International Journal of Advanced Research in Biological Sciences
ISSN: 2348-8069
www.ijarbs.com
DOI: 10.22192/ijarbs Coden: IJARQG(USA) Volume 5, Issue 1 - 2018

Research Article

DOI: http://dx.doi.org/10.22192/ijarbs.2018.05.01.014

Prevalence of Overweight and Obesity in Primary-School Children in Alkhalis City, Diyala Governorate, Iraq.

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Abstract

Background: Childhood obesity has been increasing over the past few decades and has become a public health concern in both developed and developing countries.
Aim of the study: To asses the prevalence of the overweight and obesity in primary school children in alkhalis city.
Patients & Methods: A cross- sectional study, it was conducted during October 2013- March 2014 in AlKhalis Primary school children (7-12 years) were studied, Weight and height **w**ere measured, Overweight/obesity were assessed by comparing body mass index (BMI) values to the BMI index for age and sex percentiles set by centers for disease control and prevention.
Results: One thousand and two hundred children were enrolled, 50% for each male and female gender, the mean age of the students was 9.3,mean BMIs for males and females were 18.14 kg/m2 and 18.26 kg/m2 respectively, In both sexes the mean BMI increased with age. Overall, the prevalence rates of obesity, overweight were 8.8%, 26.3% respectively.
Conclusions: Prevalence of overweight/obesity while not as high as in some countries, it suggests that Alkhalis district may be in a nutritional and epidemiological transition process toward increasing childhood obesity, multiple strategies and interventions are needed to prevent overweight/obesity related risk behavior.

Keywords: Obesity, problem, overweight, childhood

Introduction

Childhood obesity was been an increasing problem over the past few decades and became a public health concern in both developed and developing countries[1]. Global estimation indicate that about 43 million children were found to be overweight and obese in the year 2010[2].More than one-fifth of overweight and obese children were from developing countries. The prevalence of overweight globally was expected to increase from 6.7% in 2010 to more than 9% in 2020 compared to the increase from 8.5% to 12.7% in Africa within the same span of time.[2]

The diagnosis of obesity is usually based on measuring BMI [3]. Body mass index (BMI) is acceptable for determining obesity for children two years of age and older [4] .The normal range for BMI in children vary with age and sex. The Centers for Disease Control and Prevention Centers for Disease Control and Prevention defines obesity as a BMI greater than or equal to the 95th percentile.

It has published tables for determining his children. [4][5] Due to the rising prevalence of obesity in children and its many adverse health effects it is being recognized as a serious Public health concern. [3] . The term overweight rather than obese is often used in children as it is less stigmatizing.[3]Childhood obesity can be brought on by a range of factors which often act incombination. The greatest risk factor for child obesity is the obesity of both parents. This may be reflected by the family's environment and genetics. Other reasons may also be due to psychological factors and the child's body type [6] .

Changes in the dietary habits from consumption of traditional foods to intakes of high energy but low nutrient dense foods, frequent snacking and outdoor food consumption coupled with a more sedentary lifestyle are implicated in fueling the increasing problem of childhood obesity. [7] In a study of 548 children over a 19 month period the likelihood of obesity increased 1.6 times for every additional soft drink consumed per day [8] .

It is much more common for young people who come from a racial or ethnic minority, or for those who have a lower socioeconomic status, to be overweight and to engage in less healthy behaviors and sedentary activities, like playing video games and computer games.[9] polymorphism in various genes controlling appetite and metabolism predispose individuals to obesity when sufficient calories are present. As such obesity is a major feature of a number of rare genetic conditions that often present in childhood. [10]. children with early-onset severe obesity (defined by an onset before ten years of age and body mass index over three standard deviation above normal), 7% harbor a single locus mutation. [11]. One study found that 80% of the offspring of two obese parents were obese in contrast to less than 10% of the offsprinig of two parents who were of normal weight. [11]The percentage of obesity that can be attributed to genetics varies from 6% to 85% depending on the population examined. [12]

Childhood obesity can lead to life-threatening conditions including diabetes, high blood pressure, heart disease, sleep problems, cancer, and other disorders. liver disease, early puberty or menarche, eating disorders such as anorexia and bulimia, skin infections, and asthma and other respiratory problems. [13] . A 2008 study has found that children who are obese have carotid arteries which have prematurely aged by as much as thirty years as well as abnormal levels of cholesterol. [13]

Aim of the study: To assess the prevalence of obesity & over weight in primary school children in Alkhalis.

Patients and Methods

This cross-sectional study was carried out from October 2013 to March 2014. Ten (5 schools for boys and 5 schools for girls) of the primary schools of Alkhalis city were recruited for the study, 120 student (20 student for grade) from each school were selected randomly, so the total enrolled student were 1200 (600 for each male and female gender).An informed consent was obtained from all schools managers prior to participation of children in the study.

The students selected were apparently having good health, with no known systemic or debilitating conditions. Interviews and data collection were performed using a self- administered questionnaire, it includes age, sex, BW (body weight), height, BMI (body mass index) & BMI centiles.

After an interview, height and weight were measured by a single well trained person. Body weight was determined using a mechanical scale while the children were wearing light clothes with no shoes, it was approximated to 0.1 kg. Standing height was measured without shoes using a portable stadiometer. The reliability of measurements of height and weight were assessed by repeating the measurements. Body mass index was calculated as weight (kilogram) divided by square of the height (meter).

Obesity, overweight and underweight were categorized according to the BMI index for age and sex percentiles set by the Centers for Disease Control and Prevention. In which BMI $\geq 95^{th}$ percentile was regarded as obese; 85th $\leq$ BMI < 95th percentile as overweight and BMI < 5th percentile as underweight; those with 5th $\leq$ BMI < 85th percentile were categorized as normal.

Analysis of data was carried out using the available statistical package of SPSS-22 (Statistical Packages for Social Sciences- version 22). Data were presented in simple measures of frequency, percentage.

Results

The mean age of the students was 9.3 years. Of the 1200 participants, 50% were male and 50% were female. The mean BMIs for males and females were 18.14 kg/m2 and 18.26 kg/m2 respectively; In both sexes the mean BMI increased with age. Overall, the prevalence rates of obesity, overweight and underweight were 8.8%, 26.3% and 2.6% respectively. **Table (1)** show distribution of the obesity, overweight and underweight by age for males

Table (1): Prevalence of distribution of the obesity, overweight and underweight by age for males .

Age (years) male	Underweight* BMI <5th		Normal** 5th<=BMI< 85th		Overweight*** 85th<=BMI< 95th		Obese**** BMI>=95th	
	No	%	No	%	No	%	No	%
7	3	3.1	43	45.2	39	41.0	10	10.5
8	3	2.8	76	70.4	22	20.4	7	6.5
9	1	0.9	77	72.6	23	21.7	5	4.7
10	2	1.8	70	62.5	28	25.0	12	10.7
11	4	4.1	70	71.4	17	17.3	7	7.1
12	3	3.7	42	51.8	23	28.3	13	16.0
Total	16	2.7	378	63.0	152	25.3	54	9.0

BMI :Body Mass Index*Underweight: BMI <5th**Normal: BMI ≥5th % and less than 85th%*** Overweight≥85th% and less than 95th%****Obesity≥95th%

In **Table (2)** distribution of obesity, overweight and underweight by age for female .The prevalence of overweight &obesity in female increase with increasing the age, at 12 years (30.2%&12.8%) respectively.

Table (2):Prevalence of distribution of obesity, overweight and underweight by age for female

Age (years) female	Underweight* BMI <5th		Normal** 5th<=BMI< 85th		Overweight*** 85th<=BMI< 95th		Obese**** BMI>=95th	
	No	%	No	%	No	%	No	%
7	5	5.2	59	61.4	23	23.9	9	9.3
8	4	3.7	69	63.4	27	25.0	8	7.4
9	1	0.9	74	71.1	24	23.1	5	4.8
10	2	1.8	70	62.5	31	27.7	9	8.0
11	2	2.1	67	71.2	15	15.9	10	10.6
12	2	2.3	47	54.6	26	30.2	11	12.8
Total	16	2.7	386	64.4	146	24.3	52	8.8

BMI :Body Mass Index*Underweight: BMI <5th**Normal: BMI ≥5th % and less than 85th%*** Overweight:≥85th% and less than 95th%****Obesity:≥95th%

Discussion

The findings of the present study indicate an overall prevalence rate of (8.8%for obesity and 26.3% for overweight and 33.6% for both obesity and overweight in children aged 7–12 years living in urban areas in ALkhalis. The mean BMI for boys and girls was similar.

The results of our study are similar to the results reported from other geographic areas of the Arabic worlds . In a study was done in **Kuwait** the prevalence of overweight in boys was (30.0%) & (31.8% in girls).[14] While in **Qatar** they found the prevalence of overweight in boys 28.6% and in girls was 18.9%[15]. So the prevalence of obesity and overweight was increasing .in the recent years this may be attributed to decrease physical activity ,increase sedentary lifestyle, increase consumption of fast food rich in fat &calories.

In other parts of the worlds. Some studies report Similar rates to our results. For example, **Krassas et al(2001)**. reported the prevalence of overweight in 2001 in Greek children aged 6–10 years was 25.3% **(16).** In addition**, Núñez-Rivas et al (2003). who found** that the prevalence of overweight and obesity in children aged7–12 years was 34.5% and 26.2% respectively **in Costa Rica(17).**

Another studies report lower rates than result of our study. **In India**, the prevalence of overweight was reported as 10% among 10–15 year-olds.[18] While **in Turkish** students aged 12–17 years this figure was 10.6%.[19]While some studies report higher rates than ours In a study by **Manzoli et al in 2005 in Italy**, the prevalence of overweight in students aged 6–16 years was 40.6%.[20]and **in Spain** it was 40.0%.[21]

The differences seen in the results of these studies and my study may be attributed partially to the effect of genetic, lifestyle& environmental factors, and variations in the age groups of the samples and because of different study methods and definitions of obesity and underweight across the various studies. The prevalence of overweight/obesity was greater than underweight, and this suggests that Alkhalis city is in a transitional state of increasing childhood overweight and obesity, such as is happening in Middle Eastern and Asian countries because of changes in urbanization and lifestyle in recent years.

the prevalence of obesity and overweight in female children tended to increase significantly with age and the mean BMI tended to increase with age in both sexes. In a study in **Mexican** children aged 10–17years, the prevalence of obesity with respect to age varied from 9.2% to 14.7%and 6.8% to 10.6% in females and males respectively [22].this may be explained by the effect of technology on our life so make us more lazy .

In our study the prevalence of overweight & obesity nearly similar (24.3% & 8.8%in female) (25.3% & 9% in male). In published studies, the prevalence of overweight and obesity was similar in males and females[23].and in other studies these rates were greater in females.[24] The differences in pattern of obesity between the sexes may be explained by the different patterns of growth with respect to age and sex, to the different nutritional behavior or to other lifestyle-related factors between the two sexes. The differences might in part be explained by different study methods and definition of obesity and across various studies.

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DOI:10.22192/ijarbs.2018.05.01.014

How to cite this article:
Aseel Jasim Muhammad, Kareem Assi Obaid, Haider Ghassan, Shefaa Mansour Hemza. (2018). Prevalence of Overweight and Obesity in Primary-School Children in Alkhalis City, Diyala Governorate, Iraq. Int. J. Adv. Res. Biol. Sci. 5(1): 79-83.
DOI: http://dx.doi.org/10.22192/ijarbs.2018.05.01.014