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# A Study on Abdominal Obesity at Basra University Staffs

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**Abstract:** A descriptive cross-sectional study was designed involving Basra university staff for the study of abdominal obesity. The university of Basra had two location: karmet Ali (108 samples ) and Bab Alzubair (158 samples ), A randomly selected sample was taken from a list of the college, from the selected college we were chosen staff randomly. The total number of the selected college was 10, were all the departments in that colleges was included and the total number selected of staff was 266, from them were females 146 and 120 males. The demographic data has been obtained from each person in the study, The working team was asked to measure the height, weight, waist circumference and Random Blood Sugar for each selected sample, using a weight and height scale, tape measure and portable blood sugar measurement instrument.(SPSS), Version17 was utilized for the purpose for statistical analysis of the data. The results was 45% was males and 55% was females, BMI: 19.5% had healthy weight, 36.8% were overweight, 27.8 were obese, 12% were severely obese, 3.8% were morbidly obese, 43.6% of the sample were obese. 37.5% of the males were obese and 48.63% of the females were obese.30.8% carried positive history of obesity and 36.8% of the sample was practicing sport exercise, 87.6% were having normal blood sugar while 12.4% were having abnormal blood sugar (diabetics), 18% of the females had normal waist circumference and 47.5% of the males had normal waist circumference, that is mean 87% of the female had abdominal obesity and 52.5% of the males had abdominal obesity. The prevalence of abdominal obesity was 31.57%, high significant correlation between waist circumference and gender, significant correlation between BMI and practicing exercise and there is highly significant correlation between BMI and positive history of obesity in the family. high significant relationship between body weight and waist circumference and high significant relation between waist circumference and history of obesity, significant relation between waist circumference and number of daily meals and high significant relation between waist circumference and random blood sugar.

**Keywords:** Obesity, Abdominal, University Staffs

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## 1. Introduction

### 1.1. Introduction

The most basic definition of overweight and obesity is having too much body fat—so much so that it “presents a risk to health.” [1] A reliable way to determine whether a person has too much body fat is to calculate the ratio of their weight to their height squared. This ratio, called the body mass index (BMI), accounts for the fact that taller people

have more tissue than shorter people, and so they tend to weigh more. BMI uses a simple calculation based on the ratio of someone’s height and weight ( $BMI = kg/m^2$ ). Research has shown that BMI is strongly correlated with the gold-standard methods for measuring body fat. [2]

#### *Healthy BMI in Adults*

The World Health Organization (WHO) states that for adults, the healthy range for BMI is between 18.5 and 24.9. Overweight is defined as a body mass index of 25 to 29.9, and obesity is defined as a body mass index of 30 or higher.

[1] *Waist Size Matters: Abdominal Obesity*

One important category of obesity not captured by BMI is so-called “abdominal obesity”—the extra fat found around the middle that is an important factor in health, even independent of BMI. The simplest and most often used measure of abdominal obesity is waist size. Guidelines generally define abdominal obesity in women as a waist size 35 inches or higher, and in men as a waist size of 40 inches or higher.

#### *Measuring Body Fat*

There are a number of ways to measure body fat. Some are well suited to the doctor’s office, such as calculating a person’s BMI. Other, more complex methods require specialized equipment, such as magnetic resonance imaging or dual energy X-ray absorptiometry machines; while these machines can measure body fat very accurately, they are typically only used for this purpose in research settings.

Globally, there are 1.5 billion adults who are either overweight or obese, a number expected to increase to 3 billion by 2030. The epidemic is reaching catastrophic proportions, and one of the key—if small— steps to bringing it under control is to have a common language to describe the

problem Worldwide, an estimated 1.5 billion adults over the age of 20—about 34 percent of the world’s adult population—are overweight or obese. [3] By 2030, this is expected to rise to more than 3 billion people. [4] For clinical and research purposes, obesity is divided into three categories: Class I (30–34.9), Class II (35–39.9) and Class III (40). [5] With the growth of extreme obesity, researchers and clinicians have further divided Class III into super-obesity (BMI 50–59) and super-super obesity (BMI60).

Risk of developing health problems, including several chronic diseases such as heart disease and diabetes, rises progressively for BMIs above 21. [5] So does the risk of dying early. [6, 7]

#### *How Abdominal Fat Increases Disease Risk*

Fat around the midsection is a strong risk factor for heart disease, type 2 diabetes, and even some types of cancers [8]long-term follow-up studies showed that so-called “abdominal obesity” was strongly associated with an increased risk of type 2 diabetes, cardiovascular disease and death, even after controlling for body mass index (BMI). [9, 10]

#### *Abdominal Obesity Measurement Guidelines*

**Table 1.** Abdominal Obesity Measurement Guidelines.

Organization	Measurement used	Definition of abdominal obesity
American Heart Association, National Heart, Lung and Blood Institute [11]	Waist circumference	Women: > 88 cm (35 inches), Men: > 102 cm (40 inches)
International Diabetes Federation [12]	Waist circumference	Women: > 80 cm (31.5 inches), Men: > 90 cm (35.5 inches)Different cut-points for different ethnic groups
World Health Organization [13]	Waist-to-hip ratio	Women: > 0.85, Men: > 0.9

The table showed the limit of the measures of waist circumference and waist hip ratio according to WHO, American Heart Association, National Heart, Lung and Blood Institute and International Diabetes Federation

### **1.2. Importance of the Study**

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

### **1.3. The Objectives of the Study**

1-To estimate the prevalence of obesity and abdominal obesity in Basra university staff, defined by body mass index (BMI) and waist circumference measures according to American Heart Association.

2-To identify any variation as per age gender.

3-To identify any correlation between obesity and abdominal obesity versus Body mass index (BMI), Random Blood Sugar, No. of daily meals, practicing sport exercise, Monthly income and Family history of obesity.

## **2. Methodology**

### **2.1. Methodology**

#### **2.1.1. Study Setting and Population**

A descriptive cross- sectional study was designed involving Basra university staff, for the study of abdominal obesity.

#### **2.1.2. The Study Sample and Data Collection**

The university of Basra had two location  
1- karmet Ali (108 )2- Bab Alzubiar (158 )

Each location is composed of a number of colleges. The investigators had visited the two locations. A randomly selected sample was taken from a list of the college, from the selected college we were chosen staff randomly.

The total number of the selected college was 10, were all the departments in that colleges was included and the total number selected of staff was 266, from them were females 146 and 120 males.

#### **2.1.3. The Studied Variables**

Age: 23 - 66, Gender: males and females, Level of education, Weight: in kilogram

Height: in meter, Body mass index (BMI): according to

WHO chart waist circumference, Random Blood Sugar, No. of daily meals, practicing sport exercise: yes or no, Monthly income: enough or not enough, Family history of obesity: yes or no

**2.1.4. The Tools**

The working team was asked to measure the height, weight, waist circumference and Random Blood Sugar for each selected sample, using a weight and height scale, tape measure and portable blood sugar measurement instrument. The team used a designed forma for the propose of the study which include information related to the variables as shown in (appendix?)

**2.1.5. Statistical Analysis**

The Statistical Package for Social Science (SPSS), Version17 was utilized for the purpose for statistical analysis of the data. The statistical measures was in form of frequencies, percentages, and Pearson correlation

**3. Results**

*Table 2. Distribution of the sample according to demographic characteristics.*

Item	Frequency	%
Location		
Karmetali	108	40.6
Bab Alzubair	158	59.4
Gender		
Male	120	45.1
Female	146	54.9
Level of education		
Primary	7	2.6
Intermediate	28	10.5
Secondary	31	11.7
Diploma	30	11.3
Bachelor	75	28.2
Master	38	14.3
Doctorate	57	21.4
Total	266	100

The total sample was 266, 40.6% (108) was from karmetali while 59.4% (158) from Bab Alzubair location. 45.1% was males and 54.9% was females. 2.6% had primary school graduation, 10.5% had intermediate schools graduation, 11.7% secondary school graduation, 11.3% diploma graduation, 28.2% bachelor graduation, 14.3% master degree, 21.4% doctorate degree

*Table 3. Distribution of the sample according to age interval.*

Item	Age interval	Frequency	%
1	21 – 30	18	6.76
2	31-40	91	34.2
3	41 - 50	110	41.35
4	51 -60	39	14.66
5	61 - 70	8	3
	Total	266	100

The table showed that 6.76% was at first age interval, 34.2

at second age interval, 41.35% at third age interval, 14.66% at fourth age interval, 3% at fifth age interval

*Table 4. Distribution of practicing sport exercise.*

practicing sport exercise	Frequency	Percent
NO	168	63.2
YES	98	36.8
	266	100.0

The table showed that 36.8% of the sample was practicing sport exercise

*Table 5. Distribution of the history of obesity.*

history of obesity	Frequency	Percent
No	184	69.2
Yes	82	30.8
Total	266	100.0

The table showed that 30.8% carried positive history of obesity

*Table 6. Distribution of BMI.*

BMI	Frequency	Percent
healthy weight	52	19.5
Overweight	98	36.8
Obese	74	27.8
severely obese	32	12.0
morbidly obese	10	3.8
Total	266	100.0

The table showed that 19.5% had healthy weight, 36.8% were overweight, 27.8 were obese, 12% were severely obese, 3.8% were morbidly obese. i. e. 43.6% of the total sample was obese and 36.8% was overweight

*Table 7. Distribution of random blood sugar.*

random blood sugar	Frequency	Percent
Abnormal	33	12.4
Normal	233	87.6
Total	266	100.0

The table showed that 87.6% were having normal blood sugar while 12.4% were having abnormal blood sugar (diabetics)

*Table 8. Distribution of the sample according to the normal waist circumference values (according to American Heart Association) and gender.*

Waist circumference normal values	Frequency	%	Total
Women: less than 88 cm	27	18	146
Men: less than 102 cm	57	47.5	120
Total	84	31.57	266

The table showed that 18% of the females had normal waist and 47.5% of the males had normal waist circumference, that is mean 87% of the female had abdominal obesity and 52.5% of the males had abdominal obesity, and 31.57% was the abdominal obesity for total sample.

**Table 9.** Distribution of obesity according to BMI WHO categories.

Classification	Frequency	Percent
None obese	150	56.4
Obese	116	43.6
Total	266	100.0

The table showed that 43.6% of the sample were obese and 56.4% were none obese

**Table 10.** Distribution of obesity(according to BMI WHO categories) by gender.

Gender	None obese		Obese		
	Frequency	%	Frequency	Frequency	Frequency
Males	75	62.5	45	45	45
Females	75	51.37	71	71	71
Total	150		116	116	116

The table showed that 37.5% of the males were obese and 48.63% of the females were obese.

**Table 11.** Correlation between BMI and practicing exercise and history of obesity.

Pearson Correlation BMI	practicing sport exercise	history of obesity
Sig. (2-tailed)	-0.150*	0.236**
N	.014	.000
	265	265

The table showed that there is significant correlation between BMI and practicing exercise and there is highly significant correlation between BMI and positive history of obesity in the family.

**Table 12.** Correlation between body weight and waist circumference.

		body weight	waist circumference
body weight	Pearson Correlation	1	0.764**
	Sig. (2-tailed)		.000
	N	266	266

The table showed that there is high significant relationship between body weight and waist circumference.

**Table 13.** Correlation between waist circumference and history of obesity.

Correlations		waist circumference	history of obesity
waist circumference	Pearson Correlation	1	.211**
	Sig. (2-tailed)		.001
	N	266	266

The table showed that there is high significant relation between waist circumference and history of obesity.

**Table 14.** The correlation between waist circumference and number of daily meals.

Correlations		waist circumference	No. of daily meals
waist circumference	Pearson Correlation	1	.136*
	Sig. (2-tailed)		.027
	N	266	266

The table showed that there is significant relation between waist circumference and number of daily meals.

**Table 15.** The correlation between waist circumference random blood sugar.

Correlations		waist circumference	random blood sugar
waist circumference	Pearson Correlation	1	.191**
	Sig. (2-tailed)		.002
	N	266	266

The table showed that there is high significant relation between waist circumference and random blood sugar.

**Table 16.** The correlation between waist circumference and gender.

Correlations		gender of sample	waist circumference
gender of sample	Pearson Correlation	1	-.213**
	Sig. (2-tailed)		.000
	N	266	266

The table showed that there is high significant correlation between waist circumference and gender.

## 4. Discussion

Our study found that the prevalence of obesity was 43.6%, and 37.5% of the males were obese and 48.63% of the females were obese, which is had some difference from a study done in India where they found that the prevalence of obesity was 45.9%, (women: 47.4%; men: 43.2%) [14], also in our study we found that 87% of the female had abdominal obesity and 52.5% of the males had abdominal obesity, the prevalence of abdominal obesity was 31.57%. while Indian study found that of abdominal obesity was 46.6% (women: 56.2%> men: 35.1%,) [14] study done Sri lank found that prevalence of overweight, obesity and abdominal obesity (high WC) were 33.2% (male 27.3%/female 38.7%), 14.3% (male 9.2%/female 19.2%) and 33.6% (male 17.7%/female 49.0%) respectively. [15] which is similar to our finding to some extent. our study differ from a study done Spain where all the values of obesity and abdominal obesity is less (16.6% in males and 15.2% in females ) [16]

also Iran study had less prevalence of obesity (34.8%)and less abdominal obesity (28.3) but it is similar to our study in that female had higher prevalence of abdominal obesity than males [17] Netherlands study showed very low prevalence of obesity in compared to our study, it was 4 and 6% in men and women, respectively [18]

## 5. Conclusions

1- the prevalence of obesity among Basra university staff is 43.6%

2- obesity is higher in females compared to males, where 37.5% of the males were obese and 48.63% of the females

were obese

3- 12.4% of the Basra university staff were having abnormal blood sugar (diabetics)

4- Abdominal obesity is more in females as compared with males, where mean 87% of the female had abdominal obesity and 52.5% of the males had abdominal obesity. The prevalence of abdominal obesity was 31.57%

5- we find that there is high significant correlation between waist circumference and gender for the Basra university staff

6- The WHO categories of BMI in Our staff was as the following

a-healthy weight = 19.5%

b-overweight = 36.8%

c-obese = 27.8

d-severely obese = 12%

e-morbidly obese = 3.8%

## Recommendations

1- increase and improve opportunities for Basra university staff to engage in physical activity and eat a healthy diet.

2- university authority should allow for all staff to engage in at least 30 minutes of moderate to vigorous physical activity at early morning when the staff started their first hour of work.

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

4- special educational practical program about obesity designed, instructed, and presented to the obese particularly and people in general. Including information about obesity such as; definition, causes, risk factors and management.

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