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Prevalence of obesity in Childern in Madinah Ksa A Retrospective Study

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ABSTRACT

Childhood obesity has reached epidemic levels in developed countries. Children with body mass index for age (BMI for age) percentile greater than 95 are considered obese while those with BMI for age percentile greater than 85 but lower than 95 are considered as overweight. Out of 2500 children data (collected from Al-Ahmadi hospital, Madinah, Saudi Arabia), 137 (5.48%) children have BMI between 85% and 95% for age and they were considered as overweight. Also, 65 (2.6%) children with BMI 95% for age or above and they were considered as-obese. Besides, 60 (2.39%) cases had normal height while only 5 cases (0.2%) had low height for age and sex. Out of these 5 cases, only 2 children (0.08%) had at least one of parent considered as obese. Also, only 20.72% of the children enrolled in the study were Saudis while the vast majority (79.18%) were non-Saudi nationals. Incidence of both overweight and obese children was nearly 3 times higher among Saudis compared to non-Saudis. This may reflect the socio-economic and dietary factors affecting Saudi children in addition to probable genetic susceptibility. Further epidemiologic and well-designed experimental studies on obesity and its causal factors are crucially recommended.

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INTRODUCTION

Children with body mass index for age (BMI for age) percentile greater than 95 are considered obese while those with BMI for age percentile greater than 85 but lower than 95 are considered as overweight. Children who are considered obese are 70 percent more likely to continue being obese into adulthood. In addition, they are at greater risk for serious medical conditions/health problems such as heart diseases, high cholesterol, high blood pressure, diabetes, sleep apnea and cancer (Ahima, R.S., 2014; Falaschetti, E., 2010). Aside from the clinical perspective, children who are obese face social discrimination, leading to low self-esteem and often depression (Lupinno, F.S., 2010). Childhood obesity is, therefore, a serious problem that needs to be resolved with prudence in developing strategies for novel preventive measures and therapeutic control.

Childhood obesity has reached epidemic levels in developed countries . Twenty five percent of children in the US are overweight and 11% are obese . About 70% of obese adolescents grow up to become obese in adult life. The incidence of childhood obesity is increasing in developed countries since 1971 with no clear explanation for the underlying causes. In some European countries such as the Scandinavian countries the prevalence of childhood obesity is lower as compared with Mediterranean countries, nonetheless, the proportion of obese children is rising in both geographic locations (Ahrens, W., 2014; Ahrens, W., 2011). Although the highest prevalence rates of childhood obesity have been observed in developed countries, the prevalence rate is increasing in developing countries as well (Gupata, N., 2013).

Several studies addressed the prevalence of obesity and related problems in Saudi population and other middle eastern countries (El-Hazmi, M.A., A.S. Warsy, 2002; Mirmiran, P., 2010). The prevalence of childhood obesity is reported to be quite high in Saudi Arabia according to a cross-sectional study conducted in Al-Khobar city, in the Eastern province conducted in 2006 (Al-Dossary, S.S., 2010). In this study sample, 50% of the children in the Eastern province of Saudi Arabia were found to be overweight or obese. The study showed that obesity started early in life (ages 10–14years) and continued throughout the adolescent ages. The prevalence of obesity was higher among males than females, who had a tendency to be overweight rather than obese. There was no clear cut conclusion regarding the underlying causes of such a high incidence of overweight and obese Saudi children in this study.

Several studies have implicated environmental/dietary and life-style as well as genetic factors in the causation of obesity (16-18)). A few reports have also addressed the question whether

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vitamin D deficiency is a cause or effect of obesity and pointed out the need for more retrospective and prospective studies using well-defined cohorts with appropriate controls in order to investigate the actual relationship between vitamin D deficiency and obesity caused by environmental, physiological or genetic factors (Lương, K.,). In Saudi Arabia, maternal vitamin D deficiency resulting in newborns with low vitamin D and related childhood bone diseases is very common (20). Such deficiencies in women have been attributed to a lack of adequate sunlight exposure and/or inadequate intake of supplements. Furthermore, Saudi Arabia has a very high rate of consanguinity which is believed to be responsible for high incidence of genetic diseases in the population. Madinah region has the highest (>67%) rate of consanguinity and its role in genetic origin of diseases has been emphasized (Habeb, A., 2012; Habeb, A., 2011). The population of Madinah is, therefore, ideal for investigating the incidence of childhood obesity in an attempt to find the environmental and genetic causes or the consequences of gene-environment interactions. First, it is necessary to determine the prevalence of childhood obesity in order to plan appropriate epidemiological and laboratory studies on obesity. There is a paucity of hospital- or population-based data on the prevalence of childhood obesity in Saudi Arabia due to various limitations. Keeping this in mind, we conducted a retrospective study in a hospital in Madinah on the prevalence of childhood obesity with the aim to initiate a larger population-based study later.

Study Design:

This retrospective study was conducted at the Pediatric Department of Al-Ahmadi hospital in Madinah, Saudi Arabia to examine the medical records of 2500 children admitted to this hospital aged 2–12 years of Saudi or non-Saudi nationality enrolled at different pediatric departments (inpatient and outpatient). This study was approved by local ethical research committee of Al-Ahmadi hospital, Madinah, Saudi Arabia.

Measurement of Weight Status:

Obesity in children is determined by using body mass index (BMI)-for-age percentiles. BMI-for-age percentiles have emerged as the favored method to measure weight status in children. This method calculates a child's weight category based on age and BMI, which is a calculation of weight and height. This method was reportedly used in the cases considered for this study to determine the childhood obesity by qualified physicians using the CDC growth charts.

Data Collection:

The internal validity of the study was ensured by the data collectors in both inpatient and outpatient cases at the pediatric department in Al-Ahmadi hospital by analyzing the data between obese and non-obese children of the same age.

Data Analysis:

In this retrospective study of 2500 children aged between 2 and 14 years of age, included were the records of age, weight, height, calculated BMI and plot it on suitable charts leading to the determination of the obesity status of each child. Also, we noted the calculated BMI for the parents.

Results:

Out of 2500 children data we found that, 137 (5.48%) children have BMI between 85% and 95% for age and they were considered as overweight. Also, 65 (2.6%) children with BMI 95% for age or above and they were considered as-obese. Besides, 60 (2.39%) cases had normal height while only 5 cases (0.2%) had low height for age and sex. Out of these 5 cases, only 2 children (0.08%) had at least one of parent considered as obese (Table 1).

The frequency of obese children in this retrospective study appeared to be very low compared to other studies particularly the one conducted in Al-Khobar. We, therefore, stratified the study sample by ethnic background, Saudi vs Non-Saudi nationals, in order to find the obesity rate in the Saudi children. Table 2, showed these data which indicated that, only 20.72% of the children in the study were Saudis while the vast majority (79.18%) were non-Saudi nationals (not classified by country of origin or birth). Also, it was interesting to note that , despite the difference in the study samples representing Saudi and non-Saudi nationals, the incidence of both overweight and obese children was nearly 3 times higher among Saudis compared to the non-Saudis (Table 2).

Discussion:

Childhood obesity is emerging as a major problem in different countries of the world with some showing epidemic levels.[8-10,23] Although the actual causes of obesity still remain to be fully understood, the role of both genetic and environmental, particularly dietary, factors has been implicated in the development of obesity. Childhood obesity, regardless of the differences in causes, poses serious health and psycho-social problems for children. Rapid economic growth in Saudi Arabia has resulted in considerable environmental changes including food habits of the children with increasing consumption of fast food and beverages in addition to the exposure to various pollutants. Also, the high rates of consanguinity resulting in relatively higher incidence of genetic diseases in Saudi Arabia suggested that mutations in disease susceptibility genes in interaction with environmental/dietary factors may enhance the frequency of chronic diseases including health problems like obesity. An identification of the cause-effect relationship for

obesity would greatly help in designing proper preventive strategies. Therefore, there is a need for accumulating epidemiological data on the prevalence of obesity in the Saudi population. Unfortunately there is a paucity of such data focusing on the Saudi children.

Our limited retrospective study addressed the question of prevalence of childhood obesity in Madinah. It appeared that the incidence of childhood obesity in our study sample is far below that reported from Al-Khobar.[15] Like any other similar hospital/clinic- based study the consequence of biasness affecting the results observed in our samples or those from Al-Khobar cannot be ruled out. This possibility underscores the need for population-based studies on a large sample of children with additional questions incorporated in the questionnaire to derive information on dietary/environmental factors, socio-economic and ethnic background, and familial incidence etc. Such a study is now in progress for the Madinah population.

However, our preliminary retrospective study revealed that the frequency of overweight and obese children among Saudi nationals is at least 3 times higher than among other nationals. This may reflect the results of socio-economic and dietary factors affecting the Saudi children in addition to probable genetic susceptibility. Both these suggestions must be addressed by further epidemiologic and well-designed experimental studies on obesity and its causal factors.

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Conflict of interest:

The authors have no conflict of interest to declare.

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