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Research Article
Obesity Increases Blood Pressure in North-African Elderly Subjects

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Abstract

Objective: This study was designed to analyze the weight status of hypertensive patients, to estimate the prevalence of underweight, normal weight, overweight and obesity and to examine the association of body weight with daily life patients including the evolution of the disease. **Methodology:** This study focused 50 hypertensive patients aged 33-97 years. The patients were divided according to their body weight (underweight, normal weight, overweight and obesity) into four groups (N = 50). Weight, height, BMI, waist circumference and hip circumference were measured to estimate the various categories of body weight cutoffs according to International Obesity Task Force (IOTF). The blood pressure (systolic and diastolic) was also measured. **Results:** The results of the current study showed that patients with underweight and normal weight had a normal blood pressure. However, a significant increase in blood pressure was observed in overweight and obese patients. **Conclusion:** It is observed that hypertensive patients with normal weight or even underweight have lower blood pressure compared to those who were overweight or obese. This confirms the need for weight loss in the process of struggle against this public health problem or even prevention.

Key words: Hypertension, underweight, normal weight, overweight, obesity

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Data Availability: All relevant data are within the paper and its supporting information files.

INTRODUCTION

According to the Chalmers *et al.*[1], hypertension is the most deadly cardiovascular risk factors, it represents a major public health problem in almost all regions of the globe[2]. Hypertension is also the third leading cause of death in Algeria and in the world (30% of deaths) after malnutrition and smoking[3]. According to a study in Algeria[4], six million Algerians (26-35% of the population) suffer from hypertension. Hypertension is known as a complication of overweight. Several studies have shown a strong link between body weight and blood pressure. Hypertension is a multifactorial disease resulting from the interaction of genetic and environmental factors including nutritional factors. Numerous epidemiological studies have reported the relationship between lifestyle, diet and blood pressure in different populations. Thus, changes in eating behaviors (reducing dietary intake of cholesterol, saturated fat and salt) reduce blood pressure. These non-drug measurements should be systematically integrated into the therapeutic act as they act in a complementary manner[5]. The aim of the present study was to analyze the relationship between anthropometric measurements and hypertension.

MATERIALS AND METHODS

A cross-survey was conducted by questionnaire to first identify the weight status of patients and secondly parameters associated with body weight such as socio-economic and physical activity level. The study focused on 50 patients (13 men and 37 women) aged 33-97 years admitted at a hospital due to hypertension. Hypertensive patients who came for consultation at the hospital was studied. Anthropometric and blood pressure measurements were made in the presence of the physician. Then a questionnaire was distributed to patients in order to know their socio-economic and physical as well as their usual feeding activity. Researchers used a reminder of 24 h to estimate dietary intake of the subjects surveyed. After collecting the data, the population was divided into four groups according to body weight (underweight, normal weight, overweight and obesity). Then the correlation between weight status and blood pressure was analyzed.

Statistical analysis: Data were expressed as Mean±SD. Statistical software SPSS 20.0 for Windows (SPSS Inc., Chicago, IL, USA) was used for statistical analysis. A p-value< 0.05 was considered statistically significant.

RESULTS

The average age of the surveyed population was 62±12.63 years with a minimum age of 33 years and a maximum age of 97 years. Approximately 4% of the total population was less than 40 years of age, 24% were above 50 years of age and 28% were above 60 years of age. Men were 26% (N = 13) of the total population and females were 74% (N = 37). Table 1 shows the blood pressure by age and sex. The average systolic blood pressure of the population was 136.79±13.60 mmHg, with a maximum value of 160 mmHg and a minimum value of 110 mmHg. Mean systolic blood pressure was 136.90±10.73 mmHg in men, with 160 mmHg as the upper limit and 110 mmHg as the lower limit. The average systolic blood pressure for women was 138.04±28.34 mmHg with a maximum of 160 mmHg and a minimum of 110 mmHg, the blood pressure ranged from 130 mmHg in the age group 30-40 years to 160 mmHg in the age group 80-90 years. Table 2 summarizes the weight status of 50 patients by sex, 16 patients (5 women and 11 men) had normal weight, (32% of the total population), 20 patients (5 men and 15 women) (40% of the population) were categorized as overweight and 13 patients (02 men and 11 women) (26% of the total population) were obese (class I and II). In men, 38.47% (n = 5) of the patients were categorized as "overweight", 38.46% (n = 5) were categorized as "normal" and 7.69% (n = 1) were obese

Table 1: Average blood pressure (mmHg) of subjects surveyed by age and sex (Mean±SD)

	Women		Men		Total	
Age (year)	Systolic	Diastolic	Systolic	Diastolic	Systolic	Diastolic
30-40	130.00±14.10	80.00±14.10	-	-	130.00±14.10	80.00±14.10
40-50	130.00±24.40	86.70±16.30	-	-	130.00±24.40	86.70±16.30
50-60	133.30±130.00	83.30±07.70	-	-	133.30±13.00	83.30±07.70
60-70	129.00±18.50	82.00±10.30	150.00±08.10	87.50±09.50	135.00±18.70	83.60±10.00
70-80	144.00±11.40	94.00±11.40	135.70±17.10	80.00±08.10	139.20±15.00	85.80±11.60
80-90	140.00±00.00	80.00±00.00	125.00±07.00	80.00±00.00	130.00±10.00	80.00±00.00
90-100	160.00±00.00	100.00±00.00	-	-	160.00±00.00	100.00±00.00

Table 2: Weight status of the population

	Total		Men		Women	
Weight status	N	%	N	%	N	%
Thinness	01	02	01	7.69	-	-
Normal	16	32	05	38.46	11	29.72
Overweight	20	40	05	38.47	15	40.54
Obesity I	10	20	01	7.69	09	24.32
Obesity II	03	06	01	7.69	02	5.40
Obesity III	-	-	-	-	-	-

"class I" and 7.69% (n = 1) were obese "class II". For women, 40.54% (n = 15) of patients were categorized as "overweight", 29.72% (n = 11) were categorized as "normal" and 24.32% (n = 9) were obese "class I" and 5.40% (n = 2) were obese "class II". It is observed that a high percentage (approximately 62.5%) of men were overweight, compared to women (57.69%). High proportion of women (42.31%) were obese compared to men who were only 25%, 12.5% weight to the failure by men against any case of thinness in the portion of women.

It is observed that hypertensive patients who have a normal weight or underweight figures have very low blood pressure. Blood pressure was significantly higher in patients who were overweight or obese. This confirms that body weight has a very close relationship with blood pressure.

DISCUSSION

The objective of this investigation was to evaluate the nutritional status of patients with hypertension and other weight status. It is well established that a poor diet and a sedentary lifestyle and even smoking and other factors involved in the presence of hypertension. Patients with hypertension have a low socio-economic level and 83.33% had no occupation, 70% were illiterate and 80% were from a large family. In addition, these patients lived in precarious conditions and most of them (70%) lived in communal houses or semi reign promiscuity and adverse health. These conditions had a decisive influence on the diet of patients (poor nutrition and not varied). The majority of these patients had low physical activity, 48% were characterized by walking and household chores, the remaining patients were almost sedentary. The prevalence of hypertension is inversely related to level of education[6]. The analysis included 50 patients, where the majority of the population were women (74%). The poor control was significantly greater in men[7]. Women were more often aware of their hypertension than men[8]. This study showed that the rate of obesity in women is two times greater than that of men (24.32% against 7.69%). Obese adults aged 25-45 years are at risk of developing hypertension 5-6 times greater than the lean subjects. An author classified obesity as a factor even more important cardiovascular risk that causes and maintains other risk factors such as hypertension[9]. Body weight is not only regarded as a risk factor for hypertension, but also a parameter that controls the health status of hypertensive patients, the progression of the disease and the treatment of the disease. It is observed that patients with normal weight spend more balanced life. According to the Physician of the Tiaret hospital, the weight loss is necessary to better live with the disease of hypertension. Weight loss may be sufficient to normalize the blood pressure[10].

CONCLUSION

The prevalence of hypertension is higher in obese subjects. It is concluded that nutritional discipline with hypertensive medication should be added in the process of weight loss. Having a normal weight is a solution to this serious public health problem, researchers urge health authorities to launch a national program for good control of body weight in hypertensive patients.

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