Hospital-Based Overweight and Obesity Among Saudi Children Aged 4-14 Years

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Abstract

A cross-sectional hospital-based survey was conducted to find out the magnitude of overweight and obesity health problem among Saudi children aged 4-14 years. The participants were 303 Saudi children who were admitted in three hospitals in Makkah for reasons other than obesity complications. Weight and height were measured in a standardized way. Body mass index was calculated and the percentiles. Overweight and obesity was defined as BMI >85-95 and >95% respectively. The obese and overweight of the studied children represented 22.4% and 20.1% respectively. Among the obese children 61.2% aged 4-7 years and 35.3% were female kids. There was a positive correlation between BMI and age.

The magnitude of the obesity health problem is high among Saudi children who were admitted to hospitals for problems other than obesity complications. There is a need to develop a hospital-based interventional program to take in consideration dealing with obesity problem among the admitted children.

Key Words: Overweight – Obesity – Saudi children.

Introduction

OBESITY is a public health problem worldwide with significant adverse health outcomes [1-4]. The prevalence of obesity has doubled over the last decades in several developing countries as well as in the USA and most Western countries [5]. Its increasing prevalence has compelled the WHO to include it on the list of the important health problems in the world [4]. Obesity has been proposed as the most frequent cause of preventable deaths after smoking [6].

Development of obesity in childhood is associated with a simultaneous increase in the chronic diseases risk profile [7-12]. Excess weight in childhood is the leading cause of pediatric hypertension. Overweight children are at higher risk for developing long-term chronic conditions including adult onset diabetes mellitus, coronary heart diseases, orthopedic disorders and respiratory diseases [8-14]. Many studies have demonstrated that overweight children tend to become overweight adults [5-18]. Overweight and obesity in childhood also appears to increase subsequent morbidity whether or not obesity persists in adulthood [14-24]. Using the BMI as an indicator, the prevalence of overweight and obesity in Saudi Arabia is 6% among preschool children, 20-25% in school children, 25-40% in adolescents, 40-60% in adult females and 45-70% in adult males [25].

Obesity predisposes a series of chronic non-communicable diseases (CNCDs) such as diabetes, coronary heart disease, hypertension and other diseases which may lead to disability and reduced immunity [26]. Obesity is defined as excessive accumulation of body fat in individuals, who are 20-30% above the average weight for their size [27]. It is a multi-factor chronic abnormality resulting from an interaction of genotype and environment. In most of Arab countries, obesity has reached an epidemic condition, both in children and adults. Using BMI as an indicator, the prevalence of overweight and obesity in the Arab countries is about 45-70% among adult females [28]. Obesity is a result of interaction between genetics and environmental factors. There is a strong evidence that the genetic factor accounts only for one third of the variation in the body weight. This is supported by increased prevalence of obesity over the past decade although there has been no
Some researchers have revealed that the chance of a child becoming obese as an adult is 40% if one parent is obese and 80% if both parents are obese [28].

More than 300 genes that influence obesity in humans have been identified [29]. A common example of the human genes that are identified to influence the fat storage is a gene called (ob) gene. It is expressed in the fat cells and codes for the protein leptin. Leptin is suggested to promote negative energy balance by suppressing appetite and increasing energy expenditure. Very few obese people were found to have low blood leptin level. It is much common to detect a high blood level of leptin in obese people. Insensitivity, resistance, or even defective leptin receptors could be the cause of its improper function. Another hypothesis is the presence of antagonizing signals [29]. The indicators in current use to assess the human body weight are BMI and growth monitoring chart among children.

According to growth monitoring chart, overweight is defined as BMI of 85th percentile to <95th percentile among age and specific strata, while obesity is defined as BMI of >95th percentile among age and sex specific strata [22,24]. There are many strategies for prevention and management of obesity. According to WHO (2003) eating behaviours that have been linked to overweight and obesity include snacking, eating frequency, binge eating patterns and eating outside the house [30].

The current study was conducted to find out the magnitude of the overweight and obesity among Saudi children who visited paediatric departments in Makkah hospitals (Hera’a, Maternity and Children, Alnoor and King Abdul Aziz).

### Subjects and Methods

**Design and sampling technique:**

A cross-sectional hospital-based survey was conducted to find out the magnitude of the overweight and obesity problem among Saudi children aged 4-14 years who were admitted in paediatric departments in some of Makkah hospitals (Hera’a, Maternity and Children, Alnoor and King Abdul Aziz).

**Participants:** Three hundreds and 3 children aged 4-14 years who were admitted in the mentioned hospitals due to diseases other than obesity complications. The participants were recruited in the period of March 10th to June 14th, 2007.

**Outcome measures:** Weight and height was measured using the regular balance with the meter. Standardization for measuring weight and height was considered for each child. Each child was asked to take off the chose, stand upright and to wear light cloths during taking the height and weight. Body mass index was calculated for each child using the equation: BMI = the weight/(height in meter)². The children then has been classified into underweight (uw), normal (n), overweight (ow), obese (o), and according to growth monitoring chart percentile (p) into overweight (ow) which is defined as BMI of ≤85-95 and obese (o) as BMI of ≤95%.

Data entry and analysis was done using SPSS software version 13.

### Results

Out of the 303 studied Saudi children 116 (38.3%). The obese and overweight of the studied children represented 22.4% and 20.1% respectively (Table 1). Among the obese children 61.2% aged 4-7 years and 35.3% were female kids (Table 2).

<table>
<thead>
<tr>
<th>Age group (in Years)</th>
<th>According to BMI and Percentile</th>
<th>Total (%)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Normal (%)</td>
<td>Obese (%)</td>
</tr>
<tr>
<td>4-7</td>
<td>63 (43.4)</td>
<td>41 (28.3)</td>
</tr>
<tr>
<td></td>
<td>(39.9)</td>
<td>(61.2)</td>
</tr>
<tr>
<td>8-11</td>
<td>74 (60.7)</td>
<td>21 (17.2)</td>
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<td></td>
<td>(46.8)</td>
<td>(31.3)</td>
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<tr>
<td>12+</td>
<td>21 (65.7)</td>
<td>5 (15.6)</td>
</tr>
<tr>
<td></td>
<td>(13.9)</td>
<td>(7.5)</td>
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<tr>
<td>Total (%)</td>
<td>158 (52.8)</td>
<td>67 (22.4)</td>
</tr>
</tbody>
</table>

Data entry and analysis was done using SPSS software version 13.

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Table (2): Studied children by gender and BMI (n=302).

<table>
<thead>
<tr>
<th>Gender</th>
<th>According to BMI and Percentile</th>
<th>Total (%)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Normal (%)</td>
<td>Obese (%)</td>
</tr>
<tr>
<td>Female Kids</td>
<td>62 (53.9)</td>
<td>24 (20.8)</td>
</tr>
<tr>
<td>Male kids</td>
<td>96 (51.3)</td>
<td>44 (23.5)</td>
</tr>
<tr>
<td>Total</td>
<td>158 (52.3)</td>
<td>68 (22.5)</td>
</tr>
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</table>

Discussion

This hospital-based study showed that the prevalence of obesity and overweight was 22.44 and 20.5% respectively. Madani (2000) [25] reported also a nearly similar prevalence of school children obesity (20-25%). Our data showed that obesity was less in frequency among the oldest age group of the children. This could be explained by the expected increase in physical activities among the Saudi adolescents.

Conclusion: The magnitude of the obesity health problem is high among Saudi children who were admitted to hospitals for problems other than obesity complications.

Recommendation: There is a need to develop a hospital-based interventional program to take in consideration dealing with obesity problem among the admitted children.

References


