

Obesity and Related Risk Factors

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ABSTRACT

Objective. To study the prevalence of overweight and obesity among Iranian schoolgirls and to identify risk factors which lead to obesity.

Method. This cross-sectional study was conducted in 2002 and a sample of 1800 female students between 7-12 years old was obtained using a multistage cluster sampling method from Tehran. Height and weight were measured and related socio-economic information was collected.

Results. The overall percent of overweight and obesity was 13.3% and 7.7% respectively. BMI (Body Mass Index) was directly and significantly ($r=+0.28$, $P<0.001$) correlated with increasing age. Physical activity was significantly different between obese and non-obese children. ($P=0.03$) Also, economical factors such as the type of school (private & public) were different in these children. ($P=0.03$) The statistical analysis of the data revealed a significant and inverse correlation ($r=-0.03$, $P=0.04$) between maternal education and occurrence of overweight and obesity in children.

Conclusion. The prevalence of overweight and obesity in young Iranian girls was high. Advanced age, lack of physical inactivity, low economical factors and maternal educational status could be risk factors for obesity in children. [Indian J Pediatr 2007; 74 (3) : 265-267] E-mail: mozafart@sina.tums.ac.ir

Key words : Obesity; Children; BMI

Obesity is currently regarded as a public health problem that affects both young people and adults.¹⁻³ The onset of obesity may occur at any age, and prevalence of overweight and obesity in young people is increasing rapidly in both developed and developing world⁴ that it was higher than expected from the national standards.^{5,6} The health consequences of obesity will have considerable impact on future burden on health costs and services. Clinically significant obesity-related morbidities are rare in children and are generally restricted to the severely obese, but the most prevalent immediate consequences for obese children are social isolation and peer problems.⁵ However, the most important consequence of childhood overweight and obesity is a greater risk of obesity in adulthood.⁴ Possible explanations include an increase in sedentary lifestyles and changes in dietary patterns and eating habits.² In the last few decades, children have

become less active as a result of their easy access to technological advances. A positive relation has been observed between lack of activity (eg: time spent watching television) and an increase in adiposity in school-age children.¹ Therefore, it is important that health policy planners have access to accurate information.⁵

The global prevalence of overweight among preschool children in developing countries was reported 3.3% and countries with highest prevalence of overweight were located mainly in Middle East, North Africa and Latin America.⁵

A study from Brazil showed 1.5 million children suffering from obesity, with higher prevalence among girls.¹ This study was aimed at describing the prevalence of overweight and obesity among Iranian schoolgirls and to identify the risk factors. Each identification hopefully can prevent these children from becoming obese adults.

MATERIALS AND METHODS

The study was carried out in the year 2002 and included 1800 female students aged between 7-12 years old. The sampling plans followed a stratified, multistage and

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probability design to determine the prevalence of obesity and overweight in school girls in Iran. For having a standard sample, the authors divided Tehran in 5 areas (the central, north, south, west and east areas, based on the information of municipality and ministry of education). In each area the life conditions and socio-economic status is nearly the same. Authors' randomly selected 2 schools (1 private and 1 public school) in each area, and in each school they visited all the students. The students are ranged from the first grade of primary school to the last grade of it (the fifth). To determine the BMI in each child, the authors measured height (in meter with two decimal units) using a non-stretch tape to a flat and vertical surface and weight (in kilogram with one decimal unit) without shoes or jumpers. Then for each student, they have filled a questionnaire that included information about demographic data, kind of school (public or nonprofit school), physical activity, parental education, inactive time and self image of oneself. All the measurements were made by the physician. The information about physical activity included the duration of sport time, the way of going to school (on foot or by bus) and the duration of walking in a day (<15 minutes or > 60 minutes or 15-60 minutes), kind of hobby (running, playing football or the other sports). Inactivity was constructed by summing the total minutes per day spent watching television, playing video games, studying, or being in inactive transport. All data on physical inactivity was self-reported by parent or the child. The BMI of each student was determined and reference curves for Body Mass Index (BMI) have been used to define overweight and obesity. The 85th and 95th centiles of BMI for age and sex based on international curves have been recommended as cut off points to identify overweight and obesity.^{3,6,7-9}

The students were classified as overweight, obese and normal depending on their BMI for age. Then, the authors estimated prevalence of overweight and obesity in their population. Significant differences in active and inactive time between obese (or overweight) and normal children were tested by students T- Test. Associations between age, parental education, kind of school and obesity in children were tested by Pearson Correlation coefficient.

RESULTS

The mean age of students was 9.67 ± 3.5 (from 7 to 12) years. The overall percent of overweight and obesity was 13.3% and 7.7% respectively. The children's daily physical activity and inactive time were compared between obese and non-obese children. The mean daily TV watching or computer playing hours (Inactive time) in obese and nonobese children was 1.12 ± 0.14 and 0.8 ± 0.2 and the difference is significant ($P=0.03$). Physical activity was significantly different between obese and nonobese children ($P=0.03$) and nonobese children had more active

sports like running, football and etc, and they went to school by foot whereas obese children had less active time and they went to school by bus or car more than by foot. BMI was directly and significantly ($r = +0.28, P < 0.001$) correlated with increasing age. (Fig. 1) Most of obese children (30%) went to public school compared with 70 % of non-obese students. ($p=0.03$). Private school represented higher socio-economic status of the family.

Over 25.3% of parents had a university degree. Low educational level was seen more in mothers of obese children. The statistical analysis of the data revealed a significant and inverse correlation ($r = -0.03, P=0.04$) between maternal education and occurrence of overweight and obesity in children. This was not observed in education of fathers. 50% of obese children had real self-image about themselves and half of them thought they were normal.

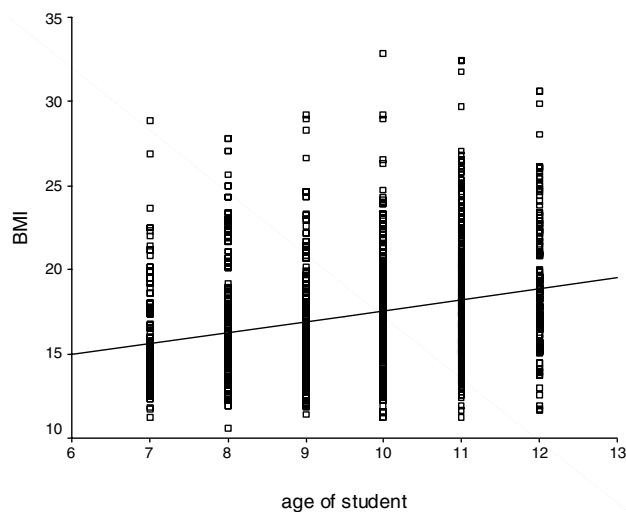


Fig. 1. BMI related to Age of Students

DISCUSSION

The prevalence of overweight and obesity in young people is increasing rapidly in both developed and developing countries and it is a major global public health concern.^{2,3}

The prevalence of overweight and obesity in school-aged children in the present study corroborates the results obtained in another study from Iran¹⁰ and other countries.^{3,11}

Study of factors contributing to obesity in schoolchildren, by comparison of obese and nonobese children revealed, increasing obesity with age, more hours of TV watching, low physical activity (as a hobby), and low level of maternal education. The tendency towards a sedentary lifestyle such as lack of physical activity and TV watching was evident in this study as reported by other authors.¹ Overall, energy imbalance must be considered as a factor related to childhood

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obesity.¹¹The importance of education, especially maternal education, as a risk factor for childhood obesity was shown by higher occurrence of overweight and obesity in students whose mothers had a lower educational level.¹ In Iran the children with good socio-economic level almost go to the private school and children with lower socio-economic level go to public school. So, they could confirm that low socio-economic level may be related with obesity. About 50% of obese children did not believe that they were obese and they had unreal self-image.

The limitation of authors study was: male students were not assessed, the sample size was not very large and finally, it was located in one city.

The present study provided unexpectedly high estimates of overweight and obesity prevalence in young Iranian children. It must be noted that the results of our survey were similar to other studies. Strategies for prevention of overweight and obesity are urgently needed in school-age children in order to stem the epidemic of overweight in the adult population.

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