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Frequency, Awareness, Treatment and Control of Hypertension in the over 40 Population of Erzincan

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Abstract

To determine distribution of blood pressure (BP) and prevalence, awareness, treatment and control of hypertension in 5 primary health care centers of Erzincan. A population-based cross-sectional survey was carried out in January – May 2009. A two-stage sampling method was used to select a sample of adult population 40 and over years of age. The total number of participants was 1570. Data were collected by face-to-face interview technique in the primary health care setting. Main outcome measures; mean systolic and diastolic blood pressures, distribution of blood pressure, prevalence of hypertension (mean systolic BP 140 mmHg or mean diastolic BP 90 mmHg, or previously diagnosed and/or taking antihypertensive drugs) awareness, treatment and control of hypertension were assessed. The overall hypertension prevalence was 67.0% in the study sample and 77.4% of them were aware of their hypertension and received a pharmacologic treatment. Of the patients who were aware of the disease, 51.8% use drug treatment. Of the patients who had a drug treatment, 33.9 % were under control in terms of blood pressure. Our data indicate that hypertension is a highly prevalent but inadequately managed health problem in Erzincan. There is an urgent need for population-based strategies to improve prevention, early detection, and control of hypertension.

Keywords

Hypertension; prevalence; awareness; treatment; control

INTRODUCTION

In 2000, it was estimated that 24.6% of adult population had hypertension-defined as systolic pressure ≥ 140 mmHg or diastolic pressure ≥ 90 mmHg and the total number of adults with hypertension (HT) was approximately one billion worldwide. The number was predicted to increase to a total of 1.56 billion in 2025 [1]. In Turkey, the prevalence of hypertension in adult population is approximately 30%, and 45-50% in the population over 50 years age [2]. It has been reported that unless extensive and efficacious precautions are undertaken, hypertension prevalence will increase even more as global population ages [3].

Hypertension is a major independent risk factor for cardiovascular and renal disease, increasing the risk of myocardial infarction, stroke, heart failure, and renal disease [3,4]. High incidence of these diseases and high prevalence of hypertension in most societies make it the single most important cause of worldwide morbidity and mortality [5,6]. Raised blood pressure is the major cause of death in the world, responsible for 60% of strokes and 50% of coronary heart disease [1]. The primary goal in treatment of hypertension is avoidance of hypertensive complications [7] by regulating blood pressure to be within normal limits [8]. Despite the relative ease of diagnosis and treatment, hypertension remains a poorly managed disease [9], and continues to be a major public health problem [10]. Despite the overwhelming evidence that hypertension is major risk factor for cardiovascular disease (CVD) and that controlling of blood pressure reduces the risk of CVD, a sizeable proportion of individuals with hypertension are either unaware of their condition, do not undergo treatment for it, or do not achieve 'goal' blood pressure levels with the treatments that are prescribed [11]. HT is also a common and consistent health problem in developing countries, and its prevalence is currently rising steadily [12]. Hypertension is one of the most serious public health problems in Turkey as well as in other countries. Turkey is developing Eurasian country located in the Eastern Mediterranean region, spanning between the Middle East and the Balkan Peninsula of Europe. In Turkey, a large percentage of general population consult the Ministry of Health-affiliated regional health centres, which serve as primary care units. Also, most hypertensive patients are followed by these health centres. However, there is lack of sufficient data on the treatment of hypertensive patients served by primary care units in Turkey.

Because hypertension is one of the major modifiable risk factors for cardiovascular disease, its detection, treatment and control are important health objectives worldwide [13]. Although high BP is one of the most common reasons for outpatient visits, BP control is often inadequate [14].

The aim of this study is to determine the prevalence, awareness, treatment and control of hypertension among population who are 40 and over year ages and consulting primary care units in Erzincan province.

MATERIALS AND METHODS

In this cross-sectional survey, data collection was conducted in primary health care centers in Erzincan city. Study population consists of 30.070 persons who were age 40 years or over

and there are 5 primary health care centers. No sampling was done in this study and the study included individuals who attended to primary health care center between January 2009 and May 2009. They were at 40 years of age or above, and were communicative and willing to participate. A total of 1570 adult subjects (60.4% women and 39.6% men) were included in the study sample, and personal data were recorded (blood pressure, height, weight).

A pilot study was carried out in primary health care setting in order to observe difficulties related to the survey. Blood pressures were measured at the beginning of interview. After a 10-15 minute rest period, systolic and diastolic blood pressures of subjects were obtained from right arm, in a seated position. Two successive measurements were performed at intervals of 5 minutes and the average of two recordings was calculated. The subjects were requested not to smoke and to avoid caffeine (coffee, colas) intake 30 minutes prior to blood pressure measurement [3]. A sphygmomanometer (ERKA) was used for the measurement. Systolic (SBP) and diastolic blood pressures (DBP) were recorded based on Korotkoff sounds.

The classification of normotensives and hypertensives were based on the classification of BP from the JNC-7(2003). The participants were considered as hypertensive if they had average systolic BP ≥ 140 mmHg or average diastolic BP ≥ 90 mmHg, or if they had been previously diagnosed and/or were taking anti-hypertensive drug regardless of the BP readings [15-17]. Awareness of HT was described as any prior diagnosis of HT by a health professional among the population defined as having HT [15]. Treatment of HT was defined as the use of any antihypertensive medication at the time. Control of HT was defined as systolic BP < 140 mmHg and diastolic BP < 90 mmHg, and was ascertained by direct measurement of BP. The control rates among patients receiving antihypertensive medication were also recorded [3,15,17].

Height measurement was obtained using a tape measure with the subjects standing on a horizontal surface with the head, shoulder, hip and heel touching a vertical wall. Values were recorded in centimetres (cm). Weight measurement was obtained using a standard balance with patients wearing lightweight clothes. Values were recorded in kilograms (kg). Body Mass Index (BMI) was calculated from body weight (kg)/ height (meter)² according to the World Health Organization (WHO) standards. BMI values under 18.5 were considered to be thin, values between 18.5- 24.9 were considered normal, 25-29.9 was considered to be overweight, between 30-39.9 as obese, and 40 or more were considered morbidly obese [18].

A smoker is a person, who smokes any tobacco product at least once a day, and a non-smoker is a person who, at the time of the survey, does not smoke at all [19]. Walking for 30-45 minutes at least 3 days a week was accepted as regular exercise [20]. We divided the types of oil into three classes: vegetable, animal and mixed [21]. A total of 30 individuals used alcohol – 1 used alcohol everyday, 2 used alcohol once or twice a week, 18 used alcohol once or twice a month and 9 used alcohol once or twice a year; and all of them were evaluated as alcohol users.

Based on the socioeconomic development ranking, Erzincan belongs to the 4th degree among groups of developed provinces in Turkey. There are 5 degrees in terms of socioeconomic development, and Degree 5 indicates the lowest level. Population growth rate and density of this region is considerably below across the country. Birth rate and average household size, on the other hand, are above the average level for the country. The rate of literate population is low. Similarly, the rate of female literacy and rate of schooling are also lower than the country rates. The 4th degree developed group of provinces which comprises 15% of the total population of the country receives only a share of 8.7% of the gross national product (GNP). Therefore, the value of GNP per person is lower compared to the country in general. In addition, regarding development status of health sector, the East Region which also involves Erzincan takes the last place across the country [22].

A descriptive questionnaire was used to obtain socio-demographic characteristics of the patients. It consisted of 14 questions (age, sex, educational status, marital status, occupation, health insurance, income level, cigarette use, alcohol drinking, salt use status, type of fat, physical activity, diabetes present status, and history of hypertension family)

Statistical analysis

Statistical procedures were carried out using Epi Info version 3.3.2, developed by the Centers for Disease Control and Prevention. All statistical tests were two-sided, and a p-value of <0.05 was accepted as statistically significant. The magnitude of the association between hypertension and independent variables were performed Chi Square test and multiple logistic regressions analysis.

Ethical issue

Institutional approval was obtained from Erzincan District Health Board. Study aims, plans and benefits were explained to patients who met the study criteria. Patients were asked if they would voluntarily participate in the study and their verbal consents were obtained. Confidentiality was maintained at all times.

RESULTS

Prevalence

Table 1 shows our findings concerning prevalence, awareness, treatment and control of HT according to gender and age groups. A total of 1570 subjects were participated in the study. The overall prevalence of HT was 67.0 %; 69.6% women and 63.0% in men. The prevalence of HT was higher in the women than that in the men ($p<0.01$). The prevalence of HT increased steadily with age both for the men and the women ($p<0.001$), with the highest prevalence in the 80 years old and over (92.9% men, 94.1 women).

Awareness, treatment and control of HT

Among subject with HT, only subject (77.4%) were aware of their condition and received antihypertensive treatment and 22.6 % were not aware of their HT. The women were more aware than the men (81.8% versus 69.9 %, $p<0.001$). Awareness in men was found to increase with age, whereas this increase was observed the most in women between the ages

of 70-79. Of the patients who had antihypertensive treatment, 33.9 % were under control in terms of blood pressure.

HT and associated risk factors

Table 2 shows univariate analysis of HT with various factors. The prevalence steadily increased with degree of obesity ($p<0.001$). The highest prevalence was found in the morbid obese subjects (92.2%). According to WHO, 61.2%, 76.5% and 92.2% of hypertensive individuals were determined to be overweight, fat, and morbid obese, respectively [18].

When level of education is considered, an inverse relationship is observed between the level of education and the prevalence of HT ($p<0.001$). The prevalence was highest in the illiterate people while lowest was in the people who graduated from universities or colleges and high school. As the education level increases the prevalence of HT decreases.

We found a significant association between HT and marital status ($p<0.001$). Prevalence of HT was highest in widowed/divorced and lowest in unmarried people.

As for occupation, association with was shown in subjects. Prevalence of HT is highest in the groups of unemployed and retired groups and lowest in the official groups ($p<0.001$).

In terms of social insurance, no significant relationship was detected between hypertension prevalence and having social insurance ($p>0.05$).

There was not statistically significant association household income and prevalence of HT ($p>0.05$).

We observed an unexpected association between cigarette use and prevalence of HT ($p<0.001$).

There was no statistically significant relationship between alcohol intake and hypertension ($p>0.05$).

A negative relationship was observed between hypertension prevalence and eating salty meals ($P<0.001$).

There was no statistically significant relationship between hypertension prevalence and meal used fat type ($p>0.05$).

Prevalence of HT was increased with decreased physical activity ($p<0.001$).

Diabetes was determined to be significantly higher in individuals with hypertension compared to normotensives ($p<0.001$).

No significant association was found between the HT and family history of hypertension ($p>0.05$).

As a result of linear logistic regression analysis, odd ratios for each of the demographic factors, lifestyle factors are presented Table 3.

Logistic regression analysis was performed for high blood pressure prevalence by using 10 variables that were considered important in the simple analysis (Table 3). The relationship between high blood pressure and age, body mass index, diabetes present, cigarette and salt use status was preserved ($p < 0.01$, $p < 0.001$), while the relationship between hypertension prevalence and gender, marital status, education, physical activity and occupational status disappeared ($p > 0.05$).

DISCUSSION

HT is a common health problem in developing countries, and its prevalence is currently rising steadily [12]. Our data showed that hypertension is a common health problem in that community with the prevalence of 67.0 %. This value is higher than the prevalence found in previous studies conducted in different parts of Turkey. These differences may reflect the effects of dynamic interactions between the genetic, socio-cultural, demographic and economic factors. Moreover, the results may be variable in different region of a country. In a study carried out in Turkey with the general population, hypertension prevalence was determined as 31.8% [15]. In addition Eski ehir, the prevalence of hypertension is 59.5% among people 50 age years and over [23], In Trabzon, the prevalence of hypertension is 44.0% [24], in Istanbul, the prevalence of hypertension is 35.5% [25]. As for the studies conducted in other countries; in China 46.5% [26], in Asia population 41.5% [27], in European area it was determined as 24.4% [28]. As shown in a study by Wolf- Maier *et al.* [29], the prevalence of hypertension varies from country to country. In the general population 35 and 64 years, 27.8% is hypertensive in the USA, 27.4% Canada, 37.7% in Italy, 38.4% in Sweden, 41.7% in the UK, 46.8% in Spain, 48.7% in Finland and 55.3 % in Germany. Another reason accounting for the high prevalence in this study is thought to be the fact that the study was conducted in health care centers and that blood pressure measurement is one of the reasons for attending health care centers.

The level of awareness, treatment and control of HT varies considerably among countries and region [12]. In economically developed countries, there were relatively high levels of awareness and treatment, with approximately one-half to two-third of hypertensives aware of their diagnosis and one-third to one-half receiving treatment [12]. The levels of awareness, treatment and control of HT are especially low in some economically developing countries [12, 15, 30].

This is study; among 1052 subject with HT, only 814 (77.4%) were aware of their condition, and 238 (%22.6) were not aware of their HT. The study sample and 77.4% of them were aware of their hypertension and received a pharmacologic treatment. Of the patients who were aware of the disease, 65.1% regular use drug treatment. Of the patients who had a drug treatment, 33.9 % were under control in terms of blood pressure. Until the last decade, however, the worldwide Picture regarding awareness, treatment and control of hypertension was far optimal [12]. There are marked differences for the blood pressure control rates hypertensives between different countries. The development level of the countries may be important for differences between the blood pressure control rates. However, it appears impossible to explain these differences with the developmental level alone. As with many countries, there are differences between geographic region for the developmental level in

Turkey, and the blood pressure control rate may vary between the geographic region of Turkey and according to the status of socioeconomic level.

In the study conducted by Altun *et al.* [15] throughout Turkey, overall, 40.7% of those with hypertension were their diagnosis, only 31.1% were receiving pharmacologic treatment and only 8.1% had their BP under control. In another study performed again in our country by Onat *et al.* [31], it was reported that 48% of individuals with high blood pressure received treatment, and control rate was 28%. It was determined in a study carried out in primary health care centers throughout Turkey that 93.3% of hypertensive individuals received antihypertensive therapy and control rate was 24.2% [32]. In another study, 41.0% of individuals with high blood pressure were aware of their situation and 54.5% of these received hypertensive treatment, and control rate was determined as 24.3% [24]. Blood pressure was reported to be 22% in a first-line study conducted in Switzerland [33].

In a study performed in China, 77% of the individuals were aware of their situation, 89% of these individuals were receiving treatment and 56% were using medication, and control rate was determined as 33% [26]. In a study conducted in Europe, 1/3 of hypertensives were receiving treatment, 36.5% of these individuals were on regular medication and 56% were aware of their situation, and control rate ranged between 42-47% [28]. In an Argentinean study conducted on primary health care level, it was reported that 62% of hypertensive individuals received treatment and control rate was 30% [34]; while it was reported in another similar study in Canada that 68.6% of hypertensive patients were untreated and only 15.8% were treated and taken under control [35]. Similarly, the control rate according to the control level of 140/90 mmHg is lower than 30% among the hypertensive patients treated in primary care unit in Germany [36].

According to the results obtained from this study, awareness and treatment rate was determined to be higher in women compared to men, while blood pressure control was observed to be better in men. In the study of Aytekin *et al.* [37], the rate of awareness, treatment and control was found to be higher in men. On the other hand, the rate of awareness, treatment and control was reported to be higher in women compared to men in a study conducted in Korea [38].

Prevalence of HT was higher in women than that in men ($p<0.01$) (69.6% in women and 63.0% in men). It is reported in various studies performed in Turkey and other countries that hypertension prevalence in women is significantly higher compared to men [15,24,25,30,39,40], It is reported to be higher in men in some studies, [26,28,41,42] while it is reported in some studies that the difference is insignificant [23,25,43-45]. Although the frequency of hypertension by gender was significant in single-variable analysis, this significance has disappeared in logistic regression analysis.

Prevalence of HT increased steadily with age both for men and women ($P<0.001$), with the highest prevalence in the 80 and over years old men (92.9%), with the highest prevalence in the 70-79 and over years old women (95.3%). Age is strongly associated with HT. In many studies, it was reported that the prevalence of HT increased with age [23-26,29,30,38,41,42,46-50].

Several studies have also found that obesity is main risk factors for the development of HT [51]. In addition, weight loss is an important approach for primary prevention of hypertension [52]. Overweight or obesity was significantly associated with high HT [24, 25, 44, 48, 49, 53, 54]. In addition, body mass index were the best predictors of the hypertension incidence rate [55]. In our study, only 11.6% of hypertensives have normal weight, and a significant relationship was determined between hypertension prevalence and being overweight. This study demonstrated that obesity was also a serious public health problem in Erzincan. A goal should be established of securing balanced nutrition for the community and increasing physical activity [24].

When level of education is considered, an inverse relationship is observed between level of education and prevalence of HT. Prevalence was highest in illiterate-literate people and lowest in people who graduated from universities or colleges and high school. As education level increases the prevalence of HT decreases. In regression analysis, the prevalence of hypertension was greater in individuals with a lower educational level which constituted a more prominent difference for literate ones. The results are in line with previous studies conducted in Turkey and other countries [23-25,38,56]. High prevalence of HT in the group with a low education level might result from the fact that the risk factors such stress, working conditions and nutritional habits were more common [25].

We found a significant association between HT and marital status. Prevalence of HT was highest in widowed and lowest in unmarried people. This relationship disappeared in the logistic regression analysis performed.

We observed an association between prevalence of HT and occupation. Prevalence of HT is highest in the groups of unemployed and retired groups and lowest in the official groups. This relationship disappeared in the logistic regression analysis performed.

Current smoking is a significant independent risk factor for HT women and men [56,57]. Interestingly, prevalence of HT was highest in the nonsmokers and lowest in the smokers. In other studies, significant association between HT and smoking has not been observed [23, 38,47,58]. Cigarette smoking is known to impair insulin action and may lead to insulin resistance. It may also cause high BP by increasing sympathetic activity [59]. In the present study, we found an association between smoking and HT (Table 2). This result is similar to that obtained from the study of Erem *et al.* [24]. HT was significantly less frequent in current smokers than in nonsmokers. Moreover, the same results were determined in current smokers multinomial logistic regression analysis. It is important to point out that our data, similar to the other studies, have shown the interesting phenomenon that smokers have lower BP than nonsmokers, and did not refute the fact that smoking is one of the main risk factors of HT.

Salt intake is an important factor in determining the blood pressure level and the rise in the blood pressure with age [1]. Also reduction of salt intake is important approach for decrease in blood pressure for hypertensive patients [60]. However, a negative relationship between hypertension prevalence and eating salty meals was observed in our study ($P<0.001$), and this relationship disappeared in the logistic regression analysis performed.

It is interesting that single analysis has revealed that HT prevalence is higher in individuals who eat low-sodium meals compared to those who eat medium- or high-sodium meals. In the study conducted by Arslanta *et al.* [23], no significant relationship was reported between hypertension prevalence and low-sodium meals. It was found in the study of Çöl *et al.* [54] that there was no significant difference in hypertension prevalence between individuals with and without compliance to life style changes applied due to hypertension. Salt restriction is reported to be most frequently applied life style change due to the condition. According to study with a follow-up period of 7 years of He *et al.* [52], suggested that the short-term reduction in sodium intake may be associated with a lower long-term risk of hypertension.

Prevalence of HT was increased with decreased physical activity. This relationship disappeared in the logistic regression analysis performed.

According to the literature, diabetes causes an increase in the risk of hypertension [61,62]. Similarly, our study showed that hypertension was present 92.2% of the participants reported to have diabetes. Hypertension was more frequent in the participants with diabetes than in those without diabetes, with a statistical significance. This finding is consistent with the results obtained from other studies [25,32,44,63,64].

No significant association was found between the HT and family history of hypertension ($p>0.05$). This result is similar to that obtained from the study of Erem *et al.* [24].

CONCLUSION

The overall hypertension prevalence was 67.0% in the study sample and 77.4 % of them were aware of their hypertension and received a pharmacologic treatment. Of the patients who had a drug treatment, 33.9 % were under control in terms of blood pressure. This is study, only 11.6% of hypertensives were normal weight. This study demonstrated that obesity was also a serious public health problem in Erzincan. Prevalence of HT increased steadily with age both for men and women. The results show that there is a problem in detection hypertensive cases and providing effective therapy. In addition according to these results, hypertension is a public health problem that becomes much more important at the advanced ages. Prevention studies and the early diagnosis and treatment programs that are directed to the risk factors for hypertension should be more widespread (elderly, overweight, presence of diabetes).

These results suggest that further educational programs among risk factors of hypertension, screening studies for early diagnosis and treatment of blood pressure in periodic times, and measure of BP in the course of physical examination of especially over 40 years aged all populations in primary health care centers for prevention and control of hypertension is needed in Erzincan city center.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1

Hypertension, awareness, treatment and control (in all hypertensives) of hypertension in the study sample by age and gender

	Age group											
	40-49		50-59		60-69		70-79		80		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Men												
Hypertension												
Yes	50	32.3	102	60.4	116	75.8	98	83.8	26	92.9	392	63.0
No	105	67.7	67	39.6	37	24.2	19	16.2	2	7.1	230	37.0
Awareness												
Yes	26	52.0	63	61.8	85	73.3	79	80.6	21	80.8	274	69.9
No	24	48.0	39	38.2	31	26.7	19	19.4	5	19.2	118	30.1
Treatment*												
Yes	26	16.8	63	37.3	85	55.6	79	67.5	21	75.0	274	44.1
No	129	83.2	106	62.7	68	44.4	38	32.5	7	25.0	348	55.9
Control												
Yes	14	16.8	28	44.8	31	36.5	23	29.1	7	33.3	103	37.6
No	12	46.2	35	55.6	54	63.5	56	70.9	14	66.6	171	62.4
Women												
Hypertension												
Yes	144	43.0	210	75.8	189	88.7	101	95.3	16	94.1	660	69.6
No	191	57.0	67	24.2	24	11.3	5	4.7	1	5.9	288	30.4
Awareness												
Yes	112	77.8	161	76.7	164	86.8	90	89.1	13	81.2	540	81.8
No	32	22.2	49	23.3	25	13.2	11	10.1	3	18.8	120	18.2
Treatment*												
Yes	112	33.4	161	58.1	164	77.0	90	84.9	13	76.5	540	56.8
No	233	66.6	116	41.9	49	23.0	16	15.1	4	23.5	408	43.0

		Age group								Total	
		40-49		50-59		60-69		70-79		80	
		n	%	n	%	n	%	n	%	n	%
Control											
Yes											
No											
All Subject											
Hypertension											
Yes											
No											
Awareness											
Yes											
No											
Treatment											
Yes											
No											
Control											
Yes											
No											

* Diagnosed patients were received treatment

Table 2

Prevalence's of normal and HT in Turkish subject by body mass index, occupation level of education

Characteristics	Normotensif		Hypertensive		Total		Statistics
	n	%*	n	%*	n	%**	X ² , p
BMI							
<18.5	3	60.0	2	40.0	5	0.3	
18.5-24.9	112	48.3	120	51.7	232	14.8	
25-29.9	252	38.8	397	61.2	649	39.5	
30-39.9	146	23.5	474	76.5	620	39.5	
>40	5	7.8	59	92.2	64	4.1	79.5,0.000
Education							
Illiterate	76	18.2	341	81.8	417	26.6	
Literate	23	17.0	112	83.0	135	8.6	
Primary	281	37.4	471	62.6	752	47.9	
Secondary	40	42.6	54	57.4	94	6.0	
High school	62	55.4	50	44.6	112	7.1	
University	36	60.0	24	40.0	60	3.8	112.2,0.000
Marital status							
Married	467	36.0	829	64.0	1296	82.5	
Unmarried	10	55.6	8	44.4	18	1.1	
Widowed/Divorced	41	16.0	215	84.0	256	16.3	42.9,0.000
Occupation							
Tradesman/Worker	96	43.6	124	56.4	220	14.0	
Housewife	271	30.1	628	69.9	899	57.3	
Official	58	59.8	39	40.2	97	6.2	
Retired	91	26.4	254	73.6	345	22.0	
Unemployed	2	22.2	7	77.8	9	0.6	53.4,0.000
Health insurance							
Insured	497	32.7	1021	67.3	1518	96.7	

Characteristics	Normotensif		Hypertensive		Total		Statistics
	n	%	n	%	n	%	X ² , p
Uninsured	21	40.4	31	59.6	52	3.3	1.3;0.249
Income level							
Income <expenditure	304	30.9	680	69.1	984	62.7	
Income = expenditure	196	36.2	345	63.8	541	34.5	
Income >expenditure	18	40.0	27	60.0	45	2.9	5.5;0.063
Cigarette							
Yes	124	54.9	102	45.1	226	14.4	
No	394	29.3	950	70.7	1344	85.6	57.1;0.000
Alcohol							
Yes	10	33.8	20	66.7	30	1.9	
No	508	33.0	1032	67.0	1540	98.1	0.002;0.968
Salt use							
Minimum	128	18.7	556	81.3	684	43.6	
Medium	309	41.6	430	58.2	739	47.1	
Maximum	81	55.1	66	44.9	147	9.4	121.5;0.000
Type of fat							
Vegetable	198	30.1	459	69.9	657	41.8	
Animal	60	33.5	119	66.5	179	11.4	
Mix	260	35.4	474	64.6	734	46.8	4.4;0.110
Physical activity							
Never	123	26.9	335	73.1	458	29.2	
Mild	152	29.3	367	70.7	519	33.1	
Middle	189	39.5	289	60.5	478	30.4	
Heavy	54	47.0	61	53.0	115	7.3	30.4;0.000
Diabetes							
Present	24	7.8	282	92.2	306	19.5	

Characteristics	Normotensif		Hypertensive		Total		Statistics χ^2 , p
	n	%	n	%	n	%	
Absent	494	39.1	770	60.9	1264	80.5	108.7;0.000
History of HT family							
Yes	233	33.5	462	66.5	695	55.7	
No	285	32.6	590	67.4	875	44.3	1.6;069

* Row percentage

** Column Percentage

Table 3
Logistic regression analysis of the variables, associated with high blood pressure in simple analysis

Variables	Odd Oran	Güven snırı	P
Age ^{**}	1,01	1,08	1,12 0.000
BMI ^{**}	1,91	1,66	2,37 0.000
Cigarette use [*]	No Yes	1 0,60	0,42 0,85 0.004
Gender	Male Women	1 1,96	0,97 3,94 0.060
Marital status			
	Widowed/ Divorced	1	0.956
	Unmarried	1,03	0,66 1,61 0.884
	Married	0,88	0,25 3,12 0.844
Level of education	University Illiterate Literate Primary Secondary High school	1 2,22 3,20 1,71 2,14 1,31	9,99 1,31 0,82 0,94 0,61 0,97 4,97 7,82 3,57 4,88 2,82 0.068 0.053 0.011 0.149 0.071 0.491
Occupation			
	Unemployed	1	0.561
	Housewife	0,99	0,16 6,31 0.993
	Official	0,61	0,09 4,17 0.618
	Retired	1,35	0,20 9,15 0.761
	Tradesman/Worker	0,94	0,15 6,01 0.950
Salt use ^{**}			

Variables	Odd Oranı	Güven sını	P
Maximum	1		0.000
Medium	2,95	1,88	4,62 0.000
Minimum	1,23	0,80	1,89 0.336
Physical activity			
Heavy	1		0.067
Never	1,53	0,91	2,59 0.108
Mild	1,60	0,97	2,66 0.068
Middle	1,13	0,68	1,86 0.641
Diabetes**			
Present	1	0,15	0,38
Absent	0,24	0,15	0,35 0.000

*
p<0.01

**
p<0.001