Prevalence of Overweight and Obesity Among Public Primary School Children in Basrah City Center

A thesis

Submitted to the Arab board of health specialization in partial fulfillment of the requirement for the degree of fellowship of the committee of Arab board of health specialization in Family Medicine

By

Firas Abdulkadir Jassim

M.B.Ch.B.

Supervised by

Dr. Ziyad Tarik Maki

M.B.CH.B.,F.I.C.M.S.\ F.M

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بسم الله الرحمن الرحيم

يرفع الله الذين امنو منكم والذين اوتوا العلم درجات

والله بما تعملون خبير

صدق الله العظيم

سورة المجادلة \ الآية 11

Dedication

I would like to dedicate this dissertation to my dear parents who instilled in me the love of learning from an early age.

To my lovely wife who encourage me to achieve my dreams.

To my beautiful kids, my brothers and sisters.

To my parents-in-law who are my role models in completing my research.

To my friend who answer the call and help me at middle of day and middle of night.

Certification

I certify that this dissertation ***Prevalence of Overweight and Obesity Among Public Primary School Children in Basrah City Center*** was carried out under my supervision at the scientific council of family medicine in partial fulfillment for the degree of fellowship of the Arabic board for health specialization in Family Medicine.

Dr. Ziyad Tarik Maki

M.B.CH.B., F.I.C.M.S.\ F.M

(*Supervisor*)

We, the examining committee, after reading this dissertation and examining the candidate Firas Abdulkadir Jassim, in its content, we find that it meets standards and requirements as dissertation in partial fulfillment of the requirement for the degree of fellowship of the committee of Arab board of health specialization in Family Medicine.

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I , the Chairperson of the Scientific Council of Family Medicine, certify that this dissertation was prepared by the candidate Firas Abdulkadir Jassim and submitted to our council.

الدكتورة الاستشارية
بان عبد الرضا الهاشمي
رئيس المجلس العربي لطب الاسرة

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I would like to thank the merciful God for helping me in performing this work and providing me with the power to continue the way all the time.

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Abstract

Obesity is the most prevalent nutritional disorder among children and adolescents. The objective of our study is to estimate the prevalence of overweight and obesity among primary school children in Basra city center, to identify any variation per age and gender and to identify any correlation between obesity and education.

A cross sectional study was designed to estimate the prevalence of obesity in primary school children in Basra city center, in November 2016, the total number of selected schools was 34 and the total number of selected students was 1020, from them 496 were males and 524 were females. Using a designed forma, each child was checked for age, sex, height, weight, class, and whether passing or failed in his class.

The BMI (body mass index) is calculated by special equation, and in turn it was categorizes into four categories, first the underweight, second the normal weight, third the overweight and fourth the obese.

The height and weight for each selected student was measured, using a weight and height scale. The Statistical Package for Social Science (SPSS), Version16 was utilized for the purpose of statistical analysis of the data.

The result of this study showed 11.2% of the students was underweight, 53.6% was normal, and 35.2% was overweight and obese. The overweight and obese represent 15.32 % of the first class, 34.82 % of the third class and 49.86 % of the sixth class. 18.82 % of males and 16.37 % of females were overweight and obese.

From these results, we concluded that the prevalence of overweight and obesity in primary school children in Basra city is relatively high, obviously males are more obese than females, students in the sixth class are more obese in compares' to other classes and obese children are more prone to fail than non obese. In compare to other similar studies in Basra city that done in 2005 and 2011, it was estimated that there is an increase in the trend of obesity as the years advances.

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List of Abbreviations

WHO		World Health Organization
BMI		Body Mass Index
Kg		Kilogram
M		Meter
FTO		Fat mass and obesity-associated protein
PCOS		Polycystic ovary syndrome
CDC		Centers for Disease Control and Prevention
SPSS		Statistical Package for Social Science

Chapter One

Introduction

And

Literature review

1. Introduction and literature review

1.1 Introduction

In the past decade, overweight and obesity among children has become a major public health problem in developed and developing countries. [1]

Adverse outcomes of overweight and obesity include psychological and physical effects during childhood and also increased risk of adult obesity, which is a major independent risk factor for cardiovascular diseases, diabetes, hypertension and cancers. [2]

The increasing rates are results of changing lifestyles and industrialization with the associated increasing rate of television viewing and playing with computer games, consumption of high calorie and high fat foods coupled with low levels of energy expenditure in the form of low physical activity. [3]

The mechanism of obesity development is not fully understood and it is confirmed that obesity occurs when energy intake exceeds energy expenditure. There are multiple etiologies for this imbalance; hence, the rising prevalence of obesity cannot be addressed by a single etiology. [4]

Genetic factors influence the susceptibility of a given child to an obesity conducive environment. However, environmental factors, lifestyle preferences and cultural environment seem to play major roles in the rising prevalence of obesity worldwide. [4]

Overweight and obesity in childhood have significant impact on both physical and psychological health; in addition, psychological disorders such as depression occur with an increased frequency in obese children. [5]

Obesity has become an epidemic in many parts of the world. The WHO has warned of the escalating epidemic of obesity that could put the population in many countries at risk of developing non-communicable diseases. The increasing rate of obesity means that obesity related chronic diseases are likely to become common among the children. Being overweight is known to significantly increase the risk of asthma, type 2 diabetes, gallstone, heart disease, high blood pressure and several other diseases. [6]

Childhood obesity predisposes to insulin resistance and type 2 diabetes, hypertension, hyperlipidemia, liver and renal disease, and reproductive dysfunction. This condition also increases the risk of adult-onset obesity and cardiovascular disease. [7]

During childhood and adolescence, excess fat accumulates when total energy intake exceeds total energy expenditure. This energy imbalance can result from excessive energy intake and/or reduced energy expenditure, the latter is usually a consequence of a sedentary lifestyle. [8]

In infancy, excess fat deposition occurs when excess energy is provided, especially when the protein-to-energy ratio is altered, this is often seen when feedings are supplemented with additives such as carbohydrates or fat and protein content remains the same. [8]

McGavock *et al* demonstrated that low cardiorespiratory fitness and reductions in fitness over time are significantly associated with weight gain and the risk of being overweight in children aged 6-15 years. Analysis on a cohort of 902 schoolchildren showed higher waist circumference and disproportionate weight gain over a 12 month follow-up period in those children with low cardiorespiratory fitness. The 12-month risk of overweight classification was 3.5-fold higher in youth with low cardiorespiratory fitness, relative to fit peers. [9]

In a study by D'Adamo *et al* that evaluated the role of fatty liver in the alteration of insulin sensitivity and β-cell function in obese patients, the investigators concluded that fatty liver, independent of visceral fat and intramyocellular lipid content has a central role in insulin resistance in obese adolescents. [10]

In the United States of America, the average rates for overweight and obesity among children have been reported to be 33% (22% and 11% respectively), while in the state of Carolina it was 48.8% (32.4% and 16.4% respectively). [2] Figures for overweight and obesity for Spain and Italy were 40%, and for Canada 25.3%. [11]

Available studies in Eastern Mediterranean countries indicate that obesity has reached an alarming level among both children and adults. Consequently, the incidence of non-communicable diseases is also very high, and represents more than 50% of total causes of death. [12]

1.2 justification of the study

Obesity among children has become a major public health problem in developed and developing countries, including Iraq, with wide range of adverse outcomes including psychological and physical effects and also increased risk of adult obesity, which is a major risk factor for cardiovascular diseases, diabetes, hypertension and cancers.

1.3 Objectives of the study

1-To estimate the prevalence of overweight and obesity among primary school children in Basra city center defined by BMI.

2-To identify any variation per age and gender.

3-To identify any correlation between obesity and the educational level of the student, whether pass or failed in the previous stage.

1.4 Review of literatures

1.4.1 Definition

Obesity is a medical condition in which excess body fat has accumulated to the extent that it may have a negative effect on health, leading to reduced life expectancy and/or increased health problems. [13]

People are considered obese when their BMI (a measurement obtained by dividing a person's weight in (Kg) by the square of the person's height in (m)), exceeds 30 kg/m^2, and with the range 25-30 kg/m^2 defined as overweight. [14]

Childhood obesity is a condition where excess body fat negatively affects a child's health or well-being. The methods to determine body fat directly are difficult; the diagnosis of obesity is often based on BMI. 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. [15]

Obesity is most commonly caused by a combination of excessive food energy intake, lack of physical activity, and genetic susceptibility, although a few cases are caused primarily by genes, endocrine disorders, medications, or psychiatric illness. Evidence to support the view that some obese people eat little yet gain weight due to a slow metabolism is limited. [16]

Obesity increases the likelihood of various diseases, particularly heart disease, type 2 diabetes, obstructive sleep apnea, certain types of cancer and osteoarthritis. [13]

1.4.2 Classification

BMI is acceptable for determining obesity for children two years of age and older. [17] The normal ranges for BMI in children vary with age and sex. It is calculated in the same way as for adults, but then compared to typical values for other children of the same age. Instead of comparison against fixed thresholds for underweight and overweight, the BMI is compared against the percentile for children of the same sex and age.

A BMI that is less than the 5th percentile is considered underweight and above the 95th percentile is considered obese. Children with a BMI between the 85th and 95th percentile are considered to be overweight. [18] *(Appendix 2).*

1.4.3 Statistics

With more than 42 million overweight children around the world, childhood obesity is increasing worldwide. [17] Since 1980, the number of obese children has doubled in all three North American countries, Mexico, the United States, and Canada. Although the rate of childhood obesity in the United States has stopped increasing, the current rate remains high. In 2010, 32.6 % of (6 to 11 year) old were overweight, and (18 % of 6 to 9 years) old were obese. [19]

International data reporting regarding childhood obesity varies and accuracy may be less than optimal, however, Eneli and Dele Davies reported that in 77% of the countries analysed, the prevalence rate for children who were overweight was at least 10%. Notably, the highest [20]

rates for children at risk for obesity were found in Malta (25.4%), Lithuania (5.1%) and Latvia (5.9%) had the lowest rates. A recent European Youth Heart Study suggests Swedish children have a lower risk of becoming overweight or obese in adolescence compared with Estonian children. [20]

A study in Iran at 2006 showed that prevalence of obesity and overweight was 5.8% and 12.3% respectively. [21]

In Saudi Arabia a study among Saudi primary school students showed that the prevalence of overweight and obesity among male primary school students were 7.3% and 17.4%, respectively, while the prevalence among female students were 12.4% and 20.9%, respectively.[22]

1.4.4 Etiology

1.4.4.1 Genetics

Childhood obesity is often the result of interplay between many genetic and environmental factors. Polymorphisms in various genes controlling appetite and metabolism predispose individuals to obesity when sufficient calories are present. Over 200 genes affect weight by determining activity level, food preferences, and metabolism,[40] having two copies of the allele called FTO increases the likelihood of both obesity and diabetes. [23]

- Genetic syndromes associated with childhood obesity include the following :

- Prader-Willi syndrome.
- Pseudohypoparathyroidism.
- Laurence-Moon-Biedl (Bardet-Biedl) syndrome.
- Cohen syndrome.
- Down syndrome.
- Turner syndrome. [23]

1.4.4.2 Hormonal disorders

- Hormonal disorders associated with childhood obesity include the following :
  - Growth hormone deficiency.
  - Growth hormone resistance.
  - Hypothyroidism.
  - Leptin deficiency or resistance to leptin action.
  - Glucocorticoid excess (Cushing syndrome).
  - Precocious puberty.
  - PCOS.
  - Prolactin secreting tumor. [24]

1.4.4.3 Medications

- Medications that may cause weight gain in children and
- adolescents include the following :
- Cortisol and other glucocorticoids.
- Megace.
- Sulfonylureas.
- Tricyclic antidepressants.
- Monoamine oxidase inhibitors , such as phenelzine.
- Insulin (in excessive doses).
- Thiazolidinediones.
- Risperidone.
- Clozapine. [24]

1.4.4.4 Family and social Practices

In the recent decades, family practices have significantly changed, and several of these practices greatly contribute to childhood obesity.

With a decreasing number of mothers who breast-feed, more infants become obese children as they grow up. Fewer children go outside and engage in active play as technologies, such as the television and video games that keep children indoors rather than walking, more school-age children are driven to school by their parents, reducing physical activity.

Different communities and nations have adopted varying social practices and policies that are either beneficial or detrimental to children's physical health. [17]

1.4.4.5 Advertising

Advertising of unhealthy foods correlates with childhood obesity rates. In some nations, advertising of candy, cereal, and fast-food restaurants is illegal or limited on children's television channels. The media defends itself by blaming the parents for yielding to their children's demands for unhealthy foods. [25]

1.4.4.6 Socioeconomic Status

It is much more common for those who have a lower socioeconomic status, to be overweight and to engage in less healthy behaviours and sedentary activities. [26]

1.4.5 Health Effects of Childhood Obesity

1.4.5.1 Immediate health effects

Obese youth are more likely to have risk factors for cardiovascular disease, such as high cholesterol or high blood pressure.

In a population-based sample of 5 to 17 year olds, 70% of obese youth had at least one risk factor for cardiovascular disease. [27]

Obese adolescents are more likely to have prediabetes, a condition in which blood glucose levels indicate a high risk for development of diabetes. [28]

Children and adolescents who are obese are at greater risk for bone and joint problems, sleep apnea, and social and psychological problems such as stigmatization and poor self-esteem. [29]

1.4.5.2 Long-term health effects

Children and adolescents who are obese are likely to be obese as adults and are therefore more at risk for adult health problems such as heart disease, type 2 diabetes, stroke, several types of cancer, and osteoarthritis. [30]

Overweight and obesity are associated with increased risk for many types of cancer, including cancer of the breast, colon, endometrium, oesophagus, kidney, pancreas, gall bladder, thyroid, ovary, cervix and prostate, as well as multiple myeloma and Hodgkin's lymphoma. [31]

1.4.6 Clinical Presentation

History and physical examination.

Clinical clues that suggest a hormonal etiology for childhood obesity include the following:

- Weight gain out of character for the family.
- Progressive weight gain without a comparable increase in linear growth.
- Dry skin, constipation, intolerance to cold and fatigability.
- Accumulation of fat in the neck and trunk but not in the arms or legs.
- Purple striae (stretch marks).
- Hypertension.
- Inappropriate sexual development at an early age.
- Excess facial hair, acne, and/or irregular menses in a teenage girl.
- Headaches, vomiting, visual disturbances, or excessive urination and drinking.
- Treatment with certain drugs or medications. [24]

1.4.7 Management of childhood obesity

1- Treatment for children who are overweight :

The American Academy of Paediatrics recommends that children older than 2 years and adolescents whose weight falls in the overweight category be put on a weight-maintenance program to slow the progress of weight gain. This strategy allows the child to add inches in height but not pounds, causing BMI to drop over time into a healthier range. [32]

2- Treatment for children who are obese :

Children ages 6 to 11 who are obese might be encouraged to modify their eating habits for gradual weight loss of no more than 1 pound (or about 0.5 kg) a month. Older children and adolescents who are obese or severely obese might be encouraged to modify their eating habits to aim for weight loss of up to 2 pounds (or about 1 kg) a week.

3- Healthy eating.

4- Physical activity.

5- Medications.

6- Weight-loss surgery. [32]

1.4.8 Studies

In Union Territory of Puducherry in India, study of childhood obesity among school children between 6 and 12 years were sampled using multistage random sampling with population proportionate to size from 30 clusters, they found that the prevalence of overweight among children was 4.41% and prevalence of obesity was 2.12%.

Mahe region had the highest prevalence of overweight 8.66% and obesity 4.69%. [33]

A study on prevalence of overweight and obesity in primary school children in Port Said city in Egypt, prevalence of overweight and obesity was 17.7% and 13.5% respectively. The rate of obesity was the highest at the age of 7–8 years and decreased with an increase in age, [34]

while overweight increased with an increase in age to be the highest at the age of 9–10 and 10–11 year. [34]

A cross-sectional study on primary school children aged 7 to 12 years living in urban areas of Babol, northern Islamic Republic of Iran in 2006, the prevalence of obesity and overweight was 5.8% and 12.3% respectively. The prevalence was significantly lower in girls compared with boys and higher among private-school. [21]

A cross-sectional study was conducted among school children in the north of Jordan at 2006, 19.4% were overweight (18.8% of boys and 19.9% of girls) and 5.6% were obese (5.6% of boys and 5.5% of girls). [35]

Overweight and obesity have reached an epidemic in Kuwait, a cross-sectional study is done to evaluate the prevalence of overweight and obesity among school children. According to WHO, the prevalence estimate overweight was 21.6% and the prevalence of obesity was 30.5%. [36]

A study to determine the prevalence and risk factors of overweight and obesity among Saudi primary school students in Tabuk, a cross sectional study was conducted among primary schools students, The prevalence of overweight and obesity among male primary school students was 24.7 (7.3% and 17.4%, respectively), while the prevalence among female students was 33.3% (12.4% and 20.9% respectively). [22]

Lafta *et al*, this study was assessed the prevalence of overweight and obesity in primary schools children in center of Iraq. The study was conducted in Babil Governorate in 2002. The prevalence of overweight and obesity was 7.3% (6% and 1.3% respectively). [37]

A study on health status of primary schools children in Basra, by Ebrahim in 2005, showed that prevalence of underweight children was 31.7%, while the prevalence of overweight children was 19.6% of their sample. [38]

A recent study on childhood obesity in Basra city was done by Salman, which was a descriptive cross sectional study conducted on a sample of children who attended public primary schools in 2011. The study found that the prevalence of overweight and obesity among primary schools children in Basra city was 24.1% (13.6% 0verweight and 10.5% obese). [39]

Chapter Two

Methodology

2. Methodology

2.1 Study setting

A total of 34 public primary schools in Basra city were involved in this study.

The agreement of the Basra education authority has been taken. *(Appendix 1).*

2.2 Design and duration of the study

A descriptive cross sectional study was designed involving public primary school children in Basra city. This study was carried out having a period from the first of November 2016 to the first of May 2017.

2.3 Sample size

Equation: $$\textbf{\textit{Sample size}} = \frac{Z^2 * P * (1-P)}{C^2}$$

Z: value obtained from the statistical tables (1.96 for 95 % confidence level).

P: percentage obtained from the recent research (24 %). [39]

C: confidence interval (0.03).

So the acceptable sample size for this study is:

$$SS = \frac{1.96^2 * 0.24(1 - 0.24)}{0.03^2}$$

$$= 777$$

In this study atrial to get a bigger sample (1020) that is to be more representative to general population.

2.4 The study sample and data collection

A systemic randomised sample technique was used for the purpose of the study. The total number of the selected schools was 34 (12 schools for males and 12 schools for females), which choose randomly from a list of schools taken from Directorate General of Education in Basrah; from the selected schools we choose three classes randomly and from each class we choose one line. The total number of selected students was 1020, from them 496 (48.6%) were males and 524 (51.4%) were females.

2.5 The studied variables

- Age: the primary school age, extending from 6- 15 years.
- Sex: males and females.
- Weight: in kilogram.
- Height: in meter.
- BMI: in kg/m^2

  Where the BMI had categorized into 4 categories:

  1. underweight: BMI below the 5th percentile.
  2. normal weight: BMI at the 5th and less than the 85th percentile.
  3. overweight: BMI at the 85th and below 95th percentiles.
  4. obese: BMI at or above 95th percentile.
- The annual final result of students, which is either passed or failed.
- The Class: three classes of the primary schools were chosen (first, third and sixth class).

2.6 Materials

A designed form was used for the purpose of the study that was displayed to teachers in the college of medicine and college of nursing as expert to take their opinions and advices, which include information related to the variables as shown in (Appendix 3).

We measured the height and weight for each selected student by using a weight and height scale, then the BMI was calculated.

BMI-for-age charts for both genders (applied by WHO) was used to found out the category for each child (Appendix 2).

2.7 Statistical analysis

SPSS Version 16 was used for the purpose of statistical analysis of the data. The statistical measures were in form of means, standard deviation, frequencies, percentages, and person correlation.

Chapter Three

Results

3. Results

3.1 Distribution of the studied students in relation to variables

A total of 1020 public primary school students were included in this study, their ages were between 6 to 15 year old, their lengths were 1.06 to 1.74 meter, their weights were 14 to 106 Kg, and their BMI were 8.79 to 40.39.kg/m^2 .(Table 3.1)

Table 3.1 Distribution of the studied students in relation to variables

Variables	Minimum	Maximum	Mean	Std. Deviation
Age (year)	6	15	8.45	2.150
Height (m)	1.06	1.74	1.3326	0.14262
Weight (kg)	14.00	106.00	34.5991	14.41213
BMI (kg/m^2)	8.79	40.39	18.6842	4.50683

3.2 Distribution of the studied students according to age

Results showed the distribution of the sample according to age were 31.7 % of the students aged 6 years, 30.4 % were 8 years and 28.7 % were 11 years, that is mean a 91% of the studied student are within the ages 6, 8 and 11 years, while only 9 % had other different ages where they represent the failed students. (Table 3.2)

Table 3.2 Distribution of the studied students according to age

Age in years	Number	%
6	323	31.7
7	16	1.6
8	310	30.4
9	27	2.6
10	4	0.4
11	293	28.7
12	35	3.4
13	7	0.7
14	4	0.4
15	1	0.1
Total	**1020**	**100**

3.3 Distribution of studied students according to gender

This study showed that 48.6 % of the studied students were males and 51.4 % were females. (Table 3.3)

Table 3.3 Distribution of studied students according to gender

Gender	Number	%
Males	496	48.6%
Females	524	51.4%
Total	1020	100 %

3.4 Distribution of studied students according to gender and BMI categories

This study showed that 53.6 % of the total sample was having normal weight, regarding the gender 25.2 % of them were male and 28.4 % were female. (Table 3.4)

The prevalence of overweight and obesity in our study was 35.2 % of the total sample, (18.82 % of them were males and 16.37 % were females). (Table 3.5)

The prevalence of overweight was 19 % of the total sample (10.2 % of them were males and 8.82 % were females), while the prevalence of obesity was 16.2 % of the total sample (8.62 % of them were males and 7.54 % were females). (Tables 3.6 and 3.7)

The prevalence of underweight was 11.2 % of the total sample, (4.6 % of them were males and 6.6 % were females). (Table 3.8)

Table 3.4 Distribution of studied students according to gender and BMI categories for the normal weight

	Normal weight		Total (sample)	
Gender	Number	%	Number	%
Males	257	25.2 %	496	48.6 %
Females	290	28.4 %	524	51.4 %
Total	547	53.6 %	1020	100 %

Table 3.5 Distribution of studied students according to gender and BMI categories for the overweight and obese

	Over weight and obesity		Total	
Gender	Frequency	%	Frequency	%
Males	192	18.82 %	496	48.6 %
Females	167	16.37 %	524	51.4 %
Total	359	35.2 %	1020	100 %

Table 3.6 Distribution of students according to gender and BMI categories for the overweight

	Over weight		Total	
Gender	Number	%	Number	%
Males	104	10.2%	496	48.6 %
Females	90	8.82 %	524	51.4 %
Total	194	19 %	1020	100 %

Table 3.7 Distribution of students according to gender and BMI categories for the obese

	Obese		Total	
Gender	**Number**	**%**	**Number**	**%**
Males	88	8.62 %	496	48.6 %
Females	77	7.54 %	524	51.4 %
Total	165	16.2 %	1020	100 %

Table 3.8 Distribution of studied students according to gender and BMI categories for the underweight

	Under weight		Total	
Gender	**Number**	**%**	**Number**	**%**
Males	47	4.6 %	496	48.6 %
Females	67	6.6 %	524	51.4 %
Total	114	11.2 %	1020	100 %

3.5 Distribution of studied students according to BMI categories and student's class

The results showed that 11.2 % of the students was under weight, 53.6 % was normal, and 35.2 % was overweight and obese. Regarding underweight, it represents 62.28 % of the first class, 32.46 % of the third class and 5.26 % of the sixth class. For the normal weight, it represents 39.12 % of the first class, 32.54 % of the third class, and 28.34 % of the sixth class. For the overweight and obese, it represents 15.32 % of the first class, 34.82 % of the third class and 49.86 % of the sixth class. So it was clear that underweight was more in first class while obesity was more in sixth class.

Table 3.9 Distribution of studied students according to BMI categories and student's class

BMI categories	First class		Third class		Sixth class		Total	
Underweight	71	62.28 %	37	32.46 %	6	5.26 %	114	11.2 %
Normal weight	214	39.12 %	178	32.54 %	155	28.34 %	547	53.6 %
Overweight and Obese	55	15.32 %	125	34.82 %	179	49.86 %	359	35.2 %
Total	340	33.33 %	340	33.33 %	340	33.33 %	1020	100 %

3.6 The association between age of studied students and BMI categories

The results showed a high significant association between age of the students and the BMI categories. (Table 3.10)

Table 3.10 The association between age of studied students and BMI categories

Correlations		Age	BMI
Age	Pearson Correlation	1	.545**
	Sig. (2-tailed)		.000
	N	1020	1020
BMI	Pearson Correlation	.545**	1
	Sig. (2-tailed)	.000	
	N	1020	1020

**. Correlation is significant at the 0.01 level (2-tailed).

3.7 The relation of the BMI categories with the final result of the studied students whether passed the class or failed in the class

The results showed a high significant association between positive final result of the students and normal weight. (Table 3.11)

The percentages of positive final results for underweight, normal weight, overweight and obesity were 93%, 96%, 86% and 85% respectively. So it is more in normal weight and less in obesity. (Table 3.12)

Table 3.11 The relation of the BMI categories with the final result of the students whether passed the class or failed in the class

Correlations		BMI	Pass
BMI	Pearson Correlation	1	.191**
	Sig. (2-tailed)		.000
	N	1020	1020
Pass	Pearson Correlation	.191**	1
	Sig. (2-tailed)	.000	
	N	1020	1020

**. Correlation is significant at the 0.01 level (2-tailed).

Table 3.12 The distribution of the BMI categories with the positive final result of the students

BMI categories	Final result		Total	Percentage of positive final result
	Pass	fail		
1	106	8	114	93%
2	525	22	547	96%
3	167	27	194	86%
4	140	25	165	85%
TOTAL	938	82	1020	92%

Chapter Four

Discussion

4. Discussion

The global prevalence of childhood obesity is increasing. Overweight children face risks of compromised physical and mental well-being, increased incidence of disease processes, and increased risk of adult obesity. Health providers play a unique role in reversing the prevalence of obesity, yet there is little understanding of what practices are utilized to monitor children's weight. Identifying children who are obese or who are at risk for becoming obese may rely on evidence based weight monitoring practices.

In Iraq the prevalence of overweight and obesity were increasing as in the other countries in the world so the study of childhood obesity is an important subject as a part of the general health of the community.

This study showed that 11.2 % of the public primary school students was under weight, 53.6 % was normal, and 35.2 % was overweight and obese. The prevalence of overweight was 19 %, while the prevalence of obesity was 16.2 % of the total sample.

Salman study which was done in Basra city at 2011 on the same population showed that 24.1 % of their samples were overweight and obese (13.6% and 10.5% respectively), [39] while Ebrahim study which was done in Basra city at 2005 on the primary school showed that 19.6 % of their samples was overweight and obese, [38] and a study done by Lafta *et al*, at 2002 showed that the prevalence of overweight and obesity in primary school children in Babil Governorate was 7.3% (6% and 1.3%, respectively).[37] (All of them are less than this study).

The prevalence of overweight and obesity in Saudi primary school students in Tabuk were 24.7 (7.3% and 17.4%, respectively) in males, and 33.3% (12.4% and 20.9% respectively) in females, [22] that is mean overweight is less in male and more in female while obesity is more in both genders in compare to this study.

Among schools children in the north of Jordan, the prevalence were 19.4% for overweight and 5.6% for obese, [35] so the obesity is less and overweight is near to this study.

A study on primary-schools children aged 7 to 12 years living in urban areas of Babol, northern Islamic Republic of Iran at 2006, showed that the prevalence of obesity and overweight was 5.8% and 12.3% respectively i.e. (18.1 %) and the prevalence was significantly lower in girls compared with boys. [21]

The prevalence of obesity is less than this study, while it is similar in that the prevalence of obesity is much in boys in compare to girls.

An Indian study in Union Territory of Puducherry showed that the prevalence of overweight and obesity was 6.53%, while in Mahe region had the highest prevalence of overweight and obesity 13.35 %. (Both these two results are less than this study). [33]

In Indian study the female children were more overweight and obese in compare to boys, [33] where the reverse is in this study.

A study on Prevalence of overweight and obesity in primary school children in Port Said city showed that prevalence of overweight and obesity was 31.2 %(which is near to this study). [34]

In the United States of America, the average rates for overweight and obesity among children in 2010 was 50.6% [19] , and the state of Carolina, it was 48.8%,[2] Spain and Italy were 40%, (all of them more than this study), but for Canada it was 25.3% [11] (less than this study).

Chapter Five

Conclusion
and
Recommendation

5. Conclusions and Recommendations

5.1 Conclusions

1- The prevalence of overweight and obesity in primary school children in Basra city was 35.2 %.

2- Generally males are more obese than females.

3- Students in the sixth class are more obese in compare to other classes.

4- Obese children are more prone to fail than none obese.

5- There is an increase in the trend of obesity as the years advance.

6- The increasing trend of obesity in Iraq indicates that the recommendations of the last studies did not take in the consideration and there is no specialised program directed toward the prevention of obesity.

5.2 Recommendations

1- Reversing the rapid increase in obesity primary schools children will require a multi-pronged approach by schools, families, communities, industry, and government that would be as comprehensive as national anti-smoking efforts.

2- Increase and improve opportunities for children to engage in physical activity and eat a healthy diet.

3- Schools should implement nutritional standards for all foods and beverages served on school grounds.

4- Schools should expand opportunities for all students to engage in at least 30 minutes of moderate to vigorous physical activity each day. Schools should provide physical education classes that last 30 to 60 minutes each day.

5- School health services should measure each student's weight, height BMI. annually and provide the results to the students and families.

6- Parents must play their part as well, by providing healthy foods in the home and encouraging physical activity by limiting their children's television time, video game, and computer time to less than two hours a day.

7- Educational programs about obesity and associated health consequences should start early in childhood so as prevent the increasing prevalence of childhood obesity.

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Appendices

Appendix 1

بسمه تعالى

جمهورية العراق

وزارة التعليم العالي والبحث العلمي

دائرة التخطيط والمتابعة

العدد ١١

التاريخ ٢٠١٢/١/١١

الرجاء الاشارة الى الرقم اعلاه وتاريخه عند الاجابة على هذا الكتاب

الى / ادارات المدارس في محافظة البصرة كافة

الموضوع / موافقة

.....

يهديكم اطيب التحيات .....

لامانع لدينا من دخول السيد (فراس عبد الامير حاسم) الى المدارس واخذ المعلومات الخاصة بالبحث الموسوم (مدى تقبل ظاهرة التعمية لدى اطفال المدارس الابتدائية) راجين تسهيل الامر .....مع التقدير.

أ.د. مسلم عبد الكريم ناصر

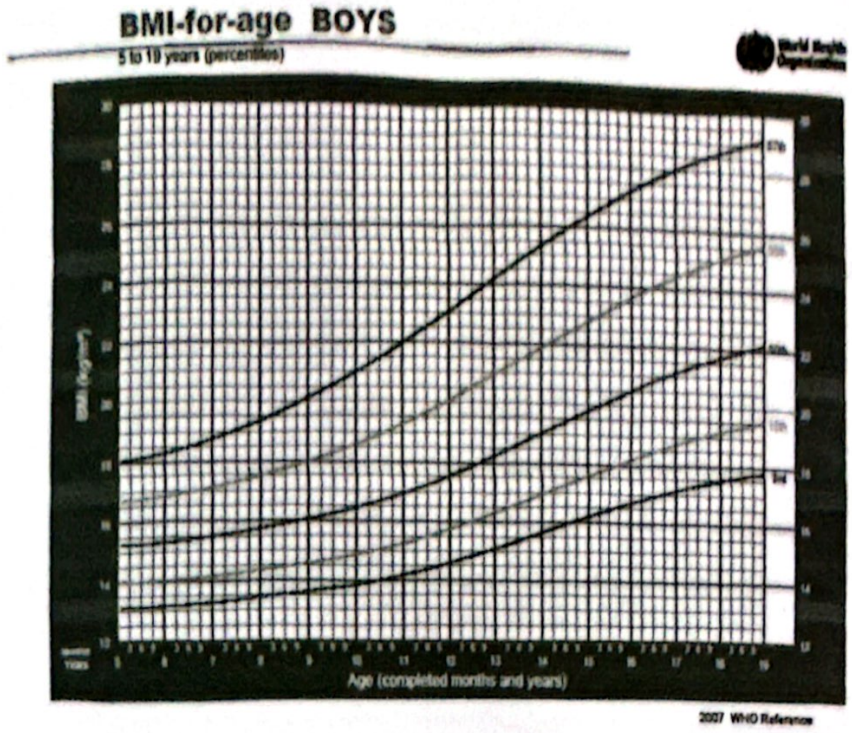
ع/ المدير العام

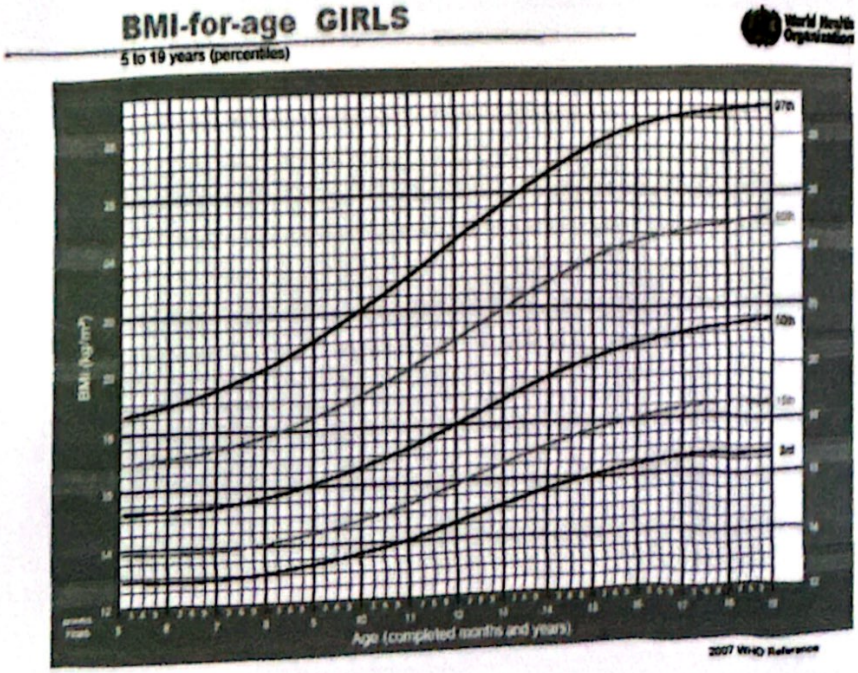
نسخة منه الى

- دائرة صحة البصرة -المجلس العربي للاختصاصات إقليم العراق ٢٥٥ في ٢٠١٢/١/٩ يقدم مع التقدير.

- الاشراف التربوي الاختصاصي للعلوم ... مع التقدير.

Appendix 2





Appendix 3

المدرسة :
مكان ا لمدرسة:
عدد الصفوف:
عدد طلبة المدرسة:
التاريخ: / /
الصف :
عدد طلبة الصف :

ت	الأسم	العمر	الجنس	الطول (m)	الوزن (kg)	BMI	Category	نتيجة العام الماضي
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

الخلاصة

الهدف من الدراسة هو قياس نسبة انتشار السمنة وزيادة الوزن في أطفال المدارس الابتدائية في مركز محافظة البصرة و لمعرفة الاختلافات في الوزن حسب العمر والجنس و لمعرفة العلاقة بين السمنة والتعلم .

دراسة مقطعية صممت لقياس نسبة السمنة في أطفال المدارس الابتدائية الحكومية في مركز محافظة البصرة في عام 2017، العدد الكلي للعينة المختارة من المدارس كان 34 مدرسة والعدد الكلي للتلاميذ المختارين كان 1020، منهم 524 اناث و 496 ذكور ولقد استخدم الباحث استبانة مصممه لغرض الدراسة .

كل تلميذ أخذت منه المعلومات التالية : العمر، الجنس، الطول، الوزن، الصف، وكونه قد نجح او رسب في صفه . ثم تم تحديد كتلة الجسم (BMI) بمعادلة رياضيه خاصة المستخدمة من قبل منظمة الصحة الدولية (WHO)، ومن ثم تم تقسيم نتائج كتلة الجسم الى اربعة اصناف : الصنف الأول ذوي الاوزان المنخفضة , الصنف الثاني ذوي الاوزان الطبيعية والصنف الثالث ذوي الاوزان المرتفعة والصنف الرابع ذوي الاوزان السمان .
قام الباحث بقياس الطول والوزن لكل طالب مستخدما جهازا خاصا لقياس الطول والوزن .
قام الباحث باستخدام برنامج (SPSS) الإصدار16 لغرض تحليل النتائج .

اظهرت نتائج الدراسة ان 11.2٪ من التلاميذ كانوا منخفضي الوزن، 53.6٪ كانوا طبيعيين، و 35.2٪ كانت اوزانهم مرتفعة وسمان.
مرتفعي الاوزان والسمان يمثلون 15.32٪ من تلاميذ الصف الأول، 34.81٪ من تلاميذ الصف الثالث و 49.86٪ من تلاميذ الصف السادس.
كان 18.82٪ ذكورا و16.37٪ إناثا وزنهم مرتفعا و سمان .

من دراستنا تستنتج ان 35,2 ٪ هي نسبة زيادة الوزن والسمنة في التلاميذ وان الاولاد اكثر سمنة من البنات وان تلاميذ الصف السادس اكثر سمنة من بقية الصفوف وان الاطفال السمان اكثر تعرضا للرسوب من غير السمان وبالمقارنة مع دراسات اخرى اجريت في البصرة عام 2005 و 2011 تبين ان هناك زيادة في اوزان التلاميذ مع تقدم العمر .

انتشار مرض السمنة لدى اطفال المدارس الابتدائية الحكومية في مركز محافظة البصرة

اطروحة مقدمة

الى

المجلس العربي للاختصاصات الطبية كجزء من متطلبات الحصول على زمالة البورد العربي في اختصاص طب الاسرة

من قبل الباحث

فراس عبدالقادر جاسم

بكالوريوس طب وجراحة عامة

اشراف

د. زياد طارق مكي

اختصاص طب الاسرة

2017