

## Relationship Between Knowledge Level, Blood Pressure Awareness-Insight and Mediterranean Diet Adherence of Hypertensive Individuals

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### ABSTRACT:

**Purpose:** This study was conducted descriptively and correlational to determine the relationship between the knowledge level, blood pressure awareness-insight and Mediterranean diet adherence of individuals with hypertension.

**Material and Methods:** The study sample consisted of 296 individuals with hypertension. The Individual Identification Form, Hypertension Knowledge Scale, Blood Pressure Awareness-Insight Scale and Mediterranean Diet Adherence Scale were used to collect data. Frequency, independent sample t test, F test, and Pearson correlation test were used to analyze the data.

**Results:** It was found that the participants' knowledge scores ( $6.35 \pm 5.13$ ), blood pressure awareness-insight ( $26.93 \pm 4.28$ ) and Mediterranean diet adherence scores ( $5.31 \pm 3.66$ ) were low. It was determined that there was a positive and moderately significant relationship between hypertension knowledge level and blood pressure awareness-insight ( $r=0.527$ ) and between blood pressure awareness-insight and adherence to the Mediterranean diet ( $r=0.443$ ). In addition, a weak positive relationship ( $r=0.369$ ) was found between knowledge level and adherence to the Mediterranean diet.

**Conclusion:** Hypertensive individuals have low knowledge, awareness and adherence to the Mediterranean diet. As individuals' knowledge scores increase, their blood pressure awareness-insight and adherence to the Mediterranean diet increase. In addition, as individuals' blood pressure awareness-insight scores increase, their adherence to the Mediterranean diet also increases. The study results showed that developing strategies to improve individuals' knowledge will increase their blood pressure awareness-insight and adherence to the Mediterranean diet. In order to increase adherence to the Mediterranean diet in the successful management of hypertension, educational programs that develop knowledge and awareness-insight should be included.

**Keywords:** Hypertension; knowledge; awareness-insight; adherence to the Mediterranean diet

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### INTRODUCTION

Hypertension (HT) is the most common disease among chronic diseases. It is reported that this disease affects 33% of adults aged 30-79 in the world (World Health Organization, 2025) and it is estimated that its prevalence will reach the highest rate in men (41.1%) and women (38.7%) in the world in 2040 (Boateng and Ampofo, 2023). A study conducted in Türkiye found that the prevalence of hypertension was 36.6% (Kılıçkap et al., 2018). It was also determined that more than 1/3 of the adult population has hypertension (Bayram et al., 2021;

Gürdoğan and Gürdoğan, 2019). Hypertension, which can cause heart, stroke, kidney diseases and death at a young age over time, is a preventable and controllable disease (Aydoğdu et al. 2019, Gürdoğan and Gürdoğan, 2019; Mohammed et al., 2021). However, one of the most important reasons that prevents HT from being controlled is the individual's lack of knowledge about HT (Paczkowska et al., 2021; Wolde et al., 2022; Mohammed et al., 2021).

Today, it is reported that there are few people with hypertension in developing and developed countries who have good knowledge (Wolde et al., 2022). In

the literature, studies conducted in different countries (Wolde et al., 2022; Estrada et al., 2020; Bacha and Abera, 2019; Akan et al. 2020) have also determined that the level of HT knowledge is insufficient. In some studies, it was found that individuals have sufficient knowledge about hypertension (Verulava and Mikiashvili, 2021; Mohammed et al., 2021; Pirasath and Sundaresan, 2021). It is reported that the level of knowledge about hypertension can be affected by many cultural factors such as place of residence, weather conditions, and eating habits (Bayram et al., 2021). For all these reasons, it is important to investigate the level of knowledge of individuals with hypertension in different cultures. In addition, determining the level of knowledge is necessary to understand the basic information of individuals, to know their misconceptions/behaviors, and to determine and meet their information needs (Ralapanava et al., 2020; Arıkan et al., 2020; Wolde et al., 2022).

One of the most important factors in the successful management of hypertension is awareness about the disease. For this reason, it is important to evaluate the awareness of individuals with hypertension in addition to their knowledge about the disease (Pirasath and Sundaresan, 2021; Yılmaz et al., 2020; Mohammed et al., 2021). Hypertension awareness is not the individual's knowledge about their disease, but their subjective awareness and acceptance of having HT (Gerretsen et al., 2018). It is stated that the awareness levels of individuals with HT are low worldwide and that when awareness levels are compared, the differences between countries vary (Taş and Büyükbeşe, 2013; Bacha and Abera, 2019; Woodiwiss et al., 2025;). It is reported that approximately three-quarters of individuals with hypertension in both developed and developing countries have very low awareness of the disease and do not have sufficient control over their disease (Mohammed et al., 2021; Estrada et al., 2020). In a study conducted in our developing country, it was determined that hypertension awareness was 30% and that this varied by region (Bayram et al., 2021). In order to control hypertension, the subject needs to be investigated in different regions and cultures. Knowing regional differences is useful in determining

and planning needs.

In hypertension management where a healthy lifestyle is adopted, the Mediterranean diet is recommended (Flippou et al., 2021). Studies have found that the Mediterranean diet is effective in reducing blood pressure and cardiovascular risk in individuals with hypertension (Flippou et al., 2021; Estruch et al., 2021). Adherence to the Mediterranean diet has been shown to reduce the likelihood of hypertension by 36% (Magriplis et al., 2020). Therefore, it is necessary to evaluate adherence to the Mediterranean diet in individuals with hypertension. However, a study investigating adherence to the Mediterranean diet in hypertensive and normotensive individuals has been found in the literature (Magripilis et al., 2020). It has been observed that there is no study on the subject in our country.

In the management of hypertension, knowledge and awareness about hypertension and compliance with the mediterranean diet are important factors (Gerretsen et al., 2018; Magriplis et al., 2020). Studies have shown that those with sufficient knowledge and awareness about hypertension have increased compliance with treatment and the Mediterranean diet compared to those with low knowledge (Iswatun, and Susanto 2021), their disease control and self-care are better, and complications and mortality are reduced (Magriplis et al., 2020; Filippou et al., 2021; Bacha and Abera 2019; Mariana et al., 2022). In addition, one study found that strict adherence to the Mediterranean diet reduces the risk of hypertension and provides better control of blood pressure (Filippou et al., 2021). Along with these studies, it is seen that knowledge (Akan et al., 2020; Arıkan et al., 2020), awareness (Bayram et al., 2021) and adherence to the Mediterranean diet (Georgoulis et al., 2024) in hypertension are investigated as separate topics in the literature. However, knowledge, insight-awareness, adherence to the Mediterranean type diet have not been addressed together and the relationship between them has not been examined. For this reason, these factors, which are important in controlling hypertension and adopting a healthy lifestyle, and which vary according to regional and cultural characteristics, need to be investigated in

societies and the relationship between them in order for countries to plan their health policies (Estrada et al., 2020; Mohammed et al., 2021).

## **MATERIAL and METHODS**

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

The aim of this descriptive and cross-sectional study is to examine the relationship between the knowledge level of individuals with hypertension, blood pressure awareness-insight, and Mediterranean diet adherence.

### **Sampling and participant**

This study, conducted between May 2023 and December 2023, consisted of 800 individuals diagnosed with hypertension who applied to the cardiology outpatient clinic of a hospital in the central Anatolian region of Turkey. The known sample calculation was used for the number of samples to be included in the study. The universe population was 800, the sample number determined with a 95% confidence level and a 0.05 margin of error was 260. The convenience sampling method was used in the sampling method. The data collection process reached 296 individuals.

*The inclusion criteria for the study were;* being diagnosed with hypertension, being over 18 years old, being able to communicate, and agreeing to participate in the study. *The exclusion criteria of the study were;* not being able to communicate, not knowing Turkish, and not wanting to participate in the study.

### **Data Collection Tools**

*Descriptive Information Form:* This form, prepared by the researcher in order to obtain information about the characteristics of the individuals constituting the sample, consists of ten questions such as age, gender, marital status, and level of education (Öncü et al., 2020; Bayram et al., 2021; Wolde et al., 2022; Mohammed et al., 2021; Pirasath and Sundaresan, 2021).

*Hypertension Knowledge Level Scale (HKLS):* The scale developed by Baliz-Erkoç et al. (2012) consists of 22 items and 6 sub-dimensions. The sub-dimensions are; definition, medical treatment,

adherence to medications, lifestyle, diet, and complications. The items in the scale are in the form of a complete sentence that can be true or false, and items 3, 4, 5, 6, 8, 10, 12, 14 and 17 are false statements. The correct answer given to each item is evaluated as "1 point", and the wrong and "I don't know" answer is evaluated as "0 points". The total score that can be obtained from the scale is between 0-22. As the score obtained increases, the level of knowledge about hypertension also increases. In the original study, the Cronbach alpha value of the scale was 0.81. (Baliz-Erkoc et al. 2012). In this study, the Cronbah alpha value was found to be 0.83.

*Blood Pressure Awareness and Insight Scale (BPAIS):* Developed by Gerretsen et al. (2018). Validity and reliability have been performed in our country (Yılmaz et al., 2020). The original Cronbach's Alpha value of the scale is 0.75. The scale consists of 8 questions and is a ten-point Likert type. The scale has four sub-dimensions: general disease awareness, awareness of the contributions of symptoms, awareness of the need for treatment, and awareness of negative consequences. Scores can be obtained from the scale in the range of 0-80. As the total score average increases, awareness and insight increase (Yılmaz et al. 2020). The study has a Cronbach alpha value of 0.78.

*Mediterranean Diet Adherence Scale (MDAS):* The validity and reliability study of the scale developed by Schröder and colleagues (2011) has been conducted (Pehlivanoğlu et al., 2020). In the original study, the Cronbach Alpha coefficient of the scale is 0.82. The scale contains 14 questions questioning the patients' daily fat and amount consumed, red meat consumption, fruit and vegetable portions, weekly wine, legumes, cake, nuts, fish-seafood, olive oil tomato sauce consumption and white/red meat consumption rates. The evaluation is made according to the criteria determined on the scale according to the amount of consumption for each item, and 1 or 0 points are given according to the answer. A total score of 7< indicates no adherence to the Mediterranean diet, 7-8 points indicate acceptable adherence to the Mediterranean diet, and 9< indicates strict adherence to the

Mediterranean diet (Pehlivanoglu et al., 2020). The study has a Cronbach alpha value of 0.80.

### Application of Data Collection Tools

After the purpose of the study was explained, the Hypertension Knowledge Level Scale, Blood Pressure Awareness and Insight Scale and Mediterranean Diet Adherence Scale were applied by the researcher to individuals diagnosed with hypertension who agreed to participate in the study. The points that the individuals did not understand on the scales were briefly explained without any guidance. The interviews lasted approximately 20-25 minutes in the patient room at appropriate time intervals where treatment and care would not be interrupted.

### Statistical Analysis

SPSS 22.0 (Version 22.0, SPSS Inc., Chicago, IL, USA) was used in the analysis of the data. Number, percentage, mean and standard deviation were used in the statistical analysis of the data. While the scale means were examined according to demographic data; since the data were normally distributed, the independent sample t test was used in two-category comparisons and the ANOVA test was used in comparisons of more than two categories. Pearson correlation test was used to determine the relationship between hypertension knowledge, blood pressure awareness-insight and Mediterranean diet adherence scores. A  $p < 0.05$  value was considered statistically significant ( $p < 0.05$ ).

### Ethical Approval

In order to conduct the research, approval was obtained from the university's Ethics Committee (Ethical approval number: 2023-01/31) and permission was obtained from the institution where the study was conducted. In accordance with the principles of the Declaration of Helsinki, participants were informed about the research and their written and verbal consents were obtained.

### RESULTS

It was determined that 58.45% of the participants with a mean age of  $60.23 \pm 3.13$  were male, 43.58% were between the ages of 56-65, 88.17% were

married, 43.25% were primary school graduates, 38.85% were employed, 58.78% had income less than their expenses, 37.84% had hypertension for 11-20 years, 54.73% had another chronic disease and 68.58% had a "none" level of adherence to the Mediterranean diet (Table 1).

When Table 2, which includes the participants' MTBDS, KBFIS and ADBÖ sub-dimensions and total score averages, is examined; it was found that the individuals participating in the study had low knowledge levels ( $6.35 \pm 5.13$ ), awareness-insight ( $4.09 \pm 1.28$ ), and adherence to the Mediterranean diet ( $5.31 \pm 3.66$ ) score averages. When the sub-dimensions of HKLS were examined, it was determined that the highest score was adherence to medication ( $3.87 \pm 2.03$ ), and the lowest score was in the diet ( $1.11 \pm 2.52$ ) and definition ( $1.11 \pm 2.11$ ) sub-dimensions (Table 2).

It was determined that there was a moderately significant positive correlation between the participants' hypertension knowledge level and blood pressure awareness-insight ( $r = 0.527$ ) and between blood pressure awareness-insight and compliance with the Mediterranean diet ( $r = 0.443$ ). In addition, a weak positive relationship was found between the knowledge level and compliance with the Mediterranean diet ( $r = 0.369$ ) (Table 3).

When some characteristics of the participants were compared with the HTBDS, KBFI and ADBÖ scores, it was found that there was a significant difference ( $p < 0.05$ ) between the knowledge score and the high level of education and the level of adherence to the Mediterranean diet. Awareness-insight score; It was found that there was a significant difference ( $p < 0.05$ ) between the marital status, level of education and the level of adherence to the Mediterranean diet in those who were married, had a high level of education and had a strict adherence to the Mediterranean diet. It was determined that the mean score of adherence to the Mediterranean diet showed significant differences ( $p < 0.05$ ) in terms of gender, age and education level, including women, 67 years of age and above and high school graduates. In addition, it was determined that there was no significant difference ( $p > 0.05$ ) between marital status and adherence to the Mediterranean diet (Table 4).

**Table 1.** Descriptive Characteristics of the Participants (n = 296)

Characteristics	n	%
<b>Mean of age (<math>\bar{x}\pm sd</math>)</b>	60.23 $\pm$ 3.13	
<b>Gender</b>		
Women	123	41.55
Men	173	58.45
<b>Age</b>		
45-55 age	46	15.55
56-66age	129	43.58
67 $\leq$	121	40.87
<b>Marital status</b>		
Married	261	88.17
Single	35	11.83
<b>Education level</b>		
Illiterate	28	9.45
Literate	45	15.21
Primary education	128	43.25
Secondary school - high school	95	32.09
<b>Job</b>		
Retired	82	27.70
Housewife	99	33.45
Employee	115	38.85
<b>Income level</b>		
Income less than expenses	174	58.78
Revenue equal to expenditure	84	28.38
Income exceeds expenses	38	12.84
<b>Duration of illness</b>		
$\leq 10$ years	89	30.07
11-20 years	112	37.84
20 years <	95	32.09
<b>Having another chronic disease</b>		
No	162	54.73
Yes	134	45.27
<b>Level of adherence to the Mediterranean diet</b>		
No adherence to Mediterranean diet (7<)	203	68.58
Acceptable adherence to Mediterranean diet (7-8 point)	62	20.94
Strict adherence to Mediterranean diet (9<)	31	10.47

**Table 2.** Mean scores the participants obtained from the HTBDÖ, KBFIDÖ ve ADBÖ

Scales	Mean	SD
<b>HKLS</b>	6.35	5.13
Definition	1.11	2.11
Medical treatment	2.32	1.08
Adherence to medication	3.87	2.03
Lifestyle	2.01	1.04
Diet	1.11	0.52
Complications	2.14	2.23
<b>BPAIS</b>	4.09	1.28
General disease awareness	4.11	2.78
Awareness of the contribution of symptoms	4.14	2.36
Awareness of the need for treatment	4.47	3.98
Awareness of negative consequences	3.04	0.57
<b>MDAS</b>	5.31	3.66

Abbreviations: HKLS, Hypertension Knowledge Level Scale; BPAIS Blood Pressure Awareness and Insight Scale; MDAS, Mediterranean Diet Adherence; SD, Standard Deviation.

**Table 3.** Relationship between the mean scores the participants obtained from the HKLS, BPAIS, and MDAS

Scales	HKLS	BPAIS	MDAS
HKLS	-		
BPAIS	0.527**	-	
MDAS	0.369*	0.443**	-

Abbreviations: HKLS, Hypertension Knowledge Level Scale; BPAIS Blood Pressure Awareness and Insight Scale; MDAS, Mediterranean Diet Adherence, \* $p < 0.05$ , \*\* $p < 0.01$

**Table 4.** Comparison of the participants' HKLS, BPAIS and MDAS scores in terms of some of their characteristics

Characteristics	HKLS	BPAIS	MDAS
	Mean $\pm$ Sd	Mean $\pm$ Sd	Mean $\pm$ Sd
<b>Gender</b>			
Women	5.72 $\pm$ 4.13	4.46 $\pm$ 4.01	6.26 $\pm$ 2.65
Men	5.85 $\pm$ 1.21	4.49 $\pm$ 3.58	5.45 $\pm$ 8.25
$p^a$	0.07	0.12	<b>0.01*</b>
<b>Age</b>			
45-55 age	9.13 $\pm$ 1.15	4.14 $\pm$ 7.44	5.11 $\pm$ 2.26
56-66 age	9.11 $\pm$ 3.25	4.26 $\pm$ 7.85	7.52 $\pm$ 3.25
67 $\leq$	9.42 $\pm$ 2.24	4.78 $\pm$ 6.54	9.85 $\pm$ 5.15
$p^b$	0.10	0.14	<b>0.03**</b>
<b>Marital status</b>			
Married	6.25 $\pm$ 4.48	6.11 $\pm$ 2.23	6.38 $\pm$ 4.28
Single	6.93 $\pm$ 3.40	4.49 $\pm$ 4.12	6.88 $\pm$ 3.61
$p^a$	0.71	<b>0.05*</b>	0.16
<b>Education level</b>			
Illiterate	3.25 $\pm$ 6.12	4.05 $\pm$ 1.21	4.13 $\pm$ 3.13
Literate	4.14 $\pm$ 7.41	4.52 $\pm$ 5.22	4.59 $\pm$ 3.24
Primary education	5.52 $\pm$ 6.35	5.24 $\pm$ 4.45	6.16 $\pm$ 4.14
Secondary school - high school	6.87 $\pm$ 6.26	6.48 $\pm$ 8.57	7.98 $\pm$ 4.47
$p^b$	<b>0.01*</b>	<b>0.01*</b>	<b>0.02*</b>
<b>Level of MDAS</b>			
No adherence to Mediterranean diet (7<)	5.16 $\pm$ 6.21	4.12 $\pm$ 5.12	-
Acceptable adherence to Mediterranean diet (7-8 points)	8.25 $\pm$ 5.14	5.99 $\pm$ 2.58	-
Strict adherence to Mediterranean diet (9< )	10.25 $\pm$ 5.14	6.92 $\pm$ 1.24	-
$p^b$	<b>0.001*</b>	<b>0.001*</b>	-

Abbreviations: HKLS, Hypertension Knowledge Level Scale; BPAIS, Blood Pressure Awareness and Insight Scale; MDAS, Mediterranean Diet Adherence, SD, Standard Deviation. <sup>a</sup>Independent t test, <sup>b</sup>One-way ANOVA, \* $p < 0.05$ , \*\* $p < 0.01$

## DISCUSSION

In the study, it was found that the knowledge, awareness-insight and Mediterranean diet adherence scores of individuals with hypertension were low and there was a positive relationship between these factors. The knowledge levels of the participants were found to be low in the study. This result suggests that the educational support that should be given to patients by healthcare personnel is insufficient. The study result is consistent with the

results of studies conducted in Spain (Estrada et al., 2020), Ethiopia (Wolde et al., 2022), and our country (Akan et al., 2020). On the other hand, it is inconsistent with the results of studies conducted in different cultures such as our country (Arıkan et al., 2020), Sri Lanka (Pirasath and Sundaresan, 2021), Georgia (Verulava and Mikiashvili, 2021), Malaysia (Mohammed et al., 2021), Poland (Paczowska et al., 2021) and Vietnam (Hien et al., 2024). In the studies mentioned, it was found that the knowledge levels

were good. It is thought that the inconsistency between the results may be due to the fact that the samples are affected by factors such as individual, cultural, region of residence, climate, altitude, health literacy, access to healthcare professionals and media (Öncü et al., 2020; Bayram et al., 2021; Wolde et al., 2022). For this reason, it is recommended that the subject be studied in different regions and cultures and that appropriate strategies be developed according to the needs determined in this direction.

Awareness is important for controlling HT (Gettensen et al., 2018). In fact, Pirasath et al. (2021) state that awareness of hypertension has a positive effect on blood pressure control according to knowledge. Studies conducted with individuals with hypertension in Georgia (Verulava and Mikiashvili, 2021), Ghana (Bosu and Bosu, 2021), Turkey (Bayram et al., 2021), and the United States (Aggarwal et al., 2021) found that awareness of hypertension was low. Similarly, awareness was found to be low in this study. This result suggests that the disease cannot be managed successfully in our society due to low awareness, which is important in preventing and controlling hypertension. Indeed, in a study investigating awareness, it was determined that the prevalence of HT was high in places where HT awareness was low (Bayram et al., 2021). In contrast, it was found that the majority of individuals in Malaysia (Mohammed et al., 2021) and Sri Lanka had moderate-high awareness (Pirasath and Sundaresan, 2021). Considering the differences between the results and studies, it is thought that cultural (eating habits, health literacy, education level, etc.), regional and individual characteristics are also effective in awareness and that the subject should be investigated from these perspectives. It is also recommended that hypertension awareness programs be carried out to increase the awareness level of individuals.

The Mediterranean diet is the most suitable diet for controlling hypertension (Flippou et al., 2021). Studies have shown that strict adherence to the Mediterranean diet reduces the likelihood of hypertension by 36% (Magriplis et al., 2020; Bakaloudi et al., 2021). A recent epidemiology study found that those with strict adherence to the

Mediterranean diet had a 4-fold lower incidence of HT than those with low adherence (Georgoulis et al., 2024). Another study found that high adherence to the Mediterranean diet was inversely proportional to hypertension (La Verde et al., 2018). In studies examining adherence to the Mediterranean diet in hypertension, compliance was also found to be low (Nenadić et al., 2022; Kolak et al., 2023). Similar to all these results, this study also determined that individuals' adherence to the Mediterranean diet was low. It is thought that this result is due to individuals not knowing about Mediterranean type nutrition or their low level of hypertension knowledge and awareness. In fact, one of the findings in this study is the positive relationship between knowledge, awareness and Mediterranean diet.

Knowledge and awareness are effective in accepting the need for treatment and lifestyle changes (Gerretsen et al., 2018; Magriplis et al., 2020). In this study, it was determined that as the knowledge scores of individuals increase, their awareness increases. In addition, it was determined that as the awareness and knowledge scores increase, adherence to the Mediterranean diet increases. In line with this finding; it can be said that strategies that can increase knowledge in individuals with hypertension can increase awareness and vice versa. In addition, it can be thought that practices that increase knowledge and awareness can increase adherence to the Mediterranean diet. Indeed, studies have shown that individuals with good knowledge about hypertension treat their disease better and adopt healthy lifestyle behaviors than those who do not have knowledge (Li et al., 2016; Paczkowska et al., 2021). In a different study, researchers concluded that awareness of hypertension has a significant and positive effect on blood pressure control rather than knowledge (Pirasath and Sundaresan, 2021).

The study examined the relationship between knowledge, awareness-insight, and adherence to the Mediterranean diet of individuals with hypertension and some demographic characteristics. One of the characteristics that affect the level of knowledge of individuals about the disease is the level of education. In this study, it was found that individuals

with a low level of education had a lower level of knowledge about hypertension. A high level of education may be related to accessing information, reading, and learning. Similarly, in different studies, it was found that individuals with hypertension with a low level of education had insufficient knowledge about hypertension (Paczkowska et al., 2021; Mohammed et al., 2021).

Education level and marital status are factors affecting many health-related conditions. These factors were also found to be factors affecting awareness-insight in this study. Similar results were found in studies examining awareness in individuals with hypertension (Mohammed et al., 2021; Yildirim et al., 2020). It is thought that it is easier for individuals with a higher level of education to access and learn information than individuals with a lower level of education, and that their knowledge and awareness on the subject increase by learning in this way. Indeed, the positive relationship between knowledge and awareness obtained in this study also supports this idea. Marital status may be due to spouses paying attention to each other's health and the social support received from the close circle and loved ones. Indeed, in one study, it was determined that spousal support is important in the disease and treatment process and in the development of healthy behaviors (Yuca and Beydağ, 2021; Brazeau and Lewis, 2021).

In the study, it was found that adherence to the Mediterranean diet differed significantly according to gender and age. This result is consistent with studies investigating gender and age in different samples in terms of adherence to the Mediterranean diet (Batman et al., 2023; Zeenny et al., 2024), while it is inconsistent with one study (Özkan and Erginbaş, 2022). In addition, the study found that one of the factors affecting adherence to the Mediterranean diet was the level of education. It was determined that as the level of education increased, adherence to the diet increased significantly. In this result, it can be thought that access to information and awareness about the disease were effective with the increase in the level of education. On the other hand, there are some studies in the literature showing that the level of education does not affect adherence to the Mediterranean diet (Batman et al., 2023; Özkan

and Erginbaş, 2022). In another study conducted in Croatia, it was found that individuals with a higher level of education were less compliant with the Mediterranean diet (Šarac et al., 2021). Considering all these results, it is thought that the subject should be examined in individuals with different cultures and levels of education.

Adherence to the Mediterranean diet is important for hypertension management (Zeenny et al., 2024; Magriplis et al., 2020). Another result obtained from this study is that those who strictly adhere to the Mediterranean diet have significantly higher knowledge and awareness scores. Knowledge and awareness are of great importance in developing behaviors and attitudes (Maruf et al., 2018). Based on this result, it is seen that knowledge and awareness are important in increasing adherence to the Mediterranean diet, which is important for individuals with hypertension to maintain a healthy life. Therefore, health professionals should provide information about hypertension to individuals with HT in order to increase adherence to the Mediterranean-type diet and develop strategies to increase awareness.

## CONCLUSION

In this study, it was found that individuals with hypertension had low knowledge, awareness-insight and adherence to the Mediterranean diet. However, it was determined that there was a positive significant relationship between individuals' knowledge, awareness-insight and adherence to the Mediterranean diet scores. When the study results were evaluated, it was seen that the knowledge and awareness-insight of individuals with hypertension affected adherence to the Mediterranean diet. Therefore, in order to increase compliance with the Mediterranean diet in hypertension management, it is recommended to evaluate the knowledge and awareness-insight levels of individuals, to implement and develop different educational strategies (online, face-to-face, group, individual, public, etc.) to increase these factors, to increase the awareness of health professionals on the subject, to research effective practices, and to examine the subject in different cultures and larger samples.

## Conflict of Interest

There are no potential conflicts of interest.

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## REFERENCES

- Aggarwal, R., Chiu, N., Wadhwa, R. K., Moran, A. E., Raber, I., Shen, C., ... & Kazi, D. S. (2021). Racial/ethnic disparities in hypertension prevalence, awareness, treatment, and control in the United States, 2013 to 2018. *Hypertension*, 78(6), 1719-1726. <https://doi.org/10.1161/HYPERTENSIONAHA.121.17570>
- Akan DD, Çaydam, ÖD, Pakyüz SÇ (2020). Hipertansiyon Tanısı Olan Hastalarda Bilgi Düzeyi ve İlaç Tedavisine Uyumun Değerlendirilmesi. *Anadolu Hemşirelik ve Sağlık Bilimleri Dergisi*, 23(2), 241-249. <https://doi.org/10.17049/ataunihem.527473>
- Arıkan, A., Aydın, A., Ekerbiçer, H., Karaayaç, R., Zeytinoğlu, Y., Muratdağı, G., ... & Kurban, A. (2020). Hipertansiyon tanısı olan hastaların hastalıkları hakkındaki bilgi düzeyleri ve ilişkili faktörler. *Sakarya Tıp Dergisi*, 10(Özel Sayı), 33-40. <https://doi.org/10.31832/smj.745870>
- Bacha, D., & Abera, H. (2019). Knowledge, attitude and self-care practice towards control of hypertension among hypertensive patients on follow-up at St. Paul's hospital, Addis Ababa. *Ethiopian journal of health sciences*, 29(4), 421-430. <https://doi.org/10.4314/ejhs.v29i4.2>
- Bakaloudi, D. R., Chrysoula, L., Leonida, I., Kotzakioulafi, E., Theodoridis, X., & Chourdakis, M. (2021). Impact of the level of adherence to the Mediterranean Diet on blood pressure: A systematic review and meta-analysis of observational studies. *Clinical Nutrition*, 40(12), 5771-5780. <https://doi.org/10.1016/j.clnu.2021.10.002>
- Baliz Erkoc, S, Isikli B, Metintas S, Kalyoncu C. Hypertension Knowledge-Level Scale (HK-LS): A Study on Development, Validity And Reliability (2012). *International Journal of Environmental Research and Public Health* 9, 1018-29. <https://doi.org/10.3390/ijerph9031018>
- Batman, D., & Yılmaz, S. (2023). Yetişkin bireylerde yeme davranışı ile anksiyete, uyku kalitesi ve Akdeniz diyetine bağlılık arasındaki ilişki. *Istanbul Gelisim University Journal of Health Sciences*, (20), 610-624. <https://doi.org/10.38079/igusabder.1289889>
- Bayram, F., Demir, Ö., Sabuncu, TE, Gedik, A.V., Çorapçioğlu, D., & Kaya, A. (2021). Prevalence and Awareness of Hypertension in Seven Distinct Geographic Regions of Turkey: The SEMT HT Study. *Turkish Journal of Endocrinology & Metabolism*, 25(1), 1-10.
- Boateng, E.B., & Ampofo, A.G. (2023). A glimpse into the future: modelling global prevalence of hypertension. *BMC Public Health*, 23(1), 1906. <https://doi.org/10.1186/s12889-023-16662-z>
- Bosun, W. K., & Bosun, D. K. (2021). Prevalence, awareness and control of hypertension in Ghana: A systematic review and meta-analysis. *PLoS One*, 16(3), e0248137. <https://doi.org/10.1371/journal.pone.0248137>
- Brazeau, H., & Lewis, N. A. (2021). Within-couple health behavior trajectories: The role of spousal support and strain. *Health Psychology*, 40(2), 120-130. <https://doi.org/10.1037/hea0001050>
- Estrada, D., Sierra, C., Soriano, R. M., Jordán, A. I., Plaza, N., & Fernández, C. (2020). Grade of knowledge of hypertension in hypertensive patients. *Enfermería Clínica*, 30(2), 99-107. <https://doi.org/10.1016/j.enfcli.2018.11.033>
- Estruch, R., Ros, E., Salas-Salvadó, J., Covas, M. I., Corella, D., Arós, F., ... & Martínez-González, M. A. (2018). Primary prevention of cardiovascular disease with a Mediterranean diet supplemented with extra-virgin olive oil or nuts. *New England Journal of Medicine*, 378(25), e34. <https://doi.org/10.1056/NEJMoa1800389>
- Filippou, C.D., Thomopoulos, C. G., Kouremeti, M.M., Sotiropoulou, L.I., Nihoyannopoulos, P. I., Tousoulis, D. M., & Tsioufis, C. P. (2021). Mediterranean diet and blood pressure reduction in adults with and without hypertension: A systematic review and meta-analysis of randomized controlled trials. *Clinical Nutrition*, 40(5), 3191-3200. <https://doi.org/10.1016/j.clnu.2021.01.030>
- Georgoulis, M., Damigou, E., Derdelakou, E., Kosti, R. I., Chrysohoou, C., Barkas, F., ... & Panagiotakos, D. B. (2024). Adherence to the Mediterranean diet and 20-year incidence of hypertension: the ATTICA prospective epidemiological study (2002–2022). *European Journal of Clinical Nutrition*, 78(7), 630-638. <https://doi.org/10.1038/s41430-024-01440-w>
- Gerretsen, P., Kim, J., Shah, P., Quilty, L., Balakumar, T., Caravaggio, F., ... & Graff-Guerrero, A. (2018). BASIS: The blood pressure awareness and insight scale. *The Journal of Clinical Hypertension*, 20(4), 748-756. <https://doi.org/10.1111/jch.13248>
- Gürdoğan M, Gürdoğan E. P. (2019). Hipertansiyon hastalarında tedaviye uyum ve ilişkili faktörler. *MN Kardiyoloji*, 26(3), 147-153.
- Hien, H. A., Tam, N. M., Devroey, D., Heytens, S., Tam, V., Thang, T. B., ... & Tien, H. A. (2024). Hypertension knowledge and its associated factors among hypertensive patients in primary care settings in Central Vietnam: A cross-sectional study. *Journal of Pharmacy & Pharmacognosy Research*, 12(5), 943-955. [https://doi.org/10.56499/jppres23.1955\\_12.5.943](https://doi.org/10.56499/jppres23.1955_12.5.943)
- Iswatun, I., & Susanto, J. (2021). Relationship between knowledge and level of dietary compliance in patients with hypertension. *Journal Midpro*, 13(1), 92-99.
- Kılıçkap M, Barçın C, Göksülük H, Karaaslan D, Özer N, Kayıkçıoğlu M, Şahin M. (2018). Türkiye'de hipertansiyon ve kan basıncı prevalansına ilişkin veriler: kardiyovasküler risk faktörleri üzerine

- epidemiyolojik çalışmaların sistematik derlemesi, meta-analizi ve meta-regresyonu. *Türk Kardiyoloji Dernegi Arsivi*, 46 (7), 525-545. <https://doi.org/10.5543/tkda.2018.15679>
- Kolak, E., Radić, J., Vučković, M., Gelemanović, A., Dogas, H., Nenadić, D., & Radić, M. (2023). Associations between adherence to the mediterranean diet and 24-hour pulse wave velocity in hypertensive patients. *Journal of Hypertension*, 41, e211-e212. <https://doi.org/10.1097/01.hjh.0000941116.05169.14>.
- La Verde, M., Mulé, S., Zappalà, G., Privitera, G., Maugeri, G., Pecora, F., & Marranzano, M. (2018). Higher adherence to the Mediterranean diet is inversely associated with having hypertension: is low salt intake a mediating factor? *International Journal of Food Sciences and Nutrition*, 69, 235-244. <https://doi.org/10.1080/09637486.2017.1350941>.
- Li, S. S., Zhou, F., Lu, Y. C., Lyv, P., Zhang, H. F., Yao, W. M., ... & Li, X. L. (2016). Hypertension related knowledge and behaviour associated with awareness, treatment and control of hypertension in a rural hypertensive population: a community based, cross-sectional survey. *Blood Pressure*, 25(5), 305-311. <https://doi.org/10.3109/08037051.2016.1172866>
- Magriplis, E., Panagiotakos, D., Kyrou, I., Tsioufis, C., Mitsopoulou, A. V., Karageorgou, D., ... & Zampelas, A. (2020). Presence of hypertension is reduced by Mediterranean diet adherence in all individuals with a more pronounced effect in the obese: the Hellenic National Nutrition and Health Survey (HNNHS). *Nutrients*, 12(3), 853-860. <https://doi.org/10.3390/nu12030853>.
- Mariana, M., Indriastuti, D., & Abadi, E. (2022). Hubungan pengetahuan diet hipertensi terhadap kepatuhan diet pada penderita hipertensi di puskesmas wundulako. *Jurnal Gizi Ilmiah: Jurnal Gizi Ilmiah*, 9(3), 26-31. <https://doi.org/10.46233/jgi.v9i3.922>.
- Maruf, F. A., Ojukwu, C. C., & Akindele, M. O. (2018). Perception, knowledge, and attitude toward physical activity behaviour: implications for participation among individuals with essential hypertension. *High Blood Pressure & Cardiovascular Prevention*, 25, 53-60. <https://doi.org/10.1007/s40292-017-0235-y>
- Mohammed, A. H., Hassan, B. A. R., Suhaimi, A. M., & Ali, A.H.H.D. (2021). Hypertension knowledge, awareness, and attitude among the hypertensive population in Kuala Lumpur and rural areas in Selangor, Malaysia. *Journal of Public Health*, 29, 443-450. <https://doi.org/10.1007/s10389-019-01160-7>
- Nenadić, B., Radić, J., Kolak, E., Vučković, M., Novak, I., Selak, M., & Radić, M. (2022). Mediterranean diet adherence and nutritional status in dalmatian diabetic hypertensive patients regarding presence of chronic kidney disease—is there any difference?. *International Journal of Environmental Research and Public Health*, 19. <https://doi.org/10.3390/ijerph19042293>.
- Öncü, E., Vayisoğlu, S. K., Güven, Y., Aktaş, G., Ceyhan, H., & Karakuş, E. (2020). Bir il örneğinde hipertansiyon hastalarının sağlık okuryazarlık düzeyi, sağlık hizmetlerinin niteliğine ilişkin değerlendirmeleri ve ilişkili faktörler. *Turkish Journal of Public Health*, 18(1), 10-25. <https://doi.org/10.20518/tjph.555354>
- Özkan, Ö. P., & Erginbaş, Ç. (2022). Koroner arter hastalarının akdeniz diyetine bağlılık durumunun değerlendirilmesi. *İstanbul Gelişim Üniversitesi Sağlık Bilimleri Dergisi*, (16), 123-135. <https://doi.org/10.38079/igusabder.1022939>
- Paczkowska, A., Hoffmann, K., Kus, K., Kopciuch, D., Zaprutko, T., Ratajczak, P., ... & Bryl, W. (2021). Impact of patient knowledge on hypertension treatment adherence and efficacy: A single-centre study in Poland. *International Journal of Medical Sciences*, 18(3), 852. <https://doi.org/10.7150/ijms.48139>
- Pehlivanoğlu EFÖ, Balcıoğlu H, Ünlüoğlu H. (2020). Akdeniz diyeti bağlılık ölçeği'nin türkçe'ye uyarlanması geçerlilik ve güvenilirliği. *Osmangazi Journal of Medicine* 42(2):160-164. <https://doi.org/10.20515/otd.504188>
- Pirasath, S., & Sundaresan, T. (2021). Descriptive cross-sectional study on knowledge, awareness and adherence to medication among hypertensive patients in a tertiary care center, Eastern Sri Lanka. *SAGE Open Medicine*, 9, 20503121211012497. <https://doi.org/10.1177/20503121211012497>
- Ralapanawa, U., Bopeththa, K., Wickramasendra, N., & Tennakoon, S. (2020). Hypertension knowledge, attitude, and practice in adult hypertensive patients at a tertiary care hospital in Sri Lanka. *International Journal of Hypertension*, 2020, 1-6. <https://doi.org/10.1155/2020/4642704>
- Šarac, J., Havaš Auguštin, D., Lovrić, M., Stryeck, S., Šunić, I., Novokmet, N., & Missoni, S. (2021). A generation shift in Mediterranean diet adherence and its association with biological markers and health in Dalmatia, Croatia. *Nutrients*, 13(12), 4564. <https://doi.org/10.3390/nu13124564>
- Schröder, H., Fitó, M., Estruch, R., Martínez-González, M. A., Corella, D., Salas-Salvadó, J., ... & Covas, M. I. (2011). A short screener is valid for assessing Mediterranean diet adherence among older Spanish men and women. *The Journal of nutrition*, 141(6), 1140-1145. <https://doi.org/10.3945/jn.110.135566>
- Taş F, Büyükbeşe MA. (2013). Hipertansiyonda Farkındalık ve Hemşirenin Rolü. *TAF Preventive Medicine Bulletin*, 12(6), 729-734.
- Verulava, T., & Mikiashvili, G. (2021). Knowledge, awareness, attitude and medication compliance in patients with hypertension. *Arterial Hypertension*, 25(3), 119-126.
- Woodiwiss, A. J., Orchard, A., Mels, C. M., Uys, A. S., Nkeh-Chungag, B. N., Kolkenbeck-Ruh, A., ... & Poulter, N. R. (2025). High prevalence but lack of awareness of hypertension in South Africa, particularly among men and young adults. *Journal of Human Hypertension*, 39(2), 111-119.

<https://doi.org/10.1038/s41371-023-00873-3>

Wolde, M., Azale, T., Debalkie Demissie, G., & Addis, B. (2022). Knowledge about hypertension and associated factors among patients with hypertension in public health facilities of Gondar city, Northwest Ethiopia: Ordinal logistic regression analysis. *PLoS One*, 17(6), e0270030.

<https://doi.org/10.1371/journal.pone.0270030>

Yılmaz, M, Kundakçı, GA, Uyanık, G, Pamuk, G, Koç, EM. (2020) Kan basıncı farkındalığı ve içgörü ölçeği (kfiö): geçerlik ve güvenilirlik çalışması. *Sürekli Tıp Eğitimi Dergisi*, 31(2), 134-141.

<https://doi.org/10.17942/sted.747418>

Yuca, G., & Beydağ, K. (2021). Kalp hastalığı olan kadınların evlilik doyumu ve eş desteğini etkileyen faktörler. *Sağlık ve Toplum*, 31(1), 110-118.

Zeenny, R. M., Haddad, C., Hajj, A., Zeidan, R. K., Salameh, P., & Ferrières, J. (2024). Adherence to the Mediterranean Diet and Cardiovascular Risk Factors among the Lebanese Population: A Nationwide Cross-Sectional Post Hoc Study. *Nutrients*, 16(15), 2426.

<https://doi.org/10.3390/nu16152426>

World Health Organization (WHO) (2025). Noncommunicable diseases: Risk factors (2025, May 5].

Available from: <https://www.who.int/data/gho/data/themes/topics/topic-details/GHO/ncd-risk-factors>