

## Risk Factors Associated with Hypertensive Patients at Baquba Teaching Hospital

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### Abstract

**Background:** Hypertension is one of the most common disorders affecting on the heart, blood vessels, brain and kidney and it is considered is a very common disease and frequent with diabetes, Conversely, it is responsible for one of four premature deaths in developed countries.

**Objective:** To evaluate the most important factors that cause hypertensive and to study their effects on patients.

**Patients and Methods:** This study was conducted at Baquba Teaching Hospital in the recovery unit for the period from 1/10/2017 until 1/3/2018. The study included 100 patients with hypertensive (44 male, 56 female) to compare them with 25 healthy persons (11 male, 14 female), was measuring blood pressure and has been done a questionnaire for each patient included (Age, BMI, Smoking, Number of hours sleep, Drinking beverages, Chronic diseases) and then by revulsion (2 cc) of blood to measured fasting blood glucose.

**Results:** The results of the study indicates that there is a significant differences at  $p < 0.05$  levels of systolic blood pressure, fasting blood glucose, hours of sleep, soft drinks, chronic diseases, smoking.

**Conclusion:** The increase in smoking, soft drinks affects on the level of blood pressure directly, and the decrease of sleep associated with high blood pressure, and most diabetics patients are more prone to hypertension.

**Keywords:** Hypertensive, Diabetes, Body mass index, Obesity.

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### Introduction

Hypertension is a serious disease and it becomes more problematic if it combined with diabetes, it's responsible for about 35% of cases of myocardial infarction (MI), stroke and about half of congestive heart failure, as well a genetic factor, the type of food, the psychological pressures. By 2025 hypertensive is an important factor which

increases the burdening of heart disease, kidney failure, diabetes, premature death, stroke and disability. It affects the population with a low and middle-income countries with poor health systems, about 10% of the budgets of developed countries [1]. Hypertension can be present in humans for many years without feeling it, so many

cases are discovered when the patient is clinically examined for another reason[2].

Between (90-95)% of hypertension cases are not known and are called primary hypertensive , the others cases called secondary hypertension whereas primary hypertensive cases ranging between 5% - 10% of all cases , also there are many renal diseases causing hypertension as repeated infections of the kidney or urinary system , kidney stones and other cause related to endocrine disorders , hormonal disorders, neurological and psychological disorders, narrowing of the aorta or multiple nodular arteritis , pregnancy , connective tissue disease , or high blood calcium [3]. The prevalence of hypertension increases significantly with age, affecting about 6% of between 18- 34 year , and this percentage increases significantly to 77% of people older than 75 years [4]. Continuous and uncontrolled hypertension is a key factor in the development of diabetic complications of retinal dysfunction , coronary artery disease , renal dysfunction [5]. The others important cause of hypertension is obesity , especially abdominal obesity , which lead to inflammation of the blood vessels , resulting in high blood pressure and the cause is that abdominal fat cells help inflammation and lead to constriction of blood vessels , as well as obesity complications cause stroke and increase the incidence of heart attack [6] .

This study aims to evaluate most important factors that cause hypertensive and to study their effect on patients.

## Patients and Methods

The study included 125 persons , Including 100 patients they who have cardiovascular disease CVD with hypertensive who were hospitalized in the recovery unit at Baquba teaching hospital ,Patients with cardiovascular disease were selected and who have hypertensive. the second group consisted of 25 healthy persons . prior to the patients questioning ,an initial consent was taken for voluntary participation by each person included in the study . both groups their ages are within range 35-80 years . was measured a height and weight of the body to calculate BMI , after then questionnaire was prepared for each person including (age , gender , number of hours sleep in one day, drinking beverage per day , chronic diseases and included (heart diseases , stroke , diabetes , asthma )) , then measured systolic and diastolic blood pressure and then revulsion(2cc) blood from the two groups to measured fasting blood glucose .this study from the period1/10/2017up to 1/3/2018.

### A-Calculation of Body Mass Index (BMI)

The length was measured by a tape tool after the patient was standing on the ground and measured from head to toe , used balance electronic type ( biomex , China ) made in 2017, to measure the weight of the patients after placing the balance on the ground and the patients ascending vertically [7].

The weight and length of the body were calculated to BMI for patients and healthy people and before blood revulsion according to the following law :  $BMI = \text{weight (kg)} / \text{Length (m}^2)$  [8].

## B- Blood Pressure Measurement

Were measured by sphygmomanometer and for all patients and healthy people , is electronic type (Rossmax , Taiwan) made in 2017. by a roll is wrapped around the upper arm of the patient recumbent on the bed , and running the device is automatically operated to measure the blood pressure of the person and then record its value.

## C- Estimation of Fasting Blood Glucose

The test was performed to determine the fasting glucose in blood after 8 hours of fasting and used the Cobas Integra 400 Plus self-analysis device to checkup .

## Statistical analysis

ANOVA analysis of variance was used to describe and the least significant difference  $\leq 0.05$  in this research.

## Results

In the present study were measured gender, age , systolic and diastolic blood pressure , body mass index , fasting blood glucose , whether the person is a smoker or not , the number of hours of sleep per day , the amount of salt consumed per day , the amount of soft drinks consumed per day, chronic disease . The parameters of patients and control group are present in Table (1) and include mean  $\pm$  SD.

**Table (1):** Shows averages ( Number , Gender , Age , Systolic and Diastolic Blood Pressure , BMI , Fasting Blood Glucose ).

Standard	Control Mean $\pm$ S.D	Hypertensive of Patients' Mean $\pm$ S.D
Number	25	100
Gender (male/female)	11/14	44/56
Age (year)	59.28 $\pm$ 10.32	66.71 $\pm$ 12.815
Systolic Blood Pressure (mmHg)	118 $\pm$ 9.354	130.11 $\pm$ 31.887*
Diastolic Blood Pressure (mmHg)	74.60 $\pm$ 18.058	76.80 $\pm$ 6.752
Body Mass Index (kg/m <sup>2</sup> )	26.40 $\pm$ 1.403	28.03 $\pm$ 6.581
Fasting Blood Glucose (mgdl)	103.90 $\pm$ 29.264	206.29 $\pm$ 116.328**

\*P <0.05, S.D, Standard Division , Mean : Arithmetic Mean

Table (1) shows the mean age in control group were (59.28 $\pm$ 10.32), while in the patients group were (66.71 $\pm$ 12.815) year. Table(1) shows that mean a significant difference in the level of systolic blood pressure in patients compared to the control group at the level of probability P<0.05 were

(31.887 $\pm$ 130.1) , ( 9.354 $\pm$ 118)mmHg , In addition high level diastolic blood pressure was observed in patients compared control group at the probability level P<0.05 were (6.752 $\pm$ 76.80) , (74.60 18.058 $\pm$ )mmHg , the study showed a high level of body mass index (BMI) in patients

compared with control group at level a probability  $P < 0.05$  and were  $(28.03 \pm 6.581)$  ,  $(26.40 \pm 1.403)$   $\text{kg/m}^2$  , table (1) shows a highly significant difference in the level of fasting blood glucose in patients with

hypertensive compared to the control group at the level of probability  $P < 0.05$  as were  $(206.29 \pm 116.328)$  ,  $(103.90 \pm 29.264)$   $\text{mgdl}$  .

**Table (2):** Shows averages ( Smoking , Chronic Diseases , Number of Hours Sleep , Drinking Beverages ).

Standard	Control Mean $\pm$ S.D	Hypertensive of Patients' Mean $\pm$ S.D
Smoking	1.56 $\pm$ 0.507	1.80 $\pm$ 0.532 *
Chronic Diseases	1.03 $\pm$ 0.171	1.32 $\pm$ 0.476 **
Number of Hours Sleep	8.39 $\pm$ 3.018 **	6.24 $\pm$ 2.006
Drinking Beverages	1.24 $\pm$ 0.436 **	1.02 $\pm$ 0.141

\* $P < 0.05$ , S.D, Standard Division , Mean : Arithmetic Mean

Smoking: 1=nonsmoker and 2=smoker , Chronic Diseases : 1=not found and 2= found and included (( heart diseases , stroke , diabetes , asthma ))).

Drinking beverage : 1=amount small , 2=amount large.

Table (2) shows that a significant difference in the level of Smoking in patients group compared to the control group at the level of probability  $P < 0.05$  were  $(1.80 \pm 0.532)$  ,  $(1.56 \pm 0.507)$  . Table (2) shows that a high significant difference in the Chronic diseases which includes (heart diseases , stroke , diabetes , asthma) in patients compared to a control group at the level of probability  $P < 0.05$  were  $(1.32 \pm 0.476)$  ,  $(1.03 \pm 0.171)$  . Also that were a high significant difference in the level of Number of hours of sleep in control group compared to the patients group at the level of probability  $P < 0.05$  were  $(8.39 \pm 3.018)$  ,  $(6.24 \pm 2.006)$  hour in one day , also Table (2) shows a high significant difference in the

amount of drinking beverages in the control group compared to the patients group at the level of probability  $P < 0.05$  were  $(1.24 \pm 0.436)$   $(1.02 \pm 0.141)$ .

## Discussion

The cause that arterial hypertension is one of the major risk factors for atherosclerosis coronary heart disease and long-term blood pressure is considered to be the most important contributor to cardiovascular disease (CVD) and kidney disease , although high systolic blood pressure is associated with the risk of heart failure , stroke , with approximately 7.5 million deaths per year Accounting for 13% of global deaths. It is estimated that about (1 billion ) of the world's population over the age of 25 suffer from the disease [9] . According to a high level body mass index is the main cause of 39% of hypertensive , 21% of ischemic heart disease , 12% of stroke and 58% of type 2 diabetes [10] . Which provides insulin resistance as well as resistance to type-2 diabetes ,

dyslipidemia , arterial hypertension , estimated 42.3% of coronary episodes in the Spanish population may be attributable to excess weight after adjusting for age , sex , and other risk factors [11] . Hypertension is considered with a diabetes are common coexisting and increasing in ageing together with risk factors for coronary heart disease (CHD) , hypertensive and diabetes tend to occur together due to their involvement in many physiological traits , Diabetes is a major risk factor for hypertensive , the most important cause is diabetes associated hypertension , whereas 70% people having diabetes and hypertension together [12] .

Hypertension is the most common disorder in patients with diabetes as it is exist in diabetics by (60-80)% , therefore hypertension accelerates the risk of coronary heart disease in diabetics patients with diabetes , Hyperinsulinemia increases the risk of hypertensive and these conditions increase the amount of sodium absorbed in the body, which encourages the stimulation of changes in the structure of blood vessels, leading to increased stiffness and severity [13] . The effect of tobacco on increasing blood pressure is complex process and not entirely clear , as it is certain that smoking increases the severity of blood pressure , passive smoking also may raise the level of blood pressure . The cause is that mechanism of the effect of tobacco on the body is by accelerating and destroying the Endothelium of blood vessels , resulting in an increase in inflammation , the formation of clots and fat deposition [14] . As sleep disorders change

the response of blood pressure and increase the risk , as in the sleep gets a drop in blood pressure and this is attributed In part because of the decline in emotional output, as a decrease in systolic and diastolic blood pressure at night is about 10%-20% compared to that in the day, the low of blood pressure at night is a strong and independent indicator reduce of the risk of heart disease and blood vessels [15][16].

The results of the current study showed that patients with hypertensive have decreased their intake of drinking beverages for its large and rapid effect on raising blood pressure , the American Heart Association in its 2012 edition indicated the risk of taking these drinks because of their direct relationship with elevated blood pressure , as well as their indirect relationship with obesity , diabetes and other metabolic disorders . the study also suggested a possible increase in systolic blood pressure (0.8-1.6) mmHg respectively when ingested a gaseous drink and other unknown factors contribute to elevated blood pressure [18][17].

Chronic diseases are the main causes of disability and death globally as estimated by the World Health Organization that nearly of the half of the world's deaths caused by these diseases occur under the age of 70 years , the most important of these diseases are ( heart diseases , stroke , diabetes , asthma ) and that patients in this study they have chronic diseases affect the level of blood pressure leading to increased blood pressure [19].

## Conclusions

The increase in smoking , soft drinks affects the level of blood pressure directly , and the decrease of sleep associated with high blood pressure , also the most diabetics patients are more prone to hypertension from others patients.

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