

## Childhood and parental obesity in the poorest district of Greece

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### Abstract

**Background and aim:** Childhood obesity represents a rising threat in southern Europe. It is widely accepted that childhood obesity is an important risk factor for the appearance of obesity in adulthood. Our aim was to estimate the prevalence of obesity in school aged children living in one of the poorest districts of Europe, as well as to estimate the association between the frequency of obesity observed in these children and their parents.

**Material and methods:** We examined and calculated the body mass index (BMI) in 107 children aged  $12.2 \pm 0.78$  years. BMI was adjusted for age and sex and it was correlated with children parents' weight status.

**Results:** Obesity was diagnosed in 16% of the children. The relationship between children's and their parents weight status was very strong. In 40% of the obese parents, their children were found to be obese also ( $p < 0.001$ ).

**Conclusion:** In the present study a strong relationship between children weight status and their parents' weight status was confirmed. Additionally, this correlation was proven at a district with very low house income. Knowing that it is easier to prevent obesity, rather than to cure it, our aim should be, when a child is brought to the doctor, independently of the cause, to assess both the child as well as its parents' weight status. Hippokratia 2009; 13 (1): 46-48

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Childhood obesity is increasing worldwide<sup>1</sup>. It is widely accepted that childhood obesity is an important risk factor for the appearance of obesity in adulthood. Furthermore, children's obesity after the age of 10 seems to be a very sensitive predictor of subsequent obesity<sup>2,3</sup>. Parental obesity is believed also, to increase the risk of adult obesity in children<sup>4-10</sup>. In the present study we tried to estimate the prevalence of obesity in school-aged children of our territory and the degree of its association with parental weight status.

### Patients and Methods

Weight and height were measured, and the BMI was calculated in 107 (Caucasian) school-aged children, living in Thesprotia, Greece. Fifty of them were males and 57 females. In order to avoid selection bias, all the children attending the last grade of the preliminary school in our area were included in the study. Additionally data regarding the presence of obesity in their family members were also collected. Body Mass Index (BMI) measurements were adjusted for age and sex (according to NHANES I)<sup>11</sup>. In order to reveal possible differences in the prevalence of obesity in the study sample, statistical analysis was performed using x-square method. Results were considered statistically significant when  $p < 0.05$ . Descriptive statistics are presented as mean  $\pm$  standard deviation.

### Results

The mean BMI of the children was  $21.71 \pm 4.68$  and their average age was  $12.2 \pm 0.78$  years (Figure 1). Seventeen of the children (16%) were obese ( $BMI > 26.2$ ), their mean BMI was 30.34. Approximately half of them were males (8 boys) and their mean BMI was 31.28, while the

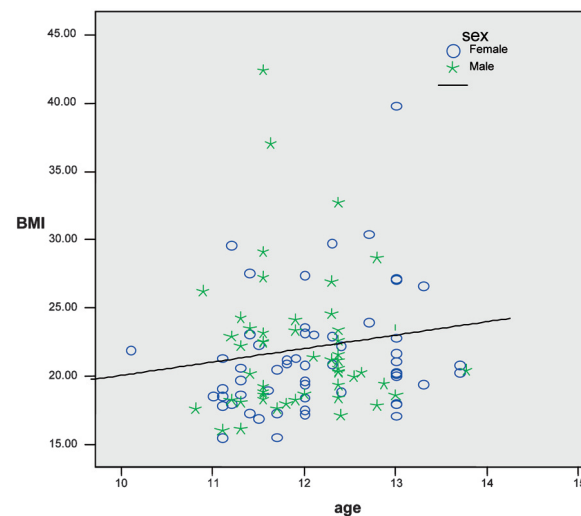


Figure 1: BMI in correlation with age and sex.

**Table 1:** Mean BMI and age in obese female and male children.

	Age (years)	BMI (Kg/m <sup>2</sup> )
Obese females	12.4 ±0.8	39.8 ±4.1
Obese males	12.2 ±0.6	31.3 ±5.7

rest were females (9 girls) and their mean BMI was 29.50 (Table 1). After the assessment of parental weight status (self reported), it was observed that: eighty five parents had normal weight, 77 (90.6%) had non-overweight children (BMI<25) with a mean BMI of 21.02, while only 8 (9.4%) were found to have obese children (BMI>26.2) with a mean BMI of 29.57.

In 22 cases, where at least one of the parents was obese: 13 parents (59.1%) had non overweight children (BMI<25) with a mean BMI of 19.85. Nine parents (40.9%) were found to have obese children (BMI>26.2), with a mean BMI of 31.26. In 4 instances where both of the parents were obese, their children were also obese (BMI>26.2) and their mean BMI was 33.41.

The differences observed, when children's obesity was adjusted for children's parents obesity, were found to be statistically significant when at least one of the parents was obese ( $\chi^2 = 12.97$ ;  $p < 0.001$ ). As well as, in the cases when only one of the parents was obese ( $\chi^2 = 4.54$ ;  $p < 0.05$ ) and when both parents were obese ( $\chi^2 = 26.87$ ;  $p < 0.001$ ).

### Discussion

A strong relationship between children's obesity and children's parent obesity was confirmed in a European district with very low outcome<sup>12</sup>.

Many different methods have been proposed and used in order to diagnose obesity in children and adolescents (skinfold thickness, electrical impedance, body circumferences, relative weight and body mass index)<sup>11,13,14</sup>. The most convenient method is the calculation of the Body Mass Index (BMI = weight/height squared, in kg/m<sup>2</sup>). Standards for BMI have been accepted since the early 70s (1974 National Health and Examination Survey). In order to achieve greater accuracy, these standards have been adjusted for race, age and sex<sup>11,14</sup>. It is accepted as a general rule that children with a BMI at or above the 85<sup>th</sup> percentile for age and sex are considered overweight and those above the 95<sup>th</sup> are considered obese<sup>4,11,15,16</sup>. The importance of this measurement seems even more significant since BMI elevations and obesity respectively have been correlated with elevated blood pressure, blood lipid levels, lipoprotein concentrations and abnormal arterial function and structure<sup>17-22</sup>. Knowing that it is easier to prevent obesity, rather than to cure it<sup>16,19,23</sup>, when a child is brought to the doctor, our aim should probably be to assess both the child as well as its parents' weight status. In all cases a balanced diet, based on home made food

should be suggested, as well as an increase in moderate physical activity.

It should be taken into consideration the fact that the study took place in the district with the lowest household income and the lowest mean consumption expenditure in the country<sup>12</sup> and consequently one of the lower across Europe. Additionally, the vast majority of the mothers were not employed outside their homes, and very few of them had higher education. The prevalence of obesity observed in these children is higher than in other parts of our country<sup>24-28</sup>, and still lower than in similar parts of Europe<sup>29,30</sup>. We come to recognize that apart from genetic factors, household income, mother's educational status and occupation, we should take into account the type of diet followed (Mediterranean diet was not followed), possibly contributed to the increased obesity prevalence<sup>29,31</sup>.

### Conclusions

In the present study a strong relationship between children weight status and their parents' weight status was confirmed. Additionally, this correlation was proven in a district with very low house income.

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