

**A STUDY OF THE PREVALENCE OF HYPERTENSION AMONG OBESE PATIENTS
ATTENDING TISHREEN UNIVERSITY HOSPITAL 2022 – 2023****Mohamad Farouk Mohamad Malek Kanaa*¹, Akram Jahjah², Eyas Alkhayer³**¹Department of Internal Medicine, Tishreen University, Faculty of Medicine, Lattakia, Syria.²Department of Cardiology, Professor, Tishreen University, Faculty of Medicine, Lattakia, Syria.³Department of Cardiology, Assistant Professor, Tishreen University, Faculty of Medicine, Lattakia, Syria.***Corresponding Author: MOHAMAD FAROUK MOHAMAD MALEK KANAA**

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ABSTRACT

Objective: Identifying prevalence of hypertension (HTN) among obese patients attending Tishreen university hospital and relationship between HTN and variables (age, sex, BMI, smoking, Physical activity and stress).
Methods and patients: The sample of study was 368 participants from obese patients attending Tishreen university hospital Lattakia 2022- 2023. We measured Blood pressure, calculated BMI, and investigated occupational stress by place of working, we considered participant departments (moderate stress) and clinics (low stress) we also asked about smoking and physical activity.
Results: The mean age was 43 years (56.3% <45 years, 43.7% ≥45 years), BMI: 81.8%, 18.2% obese, severe obese, smokers 46.7%, 55.7% had low physical activity, 39.9% and 39.1% had moderate and severe occupational stress respectively, prevalence of HTN 28.8%, the rate of pressure control among those previously known to have HTN 31%, 80.2% of those with HTN were more than 45 years of age with prevalence rate ratio 5.2 folds higher compared to those under the age of 45 years, 43.4% of those with HTN were obese compared with 56.6% of those with HTN were severe obese, 84.9% of participants had low physical activity with prevalence rate ratio 4.4 folds higher to developing HTN, 89.6% of those with HTN had a working stress between moderate and severe with prevalence rate ratio 2.3 folds compared to those with mild stress, we did not find a statistically significant relationship with gender or smoking.
Conclusions: prevalence of HTN was high among obese patients and control of HTN was low. The most significant relationship was between HTN with age and BMI.

KEYWORDS: HTN, obese patients, BMI, physical activity, occupational stress.**1. INTRODUCTION**

In terms of prevalence, high blood pressure is the main risk factor for cardiovascular disease (CVD), chronic renal insufficiency, and strokes, both hemorrhagic and ischemic.^[1]

According to report of the World Health Organization, one of every four men and one of every five women (ie about 22% of adults) has arterial hypertension.^[1]

The number of people with high blood pressure increased from 594 million in 1975 to 1.13 billion in 2015.^[1]

It is expected that the number of infected people will rise to about 1.5 billion, or about a third of the world's population, by 2025.^[2] High blood pressure is asymptomatic in most cases, so high pressure is called the "silent killer" in the medical literature. (WHO 2013) Cardiovascular diseases cause about 17 million deaths annually, or about a third of the total deaths around the

world, and among these deaths, complications resulting from high blood pressure account for about 9.4 million deaths. (WHO 2013) There are multiple risk factors for developing arterial hypertension, psychological distress being one of them.^[2] Workers in the medical professions are classified within the occupational groups in which workers are exposed to physical and psychological pressure.^[4]

2. PATIENTS AND METHODS

After taking informed consent from the participants According to European recommendations, pressure was measured using the standard method using a mercury pressure device three times at intervals of 1-5 minutes, with an average of the last two values. (European society of cardiology 2018) The height and weight of each participant were measured and then the body mass index was calculated. Psychological distress was assessed through the workplace (middle floors, light clinics). The interrogation included asking about smoking, physical activity, and the workplace in the hospital.

3. STATISTICAL ANALYSIS

Observational descriptive cross sectional study Using the laws of descriptive statistics on the studied variables quantitative variables with measures of central tendency and measures of dispersion qualitative variables with frequencies and percentages. Prevalence Rate Ratio & Prevalence Rate were calculated with confidence intervals. Chi-Square test was used to study the relationship between qualitative variables. Z.score law for percentage comparison. The results are considered statistically significant with a p-value > 0.05. Adopting the program (IBM SPSS statisticsVersion20) to calculate statistical coefficients and analyze results.

4. RESULTS

The research sample included 368 individuals (203 males, 165 females) of obese patients attending Tishreen University Hospital in Lattakia 2022-2023 in the context of conducting a survey to find out the prevalence of arterial hypertension, where pressure was measured and body mass index was calculated, as well as respiratory distress was assessed through the workplace. The ages ranged from 22 to 58 years, and the average age was 43 years.

Table 1: A sample of 368 individuals is distributed according to age groups of obese patients attending Tishreen University Hospital in Latakia-2022-2023.

Age	Number of patients	Percentage
<45	207	56.3%
≥45	161	43.7%

We note from the previous table that 56.3% of the research sample studied within the age group is less than 45 years.

Table 2: The distribution of a sample of 368 individuals according to the body mass index of obese patients attending Tishreen University Hospital in Lattakia - 2022-2023.

BMI	Number of patients	Percentage
Obesity	301	81.8%
Morbid obesity	67	18.2%

We note from the previous table that 81.8% of the research sample studied were obese and 18.2% were severe obese.

Table 3: The distribution of a sample of 368 individuals according to the presence of smoking among obese patients attending Tishreen University Hospital in Lattakia -2022-2023.

Smoking	Number of patients	Percentage
Non_Smoking	186	50.5%
Current smoker	172	46.7%
Old smoker	10	2.7%

We note from the previous table that 46.7% of the research sample studied were current smokers.

Table 4: The distribution of a sample of 368 individuals according to physical activity among obese patients attending Tishreen University Hospital in Lattakia-2022-2023.

Physical activity	Number of patients	Percentage
Normal	163	44.3%
Minus	205	55.7%

We note that 55.7% of the studied research sample had a deficient physical activity.

Table 5: A sample of 368 individuals is distributed according to the presence of pressure work in obese patients attending Tishreen University Hospital in Lattakia-2022-2023.

Pressure work	Number of patients	Percentage
Light	77	20.9%
Middle	147	39.9%
Intense	144	39.1%

We note from the previous table that the majority of the research sample studied had moderate to severe work pressure.

Table 6: A sample of 368 individuals is distributed according to the presence of comorbid diseases among obese patients attending Tishreen University Hospital in Lattakia-2022-2023.

Comorbid diseases	Number of patients	Percentage
Present	65	17.7%
Non_present	303	82.3%

We note that 82.3% of the research sample studied did not have comorbid diseases such as (diabetes, coronary heart disease, renal insufficiency, cerebrovascular accidents or heart attacks).

Table 7: A sample of 368 individuals is distributed according to the prevalence of arterial hypertension according to pressure values from obese patients attending Tishreen University Hospital in Lattakia - 2022_2023.

Pressure values	Number of patients	Percentage
Normal.	262	71.2%
Known and uncontrolled arterial hypertension	50	13.6%
Previously unknown arterial hypertension	33	9%
Known and controlled arterial hypertension	23	6.3%

The prevalence of arterial hypertension in the population of obese patients attending Tishreen University Hospital in Lattakia was 28.8%, and among those with previously known arterial hypertension, about 31% had controlled blood pressure, and symptoms of high arterial tension were observed in 19 cases, with a rate of 5.2%.

Table 8: The relationship between arterial hypertension and gender for obese patients attending Tishreen University Hospital in Lattakia -2022_2023.

Sex	Arterial hypertension		P-value
	Present	Non_present	
Male	61(57.5%)	142(54.2%)	0.1
Female	45(42.5%)	120(45.8%)	

The relationship between arterial hypertension and sex was studied through the Chi-square test, showing that there was no statistically significant relationship between them.

Table 9: The relationship between arterial hypertension and age for obese patients attending Tishreen University Hospital in Lattakia -2022_2023.

Age	Arterial hypertension		P-value
	Present	Non_present	
<45	21(19.8%)	186(71%)	0.0001
≥45	85(80.2%)	76(29%)	

The relationship between arterial hypertension and age was studied through the Chi-square test showing the existence of a statistically significant relationship between them, where the percentage of patients with an age group of more than or equal to 45 years and those with arterial hypertension was 80.2% and that this group has a probability of PRR = 5.2 [2.9 - 6.8] to have arterial hypertension more than the ages less than 45 years.

Table 10: The relationship between arterial hypertension and body mass index (BMI) for obese patients attending Tishreen University Hospital in Lattakia -2022-2023.

BMI	Arterial hypertension		P-value
	Present	Non_present	
Obesity	46(43.4%)	255(97.3%)	0.0001
Morbid obesity	60(56.6%)	7(2.7%)	

The relationship between arterial hypertension and body mass index was studied through the Chi-square test. It was found that there was a statistically significant relationship between them, as the percentage of morbid (severe) obese with arterial hypertension was about 56.6%, and they had a probability of PRR = 3.4 [2.2 - 5.7] To have more arterial hypertension than obese.

Table 11: The relationship between arterial hypertension and smoking for obese patients attending Tishreen University Hospital in Lattakia -2022_2023.

Smoking	Arterial hypertension		P-value
	Present	Non_present	
Non_SMOKER	45(42.5%)	141(53.8%)	0.05
Current Smoker	53(50%)	119(45.4%)	
Old Smoker	8(7.5%)	2(0.8%)	

The relationship between hypertension and the presence of smoking was studied through the Chi-square test, showing that there was no statistically significant relationship between them.

Table 12: The relationship between arterial hypertension and physical activity of obese patients attending Tishreen University Hospital in Lattakia -2022_2023.

Physical activity	Arterial hypertension		P-value
	Present	Non_present	
Normal	16(15.1%)	147(56.1%)	0.002
Minus	90(84.9%)	115(43.9%)	

The relationship between arterial hypertension and physical activity was studied through the Chi-square test. It was found that there was a statistically significant relationship between them, as the percentage of obese with a lack of physical activity who had arterial hypertension was 84.9%, and this category had a probability of PRR = 4.4 [3.2-7.8] To have arterial hypertension more than the group with normal activity.

Table 13: The relationship between arterial hypertension and work pressure for obese patients attending Tishreen University Hospital in Lattakia -2022_2023.

Work pressure	Arterial hypertension		P-value
	Present	Non_present	
Light	11(10.4%)	66(25.2%)	0.004
Middle	23(21.7%)	124(47.3%)	
Intense	72(67.9%)	72(27.5%)	

The relationship between arterial hypertension and pressure at work was studied through the Chi-square test. It was found that there was a statistically significant relationship between them, as the percentage of obese with medium to severe work pressure who had arterial hypertension was 89.6%, and this category had a probability of PRR = 2.3. [1.4 - 5.7] to have more arterial hypertension than the group in which the work pressure is light.

DISCUSSION Spread

The prevalence of hypertension in the studied population was 28.8%, according to WHO statistics 2015, The prevalence of hypertension in Syria was (25.1% in males and 23.8% in females)^[1], and according to the WHO global average prevalence Hypertension in adults is estimated at about 22%.^[5] According to the NHANES report, the prevalence of hypertension in adults in the USA is 32% under the old definition ($\geq 140/90$) and 46% under the new definition ($\geq 130/80$).^[3] According to AR Tohme, the prevalence of hypertension in Lebanon is 23.1%.^[7] According to Toba Kazemi, the prevalence of hypertension in Iran is about 20.1%.^[8]

Pressure setting

Among those with previously known arterial hypertension, the percentage of those who have controlled blood pressure (less than 140/90) is about 31%, while the percentage of pressure control in the United States of America is about 69-70% according to the old definition and 47% according to the definition the new).^[6]

Relationship with age

It was found that there was a statistically significant direct relationship between age and the incidence of arterial hypertension, as more than 80% of the patients with arterial hypertension were from the age group over 45. And that the probability of developing arterial hypertension is about 5 times higher in this group compared to the age group less than 45 years. And that the incidence of hypertension in the age group over 45 years was about 52%, and according to NHNES statistics (2015-2016), the prevalence rate in the same age group was 33.2%.^[9]

Relationship with body mass index (BMI)

It was found that there was a statistically significant direct relationship between arterial hypertension and body mass index. About 43.4% of patients with arterial hypertension had a BMI between 30_40 (obese), compared with 56,6% of those with HTN were severe obese.^[10]

Relationship with smoking

We did not find a statistically significant relationship between hypertension and smoking in the study population, and this can be explained by the following: According to Mikkelsen KI, & Green Ms. Habitual smokers have lower blood pressure than non-smokers^[11-12] due to being lighter and also due to the vasodilatory effect of cotinine, the main metabolite of nicotine.^[13]

Relationship with physical activity

55.7% of those included in the study had a lack of physical activity. According to Eman Sharara, 40% of Arabs have substandard physical activity.^[14] According to WHO, the global prevalence of lack of physical activity was 31%, and the highest percentage was in the Americas and the Middle East, where the percentage of women in both regions was 50%, and men 40% and 36%, respectively.^[15]

Relationship with work pressure

The percentage of those who have work pressure between medium and severe in the study population was about 89.6%. And according to Nizar Maswadi, in his study of 555 resident doctors, the percentage of doctors who suffer from moderate work pressure reached 73% and severe 18%.^[16] The likelihood of developing arterial hypertension among those who suffer from moderate to severe work pressure in our study population was 2.3 times. And according to Mei Yan Liu, the probability of developing arterial hypertension in those who suffer

from work pressure is 2,4.^[17]

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