

PREVALENCE OF OVERWEIGHT AND OBESITY ACROSS PRESCHOOL CHILDREN FROM FOUR CITIES OF THE KINGDOM OF BAHRAIN

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ABSTRACT

Background: Overweight and obesity among preschool children has received worldwide attention, partly in response to concerns about the increasing prevalence of obesity globally and partly as a result of the association between childhood obesity and the long term increases in mortality and morbidity.

Aims & Objective: The aim of this study was to investigate whether obesity among preschool children in Bahrain was considered to be a real problem and to identify the risk factors contributing to overweight children.

Material and Methods: Data for 387 children on the prevalence of overweight and obesity were retrieved from local health centre's databases retrospectively. In this cross-sectional study, four different local health centers distributed across the country were randomly selected. The BMI-for-age references by the Centers for Disease Control and Prevention (CDC) and Z score references by World Health Organization (WHO)/ National Center for Health Statistics (NCHS) were used to classify the weight status of the children.

Results: We examined 387 records of children from 3 to 60 months old, of which 15025 were registered within four health centers which were selected for this study. Based on the BMI percentile, 9.8% were at risk of being overweight, while 5.2% were considered obese. However, by using the BMI-for-age Z score; we found that 12.1% were at risk of being overweight and 2.6% were obese. Children's aged from 18 to 24 months reported the highest prevalence of overweight and obesity 6.1%, on the other hand children aged from 9 to 12 months were more at risk of being overweight 20.3%, $p = 0.05$.

Conclusion: The results in this study indicate that the prevalence of overweight and obesity among preschool children in the Kingdom of Bahrain is comparable to other countries such as Germany, China, and Kuwait.

KEY-WORDS: BMI; CDC; NCHS; Obesity; Z score

Introduction

Overweight and obesity among preschool children has received worldwide attention, partly in response to concerns about the increasing prevalence of obesity globally^[1], and partly as a result of the association between childhood obesity and the long term increases in mortality and morbidity^[2]. Obesity among children will continue to be challenging without fundamental understanding of the crucial factors underlying the early childhood and identification of effective interventions.^[2]

The World Health Organization in one recent report stated that the world, including developing

countries, is facing a global epidemic of obesity.^[3] In 2010, 43million children were estimated to be overweight and obese. Out of these children, 35 million originated from developing countries.^[4] The prevalence of childhood overweight and obesity worldwide increased from 4.2% in 1990 to 6.7% in 2010. In the USA between 1963 and 2002, the prevalence of overweight increased significantly from 4.2% to 15.8% among children aged from 6 to 11 year olds.^[5] In one recent report in 2012, it showed that 17% of children and adolescents in the U.S. are obese.^[6]

In the kingdom of Bahrain, obesity among preschool children aged 2 to 5 years old was investigated in 2009. Researchers reported the

results by using the World Health Organization percentile cut-off values. They found that overweight (12.3%) and obesity (8.4%) was higher in females between 2 and ≤ 4 years of age whereas, the proportion of both overweight (8.4%) and obesity (7.2%) were higher in males between 4 and < 6 years of age.^[7]

There are many serious health consequences as a result of obesity, including increased risk of developing social and psychosocial consequences.^[8] Researchers reported a relationship between long term health complications in the form of metabolic syndromes and cardiovascular diseases in association with childhood overweight and obesity.^[9,10] In investigating the association between child obesity and the latent factors which are responsible for it, researchers reported a significant relationship between child obesity and overweight with parents' (gender, age, and education), mother's works status, duration of breast feeding, and weight at birth.^[11]

This was alarming for some countries. For instance, in the UK, the government has responded to the rising of obesity among children by agreement with public service to work closely to prevent the yearly raise in obesity among children by measuring children's weights in reception years and year six as well.^[3] In the USA, The American Academy of Paediatrics (AAP) recommends routine obesity screening of children starting at age two. At least once a year, a health care provider should assess a child's weight status. This is the recommendation of a federally-convened expert committee, one that represents 15 national health care organizations, including AAP. The child's weight and height as well as age and sex are considered in determining the child's body mass index (BMI) percentile. BMI is a useful tool for estimating body fat.

The aim of this study was to investigate whether obesity among preschool children in Bahrain was considered to be a real problem and to identify the risk factors contributing to overweight children; therefore, we decided to study this phenomenon across four different cities in the kingdom of Bahrain.

Materials and Methods

Population

Data for 387 children on the prevalence of overweight and obesity were retrieved from local health centres' databases retrospectively. In this cross-sectional study, four different local health centers distributed across the country were randomly selected. Children were followed up in regional health centers for routine screening every 2, 4, 6, 9, 12, 18, 24, 36, and 60 months respectively. Essential details in the form of age, sex, weigh, height, were extracted from the database. The BMI-for-age references by the Centers for Disease Control and Prevention (CDC) and Z score references by World Health Organization (WHO)/ National Center for Health Statistics (NCHS) were used to classify the weight status of the children.

Survey

A questionnaire which consisted of 20 items was constructed to collect the following information: date of birth, gender, educational status of the parents, mother's work status, birth order, duration of breast feeding, duration of exclusive breast feeding, and age of weaning. Further information required in the form of breast feeding history was obtained by contacting the family by phone which was recorded in the health centre's database. The instrument was tested by selecting a proportionate stratified (from four health centers) random sample of children's parents. Feasibility was established by time needed to fill in the questionnaire and by the response rate as well. Two way translations in the form of Arabic to English, and English to Arabic were conducted to ensure preservation of the meaning.^[12]

Ethics

Research was approved by the Ethics Committee of Ministry of Health in Bahrain. Verbal approval was obtained from the Department of Maternity and Child Health across the four centers. Written consent was obtained from the parents of children involved in this study.

Statistical Analysis

Data was analyzed using SPSS version 15. Descriptive statistics and frequency distributions were calculated for the study variables. A chi-squared test was used to compare overweight and obese children with normal weight children across different factors such as; different age groups, parental educational status, maternal work status, birth order, birth weight, and type of feeding. A P value of < 0.05 was considered significant.

Results

We examined 387 records of children (197 males, 191 females) from 3 to 60 months old, of which 15025 were registered within the four health centers which were selected for this study. Based on the BMI percentile, 9.8% were at risk of being overweight, while 5.2% were considered obese. However, by using the BMI-for-age Z score; we found that 12.1% were at risk of being overweight and 2.6% were obese. There was significant prevalence of obesity based on children’s ages. Children aged from 18 to 24 months reported the highest prevalence of overweight and obesity 6.1%, on the other hand children aged from 9 to 12 months were more at risk of being overweight 20.3%, p = 0.05.

Table-1: Prevalence of Overweight & Obesity according to BMI Percentile

	N	%
Underweight	20	5.2
Normal	309	79.8
At risk of Overweight	38	9.8
Overweight	20	5.2
Total	387	100.0

Table-2: Prevalence of Overweight & Obesity according to BMI for Age Z-score

	N	%
Underweight	3	.8
Normal	327	84.5
At risk of Overweight	47	12.1
Overweight	10	2.6
Total	387	100.0

In regard to the factors which might contribute to child obesity and overweight we found the following:

- Higher parental education status was associated with increase in the prevalence of overweight and obesity among their children.

Although most parents involved in this study were educated, the results were statically insignificant. These findings are supported by a study conducted by Martorell et al in 2000.^[11]

- Working mothers which represent 64.3% of the total mothers in our study were found to have higher prevalence of overweight and obese children in comparison to housewife’s mothers (3.7% & 2.0% respectively, p = 0.223).
- Children born third, fourth, and fifth in their families represented 74.8% of the total sample reported highest prevalence in of overweight and obesity in comparison with children born first or second in their families, p = 0.36. Our results were contradicted with other studies. Other researchers found that obesity was more prevalent in the first child in the family, which subsequently declined gradually.^[13]
- In this study, 9.7% of children were born small for age, 63.5% were born normal for age and 26.8% were large for age. Children born large for age had significantly higher prevalence of overweight and obesity in their follow up, P = 0.009. These findings correspond with the findings of other studies conducted in Germany^[14], China^[15], and Kuwait^[13].
- In regards to breast feeding, out of 387 children, 88 were breast fed, 255 were mixed fed, and 31 were formula fed which represent 23.5%, 68.2%, and 8.3% respectively. Children who were mixed fed (breast and formula) were found to have higher prevalence of overweight and obesity compared to those only breast fed or only formula fed.

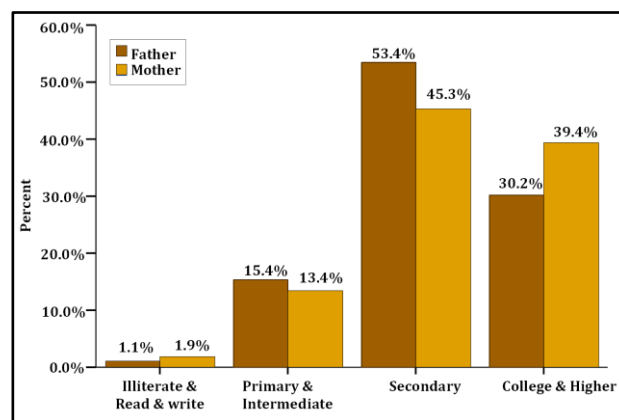


Figure-1: Educational Level of Parents

- However, no difference was found in the prevalence of overweight and obesity in relation to time of weaning. Five months was

reported as the mean age of weaning in this study.

Discussion

Overweight and obesity are considered an epidemic in many countries of the world including developed and developing countries.^[16] Overweight and obesity in children can be affected by several factors, such as parents' education, maternal working status, birth order and type of feeding. Most of the studies reported information regarding overweight and individual risk factors. However, to our knowledge, few studies determined several risk factors that can affect obesity and overweight in children across the Middle East. In addition, this cross sectional study was conducted over four centers distributed all over the country. In terms of if the sample was representative to the total population of children; because of the way centers were distributed we believe that the sample involved in this study is representative for the total children population among this age group in the Kingdom of Bahrain. Although, our results showed that the prevalence of overweight and obesity in preschool children was relatively low, the need to preserve such results will required extraordinary efforts to implement methods or frameworks to prevent such phenomena from occurring in the future.

Conclusion

The results in this study indicate that the prevalence of overweight and obesity among preschool children in the Kingdom of Bahrain is comparable to other countries such as Germany, China, and Kuwait.

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