

## Prevalence and Awareness of Hypertension in Pazar District of Tokat Province: A Community-Based Study\*\*

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### ABSTRACT:

**Purpose:** This study was conducted to evaluate the prevalence of hypertension in individuals over the age of 18, risk factors, knowledge and opinions of society about hypertension, and awareness of hypertension in Pazar district of Tokat province.

**Materials and Methods:** This descriptive cross-sectional study was carried out in Pazar district of Tokat province between February and May 2022. The research was conducted with 270 individuals over the age of 18 who agreed to participate in the study in each neighborhood in the district center using the proportional cluster sampling method.

**Results:** While the prevalence of hypertension was 27%, awareness of hypertension was 21.9% in individuals. Both the prevalence of hypertension and awareness of hypertension were statistically significantly high in individuals with a family history of hypertension and comorbidities. Each unit increase in age increases the probability of hypertension by 1.112 times. Low-income participants were 8.381 times more likely to have hypertension than high-income participants. Comorbidities increase the risk of hypertension by 4.541 times. The rate of individuals who were diagnosed with hypertension by a physician was 5.9%, and the rate of regular use of the drugs recommended by the physician was only 62.5%.

**Conclusion:** Hypertension is observed in approximately one in every three people, and the rate of awareness of hypertension is quite low. It is recommended that individuals in society should be screened for hypertension with blood pressure measurements at regular intervals, and health education should be planned for awareness.

**Keywords:** Hypertension; prevalence; awareness; knowledge; treatment

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### INTRODUCTION

Hypertension is one of the most important causes of deaths at an early age in the world and is a serious health problem that significantly increases the risks of heart, brain, kidney, and other diseases (The Global Burden of Metabolic Risk Factors for Chronic Diseases Collaboration, 2014; World Health Organization, 2021). The number of hypertensive adults increased from 594 million in 1975 to 1.13 billion in 2015 worldwide. Hypertension is a global health threat, and the number of patients has increased from past to present (NCD Risk Factor

Collaboration (NCD-RisC), 2017). According to the 2012 data from the Turkish Society of Hypertension and Renal Diseases, the prevalence of hypertension is 30.3% in Turkey (Sengul et al., 2016). Worldwide, about 1.28 billion adults between the ages of 30-79 have hypertension. The prevalence of hypertension differs according to regions and country income groups. The WHO African Region has the highest prevalence of hypertension (27%), whereas the WHO Region of the Americas has the lowest prevalence of hypertension (18%). In the world, two-thirds of individuals with hypertension live in low-

and middle-income countries. The high prevalence of hypertension in low- and middle-income countries can be explained by increased risk factors (WHO, 2021). When the prevalence of hypertension was examined according to the regions of Turkey, it was revealed to be higher in the Mediterranean, Central Anatolia and Black Sea Regions and lower in the Southeastern Anatolia and Aegean Regions (Bayram et al., 2021).

While only 14% of adults with hypertension have hypertension under control worldwide, this rate is 28.7% in Turkey. It is reported that 46% of adults with hypertension are not aware of this condition (Sengul et al., 2016; WHO, 2021). In a study performed in seven regions of Turkey, awareness of hypertension was 30% (Bayram et al., 2021). It is extremely important to understand the characteristics of individuals who are unaware of their disease so that the control over hypertension can be improved, and new strategies can be targeted and adapted to the needs of high-risk groups in each country (Fenech et al., 2020). On the other hand, even if individuals are aware of their hypertension and complete the treatment process, they cannot control their hypertension because of their unhealthy lifestyles. Modifiable unhealthy lifestyle factors such as excessive alcohol consumption, excessive weight, and non-compliance with dietary recommendations have been observed to be associated with an increased risk of uncontrolled hypertension in individuals receiving hypertensive treatment (Cherfan et al., 2020).

In a society, not knowing the risk factors related to the disease or not being aware of the disease constitutes a major obstacle to overcoming that disease. Since hypertension has a common but preventable and treatable nature, it is necessary to identify the prevalence and risk factors of hypertension in society and provide appropriate treatment and control through awareness of hypertension. In this way, other problems such as illness, disability, loss of workforce, and decreased quality of life resulting from complications that may develop due to hypertension will be prevented.

The aim of this study is to determine the knowledge, opinions, and awareness of adults living in Pazar district of Tokat province about hypertension and

the prevalence of hypertension.

## **MATERIALS and METHODS**

### **Purpose and Type of the Study**

This descriptive cross-sectional study was conducted to evaluate the prevalence of hypertension in individuals over the age of 18, risk factors, knowledge and opinions of society about hypertension and awareness of hypertension in Pazar district of Tokat province.

### **Sampling and Participants**

The study population consists of individuals from Pazar district of Tokat province, in which the population of the district center over 18 years of age is 3648, according to the 2021 data of the Turkish Statistical Institute (TURKSTAT) Address-Based Population Registration System Results (ABPRS) (Turkey Statistical Institute, 2021). In the sample size calculation of the research, the study was planned to include a minimum of 268 individuals (over 18 years of age) at a 95% confidence interval and with 0.05 deviation using the Open Epi Program, and it was completed with 270 participants (Dean, Sullivan, Soe, 2022). In the field research conducted between February and May 2022, the sample selection method was performed in two stages. At the first stage, the proportional cluster sampling method was employed to determine the number of individuals to be included in the research in the neighborhoods affiliated to the district center (Akdur, 2019). There are 6 neighborhoods affiliated to Pazar Municipality in the district center (Erkilet, Esentepe, Merkez, Seyitali, Sinanpaşa, and Tekke neighborhoods). Using the proportional cluster sampling method, each neighborhood was taken as a cluster, and the number of samples that would be included in each cluster was calculated proportionally according to the cluster weight. At the second stage, the research was conducted with adults over the age of 18 who agreed to participate in the study by the researcher, who went to households in the research field, through purposive sampling.

### **Data Collection Tools**

The data collection tool was created by the researcher reviewing the literature, and the

"Prevalence and Awareness of Hypertension Questionnaire," consisting of 37 questions related to the participants' socio-demographic characteristics, health status, and awareness of hypertension, was used.

The blood pressure of the individuals was measured with an adult sphygmomanometer, and the mean value of two measurements made at 3-minute intervals was calculated (Unger et al., 2020). In accordance with the recommendations of the World Hypertension League Expert Committee in 2014, classification was made based on hypertension, awareness, and treatment criteria (Gee et al., 2014). The prevalence of hypertension was defined as follows: "Respondents who have systolic blood pressure  $\geq 140$  mm Hg or diastolic blood pressure  $\geq 90$  mm Hg or who report currently taking medication for the treatment of high blood pressure or who report having been diagnosed with hypertension by a health professional" (Gee et al., 2014).

The awareness of hypertension was defined in the following way: "Respondents who report either having been diagnosed with high blood pressure or who report being currently treated with medication for high blood pressure" (Gee et al., 2014).

The treatment of hypertension was described as follows: "Respondents who report being currently treated with medication for high blood pressure" (Gee et al., 2014).

Other variables are defined as the proportion of respondents who state that systolic blood pressure  $\geq 140$  mm Hg or diastolic blood pressure  $\geq 90$  mm Hg regarding the rate of knowing the upper limits of hypertension correctly. Body mass index  $\geq 30$  was defined as obesity, regular physical activity was defined as 150 minutes of exercise per week (WHO, 2020). For how many years the participants smoked and consumed alcohol and the frequency of smoking and alcohol consumption on a weekly basis were questioned. Stress exposure was classified as none/few, moderate, a lot.

### Statistical Analysis

Quantitative variables were presented with mean  $\pm$  standard deviation (SD), and categorical variables were presented in number and percentage (%) at a 95% confidence interval (CI). The chi-square

test was used for statistical comparisons in categorical variables. In the analysis, when there were more than two categorical variables and there was a difference in the statistical significance level, the post hoc chi-square test was applied to determine which variable caused the difference. Multivariate logistic regression analysis was conducted to determine hypertension risk factors. Independent variables/risk factors were tested individually against the dependent variable by binary logistic regression analysis, and in the univariate analysis, the model was created by including potential risk factors with  $p=0.25$  or less in multivariate analyses. The fit of the model from which the extreme observations in the data set were removed was evaluated with "Hosmer-Lemeshow's Model Goodness-of-Fit Test", and the "Enter Model" was used for the application. Analyses were carried out in SPSS 20.0 (Statistical Package for Social Sciences) for Windows, and a  $p<0.05$  value was considered significant.

### Ethical Approval

The present research was carried out following the principles of the Declaration of Helsinki and in line with the local statutory requirements obtained from Tokat Gaziosmanpaşa University Non-Invasive Clinical Research Ethics Committee (20.01.2022-2022/02 Project no:22-KAEK-06). Institutional permission was acquired from Pazar District Governor's Office with the letter numbered E-87832731-806.02.02-1103 on 17.01.2022. All study participants provided informed consent.

## RESULTS

### Demographic characteristics of the study population

While 33.3% of the participants were female, 66.7% were male, and the mean age was  $38.15 \pm 11.97$  years. Most of the participants were primary school graduates and had middle incomes. The rate of regular physical activity was quite low (9.6%). The rate of participants with hypertension in their families was 31.9% (Table 1).

Of the participants who stated that they knew the upper limits of hypertension ( $n=139$ ), 63.3% knew the upper limits of hypertension correctly (this rate

is 32.5% among all participants [n=270]). The participants showed stress (70%), salty food (48.1%), and overweight (33.7%) as the top three causes of hypertension.

The most known symptom of hypertension is headache (82.6%). To the question 'What are the complications of hypertension?', almost half of the participants (46.3%) answered as 'I don't know.'

**Table 1.** Socio-demographic and health-related characteristics of the participants (n=270)

	Number	Percent
<b>Gender</b>		
Female	180	66.7
Male	90	33.3
<b>Age (38.15±11.97; 19-80)</b>		
18-25	36	13.3
26-33	71	26.3
34-41	73	27.0
42-49	41	15.2
50-57	31	11.5
58-65	10	3.7
Over 65	8	3.0
<b>Educational status</b>		
Primary education	127	47.0
High school	88	32.6
Bachelor's degree	49	18.1
Master's degree	6	2.2
<b>Economic status</b>		
High income	50	18.5
Middle income	212	78.5
Low income	8	3.0
<b>Marital Status</b>		
Married	190	70.4
Single	72	26.7
Widowed/Divorced/Separated	8	3.0
<b>Status of having children (n=198)</b>		
Yes	184	92.9
No	14	7.1
<b>Number of children (2.45±1.09; 1-6)</b>		
1	35	19.0
2	72	39.1
3	43	23.4
4 and over	34	18.5
<b>Regular physical activity</b>		
No	244	90.4
Yes	26	9.6
<b>Family history of hypertension</b>		
No	184	68.1
Yes	86	31.9
<b>Current smoking</b>		
No	192	71.1
Yes	78	28.9
<b>Current drinking</b>		
No	260	96.3
Yes	10	3.7
<b>Overweight/Obesity</b>		
No	226	83.7
Yes	44	16.3
<b>Presence of chronic disease</b>		
No	213	78.9
Yes	57	21.1
<b>Stress exposure</b>		
None/Few	110	40.7
Moderate	115	42.6
A lot	45	16.7

Two of the most known complications are heart attack (34.1%) and stroke (21.5%). While most of the participants stated that they drank the juice of squeezed lemon when their blood pressure increased, they reported that they drank ayran when

their blood pressure decreased (81.7% and 88.5%, respectively). To the question 'What is the prevalence of hypertension in society?', more than half of the participants (58.1%) answered as 'no idea' (Table 2).

**Table 2.** Participants' knowledge, attitudes, and opinions about hypertension

	Number	Percent
<b>Reporting that he/she knows the upper limits of hypertension</b>		
No	131	48.5
Yes	139	51.5
<b>The state of knowing the upper limit of hypertension correctly (n=139)</b>		
No	51	36.7
Yes	88	63.3
<b>Presence of a blood pressure device at home</b>		
No	168	62.2
Yes	102	37.8
<b>Answers to the question, What are the causes of hypertension?</b>		
Stress	189	70.0
Salty food	130	48.1
Overweight	91	33.7
Genetic factors	81	30.0
Sedentary lifestyle	34	12.6
Oily food	24	8.9
Medications	10	3.7
Diabetes	8	3.0
Kidney diseases	6	2.2
No idea	23	8.5
<b>Answers to the question, What are the symptoms of hypertension?</b>		
Headache	223	82.6
Dizziness	188	69.6
Chest pain	37	13.7
Palpitation	34	12.6
Nausea, vomiting	30	11.1
Shortness of breath and double vision	14	5.2
No idea	13	4.8
<b>Answers to the question, What are the complications of hypertension?</b>		
Heart attack	92	34.1
Stroke	58	21.5
Embolism	54	20.0
Heart failure	20	7.4
Visual impairment	43	23.4
Kidney failure	34	18.5
I don't know	125	46.3
<b>Answers to the question, What do you do when your blood pressure rises?</b>		
I drink the juice of squeezed lemon	219	81.1
I eat garlic	128	47.4
I go to a health institution	36	13.3
I get away from stress	17	6.3
I take blood pressure medication	8	3.0
No idea	23	8.5
<b>Answers to the question, What do you do when your blood pressure is low?</b>		
I drink salty ayran	239	88.5
I eat pickles	8	3.0
I eat olives	4	1.5
I lift my feet	1	0.4
No idea	30	11.1
<b>Answers to the question, What is the prevalence of hypertension in society?</b>		
Rare	23	8.5
Frequent	69	25.6
Observed in Everyone	21	7.8
No idea	157	58.1

**Prevalence and awareness of hypertension**

While the prevalence of hypertension was 27% [95%CI 22.0-32.6], the awareness of hypertension was 21.9% [95% CI 13.9-32.7] in individuals. The prevalence of hypertension in male and female participants was 25.6% and 30.0%, respectively. The awareness of hypertension was higher in women than in men (28.3% and 11.1%, respectively). The prevalence of hypertension among the participants in the 18-29 age group was the lowest at the level of statistical significance compared to other age groups ( $p<0.05$ ). The participants with a low income had the

highest prevalence of hypertension ( $p<0.05$ ). Both the prevalence of hypertension and the awareness of hypertension were statistically significantly high in individuals with a family history of hypertension and chronic diseases ( $p<0.001$ ) (Table 3).

Among the participants, the rate of individuals who reported to have hypertension diagnosed by a physician was 5.9% [95% CI 3.6-9.4], and the rate of regular use of the medications recommended by the physician was only 62.5% [95% CI 38.6-81.4].

**Table 3.** Distribution of hypertension and awareness of the participants according to some variables

Variables	Prevalence of hypertension			Awareness of hypertension		
	Number	Percent	95% CI	Number	Percent	95% CI
<b>Total</b>	73	27.0	22.0-32.6	16	21.9	13.9-32.7
<b>Gender</b>						
Female	46	25.6	19.7-32.3	13	28.3*	17.3-42.5
Male	27	30.0	21.5-40.1	3	11.1*	3.8-28.0
<b>Age</b>						
18-29	5	6.7 <sup>a*</sup>	2.8-14.6	0	0.0	0.0-43.4
30-39	22	25.6 <sup>b</sup>	17.5-35.7	1	4.5	0.08-21.8
40-49	17	28.3 <sup>b</sup>	18.5-40.7	4	23.5	9.5-47.2
50-59	16	47.1 <sup>b</sup>	31.4-63.2	4	25.0	10.1-49.5
60 and over	13	86.7 <sup>b</sup>	62.1-96.2	7	21.9	29.1-76.7
<b>Educational status</b>						
Primary education	47	37.0	29.1-45.6	9	19.1	10.4-32.5
High school	12	13.6	7.9-22.3	2	16.7	4.7-44.8
Bachelor's degree	8	16.3	8.5-29.0	0	0.0	0.0-32.4
Master's degree	6	100.0	0.0-64.0	5	83.3	43.6-96.9
<b>Economic status</b>						
High income	10	20.0 <sup>a*</sup>	11.2-33.0	2	20.0	5.6-50.9
Middle income	58	27.4 <sup>a</sup>	21.8-33.7	13	22.4	13.5-34.6
Low income	5	62.5 <sup>b</sup>	30.6-86.3	1	20.0	3.6-62.4
<b>Regular physical activity</b>						
No	71	29.1*	23.8-35.1	16	22.5	14.3-33.5
Yes	2	7.7*	2.1-24.1	0	0.0	0.0-65.7
<b>Family history of hypertension</b>						
No	43	23.4*	17.8-30.0	6	14.0*	6.5-27.2
Yes	30	34.9*	25.7-45.4	10	33.3*	19.2-51.2
<b>Current smoking</b>						
No	50	26.0	20.4-32.7	14	28.0	17.4-41.6
Yes	23	29.5	20.5-40.4	2	8.7	2.4-26.8
<b>Current drinking</b>						
No	70	26.9	22.0-32.6	16	22.9	14.5-33.9
Yes	3	30.0	10.8-60.3	0	0.0	0.0-56.1
<b>Overweight/Obesity</b>						
No	51	22.6 <sup>**</sup>	17.6-28.5	9	17.6	9.5-30.2
Yes	22	50.0 <sup>**</sup>	35.8-64.2	7	31.8	16.3-52.6
<b>Presence of chronic disease</b>						
No	41	19.2 <sup>**</sup>	14.5-25.7	0	0.0*	0.0-8.5
Yes	32	56.1 <sup>**</sup>	43.3-68.2	16	50.0*	33.6-66.3
<b>Stress exposure</b>						
None/Few	19	17.3 <sup>a**</sup>	11.4-25.4	3	15.8	5.5-37.5
Moderate	33	28.7 <sup>ab</sup>	21.2-37.6	7	21.2	10.6-37.7
A lot	21	46.7 <sup>b</sup>	32.9-60.9	6	28.6	13.8-49.9

<sup>a,b,c</sup> Superscripts with different letters across the table show significant differences. \* $p<0.05$ , \*\*  $p<0.001$

### Related risk factors in hypertension

According to the results of multiple logistic regression analysis conducted to identify the risk factors for hypertension in the studied population, it is seen that age, economic status, and presence of chronic diseases have a significant effect ( $p < 0.05$ ). Each unit increase in age increases the probability of hypertension by 1.112 times (OR: 1.112, 95% CI:

1.070-1.156). The participants with low income are 8.381 times more likely to have hypertension than the participants with high incomes (OR: 8.381, 95% CI: 1.185-59.300). The participants with chronic diseases are 4.541 times more likely to have hypertension than those without chronic diseases (OR: 4.541, 95% CI: 2.061-10.005) (Table 4).

**Table 4.** Multiple Logistic Regression Model Results of Hypertension Risk Factors

Variables	$\beta$	OR	95% CI	p-Value
<b>Constant</b>	-7.238	0.001	-	0.000
<b>Age</b>	0.106	1.112	1.070-1.156	0.000
<b>Gender</b>				
Female	<i>Ref</i>			
Male	.401	1.493	0.615-3.621	0.376
<b>Economic status</b>				
High income	<i>Ref</i>			
Middle income	0.646	1.908	0.704-5.166	0.204
Low income	2.126	8.381	1.185-59.300	0.033
<b>Family history of hypertension</b>				
No	<i>Ref</i>			
Yes	0.289	1.335	0.614-2.903	0.466
<b>Current smoking</b>				
No	<i>Ref</i>			
Yes	0.611	1.842	0.746-4.551	0.746
<b>Overweight/Obesity</b>				
No	<i>Ref</i>			
Yes	0.534	1.707	0.695-4.189	0.243
<b>Presence of chronic disease</b>				
No	<i>Ref</i>			
Yes	1.513	4.541	2.061-10.005	0.000
<i>Cox &amp; Snell R Square .309</i>		<i>Nagelkerke R Square .463</i>		

Constant: Constant Term,  $\beta$ :  $\beta$  Coefficient, OR: Odds Ratio. CI: Confidence Interval, Ref: Reference Category, No hypertension=0, There is hypertension=1.

### DISCUSSION

In this study conducted to evaluate the prevalence of hypertension in adults living in a district center and their knowledge, opinions, and awareness of hypertension, the prevalence of hypertension was 27%. According to the 2012 data of the Turkish Society of Hypertension and Renal Diseases' large-scale research in Turkey, this rate was 30.3% (Sengul et al., 2016). According to the results of the Turkish Epidemiology Survey of Diabetes, Hypertension, Obesity and Endocrine Diseases (TURDEP-II) conducted in 2010, the prevalence of hypertension was reported as 31.4% (Satman et al., 2013). In

another study conducted in seven regions of Turkey, the prevalence of hypertension was 36.5%. In the same study, the prevalence of hypertension in the Black Sea region, where this study was carried out, was 44.9% (Bayram et al., 2021). Contrary to our research results, the prevalence of hypertension in rural areas was revealed to be higher than those living in urban areas in a recent study conducted in Turkey and research conducted in China (Bayram et al., 2021; Xing et al., 2019). This difference can be explained by the fact that the district where the study was conducted is close to the city center and the health education interventions for society's

awareness of hypertension within the scope of the learning festival held in the district center for the last five years.

Among the risk factors for hypertension, gender, age, economic status, comorbidity, lack of activity, obesity, and smoking are widely stated in many studies in the literature (Balijepalli et al., 2014; Bayram et al., 2021; Geldsetzer et al., 2019; Iqbal et al., 2021; Kotsis et al., 2005; Morillo, Amato, Cendon Filha, 2006; Saju et al., 2020; Xing et al., 2019). In this study, there is a significant difference in the prevalence of hypertension according to age, economic status, physical activity, obesity, comorbidity, a family history of hypertension, and the presence of stress. According to the results of multivariate logistic regression analysis, age, economic status, and comorbidity were found to be the most important determinants of hypertension in this study, similar to the literature. On the other hand, although there was no statistically significant difference in this study, the prevalence of hypertension in men was 30%, whereas this rate was 25.6% in women. This result is similar to the results of another study (Bayram et al., 2021) conducted in Turkey, but the prevalence of hypertension is reported to be higher in women in some countries (Geldsetzer et al., 2019; Iqbal et al., 2021; Saju et al., 2020). The difference in the prevalence of hypertension according to gender may result from the age differences of the participants in the studies. It can also be one of the negative health consequences of gender inequality in low-income countries (WHO, 2022). Moreover, differences between men and women in benefiting from health services are likely to lead to differences in the prevalence of hypertension.

The participants' awareness of hypertension was 21.9%. In the PATENT I-II (prevalence, awareness, treatment, and control of hypertension in Turkey) studies conducted in 2003 and 2012, the rates were reported as 40.7% and 54.7%, respectively (Sengul et al., 2016). In the study conducted in seven regions of Turkey, the awareness of hypertension across the country was 30%, whereas the awareness of hypertension in the Black Sea region was 26.8% (Bayram et al., 2021). In the research conducted in low-, middle-, and high-income countries, the

general rate of awareness of hypertension was 46.5% (Chow, 2013). In another comprehensive population-based study conducted in France, the rate of awareness of hypertension was 37.5% (Fenech et al., 2020). Although studies are conducted on awareness of hypertension in the region where the research was carried out, this situation can be attributed to the fact that individuals do not apply to a health institution when their blood pressure rises because the prevalence of hypertension in adults in this study is quite low compared to other studies. In a meta-analysis study of the data obtained from 12 high-income countries, awareness, treatment, and control of hypertension have improved significantly in high-income countries since the 1980s and 1990s (NCD Risk Factor Collaboration (NCD-RisC), 2019). The awareness of hypertension is undoubtedly one of the most important elements in the fight against hypertension, which is a preventable and treatable disease. Thanks to awareness of hypertension, the prevalence of hypertension has decreased while health systems have reached treatment rates of up to 80% and control rates of up to 60% in high-income countries. The fact that the number of individuals with hypertension has doubled worldwide since 1990, and especially the fact that the majority of this increase took place in low- and middle-income regions, clearly show the importance of awareness of hypertension (NCD Risk Factor Collaboration (NCD-RisC), 2021).

In the awareness of hypertension, some individuals come to the fore in the context of socio-demographic and some other characteristics. In this study, awareness of hypertension was higher in the female gender, individuals with a family history of hypertension and those with comorbidities, which is similar to the studies in the literature (Chow, 2013; Fenech et al., 2020; NCD Risk Factor Collaboration (NCD-RisC), 2019).

In the study, the rate of regular use of the medications recommended by the physician was only 62.5%. In the study conducted with the participation of individuals who presented to four different district family health centers in Kayseri province of Turkey, the rate of those who reported that they used medications regularly was 80.8%



(Arslantaş et al., 2019). The low rates of regular use of hypertension medication in our study can be attributed to the collection of data by going to the individuals' households. Individuals who present to a health institution are likely to have a certain level of awareness for their health. Indeed, in a study conducted with individuals diagnosed with hypertension in a health institution, it was reported that only 21% of the participants did not take their medications regularly every day (Arikan et al., 2020). In this study, 63.3% of the 139 participants who reported that they knew the upper limits of hypertension knew the upper limits of hypertension correctly (this rate was 32.5% among all participants). In the study conducted by Oskay, Önsüz, Topuzoğlu in 2010, 12.7% of the participants knew blood pressure values correctly ((Oskay, Önsüz, Topuzoğlu, 2010). In a recent study carried out on university employees, the rate of individuals who knew the upper limits of blood pressure varied between 0% and 16.2% (Özer, Teke, Turan, 2020). On the other hand, although they were diagnosed with hypertension, only 8.3% of the participants knew blood pressure values correctly (Atila et al., 2021). These results can be attributed to the fact that the knowledge of society about hypertension, which is extremely important in the early diagnosis, treatment, and control of hypertension, is still not at the desired level.

The participants reported stress as the first cause of hypertension. Stress is shown to be the first cause of hypertension in other studies, although they were conducted in Turkey in different years (Oskay, Önsüz, Topuzoğlu, 2010; Özer, Teke, Turan, 2020). Hypertension is the predominant risk factor for myocardial infarction, paralysis, and heart failure (Yusuf et al., 2020). Similar to the study by Özer, Teke, Turan the participants mostly reported heart attack as a complication of hypertension in this research (Özer, Teke, Turan, 2020). However, it is an important finding that almost half (46.2%) of the participants in this study did not know the complications of hypertension. The most important point in motivating individuals regarding their health is their knowledge of the negative health outcomes that may occur when they do not do anything to protect and improve their health (Bahar Özvarış,

2016).

In this study, individuals reported that they mostly drank the juice of squeezed lemon and ate garlic to lower their blood pressure. In another study conducted on individuals with hypertension, similar to our findings, 63.2% of the participants were found to try to lower their blood pressure by consuming garlic and the juice of squeezed lemon, which are traditional methods (Sengul et al., 2016). In Turkey, people widely drink juice of squeezed lemon and eat yogurt with garlic as acute interventions in hypertension (Adibelli, Dilek, Akpolat, 2009).

## CONCLUSION

In this community-based study conducted in a district center, hypertension was observed in approximately one in every three people, and the rate of awareness of hypertension was quite low. In hypertension, the ages, economic status, and comorbidities of individuals are the most important determinants. Furthermore, the family history of hypertension, lack of physical activity, obesity, and high stress exposure lead to an increase in the prevalence of hypertension. This study, which was carried out by conducting field research, makes an up-to-date contribution to the field and puts emphasis on which segments should be targeted in health education interventions for society. In the context of socio-demographic risk factors in hypertension, it is recommended to identify target groups separately, starting from those with poor economic status in adults over the age of 25, and provide health education. Individuals should be encouraged for healthy lifestyle changes such as physical activity and diet, which have major contributions to both preventing and controlling hypertension. Preventive health services should be given importance and priority by screening individuals in society for hypertension with blood pressure measurements at regular intervals and by ensuring the participation of society for awareness. To keep all these interventions sustainable, the national health system must be quickly transformed into an applicable mechanism, and evaluations must be made meticulously. Moreover, to prevent comorbidities, appropriate screening and early diagnosis, treatment and control interventions

should be integrated into the national health system in a way that is applicable and sustainable. While doing all these, targets for social change should also be focused on not only through health institutions but also in collaboration with other sectors.

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### Conflict of Interest

The author declares no conflict of interest.

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