Prevalence of Obesity among Early Adolescent at Secondary School in AL-Nasiriyah City

Jaber Q. Jaber BSN[1], Khamees B. Obaid PhD[2]

Health Department of ThiQar

Assistant professor, College of Nursing, University of Baghdad

Abstract: _Background: Obesity has been rising sharply worldwide in recent years. This epidemic problem not only occurs among adults, but also becomes more serious in children and adolescents. Objective(s): The purposes of the study to determine the prevalence of overweight and obesity among adolescents aged 12–14 years in secondary schools in AL-Nasiriyah city, Iraq. Methodology: A descriptive (Cross sectional) study was conducted on students' at Secondary Schools in AL-Nasiriyah City between the periods of 16 October 2016 to 20 April 2017. In a cluster random sample from 12 secondary school the number of student's early adolescent in these 12 schools was 1500 students aged 12–14 years, 746 males and 754 females. The data were analyzed through the application of descriptive statistic frequency, percentage, and the application of inferential statistical procedures, which include correlation coefficient. Results: The results of the study indicated the prevalence in obesity and overweight in early adolescence in 12 schools in the Nasiriyah city was (13.4%) among the students, and we found that the proportion of obesity in girls 57% slightly more in boys 43%, and the most prevalent category where the proportion of obesity is at the age of 14 years 45.7% and we found that the rate of obesity in grades high in the first grade average 55.5%. Conclusion: The results of the study indicated that there is a high significant relationship between obese students and their general information which include (gender and age), while there is no significant relationship between obese students and class. Recommendations: Increase community awareness about the risks of epidemic of obesity among school children age._

Keywords: Prevalence, Obesity, Early Adolescent, Secondary School.

1. Introduction

Overweight and obesity are defined as abnormal or excessive fat accumulation that presents a risk to health. A crude population measure of obesity is the body mass index (BMI), a person's weight (in kilograms) divided by the square of his or her height (in metres). A person with a BMI of 30 or more is generally considered obese. A person with a BMI equal to or more than 25 is considered overweight[1].

Obesity is defined as abnormal or excessive fat accumulation that may impair health, that occur when an energy imbalance between calories consumed and calories expended [2].

Overweight and obesity are major risk factors for a number of chronic diseases, including diabetes, cardiovascular diseases and cancer. Once considered a problem only in high income countries, overweight and obesity are now dramatically on the rise in low- and middle-income countries, particularly in urban settings. **[1].**

Obesity has been described as a complex, multifactorial chronic disease [3], or as a "multifactor syndrome consisting of physiological, biochemical, metabolic, anatomical, psychological, and social alterations" [4] On the other hand, it has been suggested that excess fat should not be considered as a disease, but instead as a "collective adaptation to the pathological environmental pressure to eat too much and exercise too little" [5].

There was a graded increase in diabetes, hypertension and high serum cholesterol with increasing body weight in nearly all gender, racial and socioeconomic groups. Among the obese individuals, the prevalence of hypertension was higher in black subjects and the prevalence of diabetes, hypertension and heart disease was higher in individuals with lower education compared to their counterparts. The odds of having diabetes, hypertension, heart disease and high serum cholesterol increased with increasing body weight after adjusting for age, gender, race, income, education and smoking[6].

Over the last several decades, the prevalence of childhood obesity has increased in the United States (US) and around the world Childhood obesity is associated with increased risk of health problems and social discrimination, childhood obesity is a significant public health problem in the US, rapid increases in the prevalence among children of both obesity and consequent medical conditions that had previously been rare have led to abundant research and policymaking focus on the issue [7].

Obesity has been rising sharply worldwide in recent years. This epidemic problem not only occurs among adults, but also becomes more serious in children and adolescents, according to estimations by [8] prevalence has increased substantially in children and adolescents in developed countries, for example, in 2013, 24% of boys and 23% of girls were overweight or obese, compared with 17% of boys and 16% of girls in 1980. Specifically, the Centers for Disease Control and Prevention (CDC) reported a rapid 4 fold rise in child and adolescent obesity (aged 6–19) over the past 20 years in US [9], [10].

In 2015, more than 1.9 billion adults worldwide, 18 years and older, were overweight while 462 million were underweight. More than 600 million were obese. In the same year, 42 million children under the age of five were overweight or obese but 156 million were affected by

stunting (low height-for-age). While 50 million children were affected by wasting (low weight-for-height)[11].

The prevalence of overweight and obesity in Iraq was 6% and 1.3%, respectively [12].According to WHO available sources, the prevalence of children overweight and obesity in Iraq was 15% in the year 2006, while prevalence of underweight was 7.1% [11][13].

The local available sources from the Ministry of Health in our country, the prevalence of children overweight and obesity in Iraq was 13.9% in the year 2010 (11.5 % in male, 9.5 % in female), while prevalence of underweight was 6.4% [14][15].The prevalence of overweight was 16.8 %, and prevalence of obesity were 18.15 % in Iraqfound that 7.3% of school students in Baghdad, Iraq, aged 6–12 were obese in central Iraq[16] .The prevalence of overweight/obesity among school children in Basrah city was 24.1% (13.6% were overweight and 10.5% were obese). The prevalence was nearly the same for males and females [17].

Obesity statistics in the middle east and countries nearby (Turkey 49% Jordan 26.3% , Lebanon 36% , Palestinian 32% , Bahrain 28% , Kuwait 29% ,Oman 20% , Qatar 40% , Saudi Arabia 36% , United Arab Emirates 24% , Iran 15% [18].

2. Method

Cross sectional study was conducted on students' at Secondary Schools in AL-Nasiriyah City between the periods of (11 October 2016) to (20 April 2017).The study was carried-out in 8 secondary schools; this number selected throughout the use of probability sampling a simple random sampling (cluster-stratified).The schools selected by simple randomize selection (10%) of total number of schools(75) intermediate school in AL-Nasiriya city.. eight Schools selected randomly include both four boys' schools and four girls' schools.The total number of secondary schools in the city of Nasiriyahwas 75 and the number of students was 33750. We chose 8 schools in a lottery manner divided equally between boys and girls. The number of student's early adolescent in these 8 schools was 1500 students from first and second level. Obesity of 202 students of the total sample. All of the Adolescents' students male and female who were taken obese all from all selected schools and their age between 12 to 14 years.According to literature review of previous studies related to impact of obesity upon school achievement were assessed by anthropometrics measurement. Were measured anthropometrics measurement using BMI calculate by [20] and compare them with the growth chart which is supported by WHO and CDC. Therefore, an instrument was constructed as a questionnaire for the study purpose. Another format for the secondary school student socio-economic and demographic data formed which was established to collect demographic data Prevalence of Obesity among Early Adolescent at Secondary School**.** The final study instrument is composed of two major parts and these parts are:Demographic variable and Anthropometric Measurement (physical measurements: height and weight (BMI)**.**The data collected with constructed questionnaire through an application of direct interview as mean of data collection.We taking all student and check

weight and height to find BMI and compared with growth chart weretaken students between the ages of 12 and 14 and excluded students who were low or older age, from this procedure we finding 202 students have obese.Appropriate statistical approach was carried out to achieve the purpose of the study.

Table 1: Determine Weight Category for Child and Adolescent by BMI

Category	BMI(kg/m²)	Percentile
Under weight	Below 18.5	<5th percentile
Healthy weight	18.5 - 24.9	5th -84th percentile
Overweight	25.0 - 29.9	85th -94th percentile
Obese	30.0 and above	≥95th percentile

[19]

3. Results

Table 1: Distribution of the Study Sample by their General Information

Variables		No.	%
Gender	Male	746	49.7
	Female	754	50.3
	Total	1500	100
Ages (years)	12	370	24.7
	13	519	34.6
	14	611	40.7
	Total	1500	100
Class	1st	725	48.3
	2nd	775	51.7
	Total	1500	100

No.= number, %= percentage

This table shows that 50.3% of the study sample was female, 40.7% of them at age 14 years and 51.7% of them at 2nd class.

Table 2: Distribution of the Study Sample by their Overall Measurement of BMI Percentile Results

BMI percentile	No.	%
Underweight (<5th Percentile)	110	7.3
Normal (5th -84th Percentile)	1188	**79.3**
Overweight (85th -94th Percentile)	95	6.3
Obesity (=>95th Percentile)	107	7.1
Total	1500	100

No. = number, % = percentage

This table (2) shows that (13.4 %) were overweight and obese from (1500) students the total study sample.

Table 3: Distribution of the Obese Students by their General Information

Variables		No.	%
Gender	Male	87	43
	Female	115	**57**
	Total	202	100
Ages (years)	12	33	16
	13	77	38.3
	14	92	**45.7**
	Total	202	100
Class	1st	112	**55.5**
	2nd	90	44.5
	Total	202	100

No.= number, %= percentage

This table(3) shows that 57 % of the obese students were female, 45.7 % of them at age 14 years and 55.5 % of them at 1ˢᵗ class.

Table 4: The relationship between Obese and General Information

Variables		No.	%	Sig.
Gender	Male	87	43	χ²=10.77 sig=**0.032**
	Female	115	**57**	
	Total	202	100	
Ages (years)	12	33	16	χ²=11.17 sig=**0.044**
	13	77	38.3	
	14	92	**45.7**	
	Total	202	100	
Class	1ˢᵗ	112	**55.5**	χ²=18.85 sig=**0.075**
	2ⁿᵈ	90	44.5	
	Total	202	100	

Table (4)shows that there is a high significant relationship between obese students and their general information which include (gender and age), while there is no significant relationship between obese students and (class) at p-value ≤ 0.05.

4. Discussion

Part I: General Information of theobese student adolescents in secondary schools
The study results of gender (Row 1 of Table 1) shows that 49.7 % of the obese students were male and 50.3% female. This result consistent with [21] their studying (Prevalence of overweight and obesity among secondary school adolescents in an urban area of Lagos, Nigeria) their study is shown that majority of participating regarding the gender distribution was evenly split with 46.7%of the sample identified as male and 53.3%percent identified as female.The study results of age (Row 2 of Table 1) shows that 40.7 % of them at age 14 years from student sample. This result consistent with [22] who studying (Does weight status affect academic performance? Evidence from Australian children) their study is shown that the possibility of obesity increases with age, given other variables. This reflects the awareness of appearance or the negative effect of obesity when a child gets older and become more educated. However, the likelihood of overweight and value of BMI increases with age.

The study results of class (Row 3 of Table 1) shows that 51.7 % of them at 2ᵗʰ class from student sample. This result disagrees with their studying (Prevalence of Overweight and Obesity in 7 to 18 Year 0ld Children in Birjand/ Iran) their study is shown indicated that the prevalence of overweight and obesity increases in first second class in the secondary school 55.2 %[23]

Part II: Distribution of the Study Sample by their Overall Measurement of BMI Percentile Results

The study results (in table 2) of BMI Percentile was 7.3 % underweight , 79.3 % normal weight, Overweight 6.3 % , and 7.1 % were obese from (1500) students the total study

sample. This result disagree with [24] their studying (Prevalence of Overweight and Obesity among Students in the Kumasi Metropolis) their study finding indicated that data on BMI showed that 7.40%, of the total sample was underweight, 79.60%, normal weight, 13 % overweight and obese.

Part III: Distribution of the Obese Students by their General Information

The study results (in table 3)this results shows that 57 % of the obese student were female, 45.7 % of them at age 14 years and 55.1% of them at 1ˢᵗ class. This result agrees with[25] who studying (Prevalence of overweight and obesity among high school students of Thiruvananthapuram City Corporation, Kerala, India)his findings indicated that the prevalence of overweight and obesity increases with the age and is found to be high in the age group 14 yrs. The prevalence is high among girls compared to boys. This result agrees with [26] their studying (Prevalence of overweight and obesity among adolescents in Irbid governorate, Jordan) their study is shown indicated that the prevalence of overweight and obesity increases in first second class in the secondary school 35.9 %.

5. Relationship between Obese and General Information

The study results (in table 4) this results shows that there is a high significant relationship between obese students and their general information which include (gender and age), while there is no significant relationship between obese students and (class) at p-value ≤ 0.05. This result contrast with [26]their studying there was a statically significant difference between males and females in terms of overweight and obesity the prevalence of overweight was higher in female (57%) than male students (43%) .and was positive relationship between age and obesity and not found relationship with other variable .

6. Conclusions

The study revealed prevalence in obesity and overweight in early adolescence in 8 schools in the Nasiriyah city was (13.4%) among the students, which are 202 students out of the total number of the sample which was 1500 students.We found that the proportion of obesity in girls slightly more in boys. The most prevalent category where the proportion of obesity is at the age of 14 years just under half and we found that the rate of obesity in grades high in the first grade average Just over half.In conclusion, based on the results of the present study, we can conclude that the prevalence of overweight and obesity was relatively high among school children in the Nasiriyah city.

7. Recommendations

Based on the previous conclusions the researcher can recommended the following :

Application of assessment of children obesity and the preventions particularly at the age of children. Increase

community awareness about the risks of epidemic of obesity among school children. Further studies are needed to find out the causes of spread obesity in the Nasiriyah city.

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