0.005$). Prevalence of obesity and overweight among girls of the UIG, MIG and LIG socioeconomic groups was 10% and 28%, 4% and 5%, and 2% and 3%, respectively ($P<0.005$).



(a)



(b)

UIG: Upper income group; MIG: Middle income group; LIG: Lower income group; percentiles are as per CDC growth chart 2000.

Fig.1 BMI for (a) boys and (b) girls of different socioeconomic status.

In this study, there was no age related trend seen in the percentages of obesity or overweight among boys, but in girls, overweight increased with age. The percentage of obese and overweight girls are consistently higher along all age groups than boys in the same age group. When comparing socioeconomic groups, obesity and overweight were more prevalent in UIG girls than UIG boys, while there was not much gender difference in the MIG and LIG.

The prevalence of overweight and obesity in the UIG in this study is comparable to levels of overweight and obesity in developed countries [3,4]. However, overweight and obesity are much lower in the lower socioeconomic groups as compared to developed countries [4]. Among American children, higher rates of obesity and overweight have been found to have some association with lower socioeconomic status [3]. In India,

recent economic advancements have created easy access to calorie-rich foods, especially for the higher socioeconomic groups. This coupled with a lack of awareness in parents about childhood obesity and nutritive diets may be part of the reason behind this trend.

India, apart from its vast population, is a country of great cultural and ethnic variety. Food habits differ significantly in various parts of the country. Education, awareness and attitudes among parents, and gender discrimination all play a role in influencing the nutrition of children. Large-scale surveys will be needed to create standards of growth that are representative of Indian children. Further research is needed to determine the extent of obesity and overweight in Indian children and to identify the reasons for the same.

Acknowledgment: Mr AR Rakesh for the computer data management and Ms KS Jabeena for assisting in data-collection. *Contributors:* All authors contributed to data acquisition and drafting the paper.

Funding: None; *Competing interests:* None stated.

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WHAT THIS STUDY ADDS?

- Obesity and overweight in urban school children of Kerala did not show any age-related trend. Prevalence of obesity was 3% for boys and 5.3% for girls.

and obesity in Indian adolescent school going children: Its relationship with socioeconomic status and associated lifestyle factors. *JAPI*. 2010;58:151-8.
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