



DOI: 10.5505/anatoljfm.2022.38278

Anatol J Family Med 2022;5(3):169–175

Evaluation of Medication Adherence Levels of Hypertensive Patients in an Education Family Health Center

Orçun Çalışkan,¹ Yusuf Adnan Güçlü,² Burak Altındağ³¹Clinic of Family Medicine, TC Ministry of Health KazımKarabekir Government Hospital, Karaman, Türkiye²Clinic of Family Medicine, İzmir Health Science University Tepecik Training and Research Hospital, İzmir, Türkiye³Clinic of Family Medicine, Nevşehir Merkez 2th Family Health Center, Nevşehir, Türkiye

ABSTRACT

Objectives: Non-adherence to medical and non-medical treatment is the main reason for uncontrolled hypertension (HT) worldwide. It was aimed to evaluate the medication adherence levels of patients with HT in this study.

Methods: In this cross-sectional study, patients with HT who applied to an educational family health center from August 2018 to November 2018 and received HT treatment for at least 6 months were included in the study. The form consisted of questions about sociodemographic characteristics, medical information, and lifestyle habits. Morisky, Green, and Levine's Adherence Scale (MGL) was used to determine patients' adherence to pharmacotherapy.

Results: A total of 186 patients were included in the study. According to the MGL scale, 26 (14.0%) of the participants were found to be non-adherent to their medication. According to blood pressure measurement results, 89 (47.8%) patients had uncontrolled HT. When sociodemographic characteristics and medication compliance were evaluated, 14 (8.8%) of university and above, 30 (18.8%) were in high school, 21 (13.0%) in secondary school, 64 (40.0%) were in primary school, 14 (8.8%) of literate, and 17 (10.6%) of illiterate patients were found to be adherent to drug therapy ($p=0.035$). While 87 (54.4%) of the patients whose blood pressure was normotensive were adherent to drug therapy, 73 (45.6%) of the patients who had uncontrolled HT were adherent to drug therapy ($p=0.132$).

Conclusion: It was observed that high education level was effective in increasing adherence to drug therapy. Interestingly, there was no significant difference between medication adherence and providing blood pressure control in patients.

Keywords: Hypertension, medication adherence, secondary prevention



Please cite this article

as: Çalışkan O, Güçlü YA, Altındağ B. Evaluation of Medication Adherence Levels of Hypertensive Patients in an Education Family Health Center. Anatol J Family Med 2022;5(3):169–175.

Address for correspondence:

Dr. Burak Altındağ. Clinic of Family Medicine, Nevşehir Merkez 2th Family Health Center, Nevşehir, Türkiye

Phone: +90 532 354 73 79

E-mail:

altindagburak@hotmail.com

Received Date: 04.10.2021

Revision Date: 18.02.2022

Accepted Date: 19.02.2022

Published online: 30.12.2022

©Copyright 2022 by Anatolian Journal of Family Medicine - Available online at www.anatoljfm.org

OPEN ACCESS



This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.

INTRODUCTION

Hypertension (HT) is a systemic disease manifested by persistent high blood pressure and is a significant public health problem because it causes severe complications and is common in the community.^[1] Complications of HT and the associated mortality rate increase in direct proportion to high blood pressure. In 2008, 40% of adults over the age of 25 were diagnosed with HT. The number of people with uncontrolled HT increased from 605 million (537–680 million) in 1980 to 978 million (921–1040 million) in 2008 due to population growth and aging.^[2]

The successful treatment of HT is determined by the timely and correct diagnosis of HT, the

effective lifestyle changes of the patients, the timely initiation of drug therapy, and absolute medication adherence.^[3] There are three main reasons for not being able to control blood pressure despite treatment: Patient non-compliance, treatment failure, and resistant HT.^[4] The treatment non-compliance among these causes is a major cause of poor HT control worldwide. The World Health Organization reported that the compliance prevalence of hypertensive patients to treatment is 50% worldwide.^[5] In Turkey, this prevalence was found to be 47.5% in the PatenT2 study.^[6] Many factors reduce adherence to treatment in hypertensive patients, and the most critical factor contributing to poor medication adherence is that the disease is asymptomatic and lifelong. In addition, other determinants of medication adherence for HT patients may be related to demographic factors such as age, gender, education or complex antihypertensive drug regimens or adequate information about patients about HT by the physician.^[5,7] Determining the effective factors to increase medication adherence in HT patients will help ensure that the patient, an important element of the patient-centred approach in primary care, participates in the entire diagnosis and treatment process.^[7]

This study aimed to determine the level of adherence to drug treatment of patients with HT who applied to an education family health center and to determine the factors affecting drug compliance.

METHOD

This cross-sectional study included patients who applied to an education family health center from August 2018 to November 2018 and patients over the age of 18 who received medical treatment for HT. The prevalence of medication non-adherence in HT patients was found to be 13.2% in a previous study conducted in Turkey.^[8] In this study, when it was calculated with the formula of the sample size whose universe is unknown, 95% confidence level, and 5% deviation, it was calculated that the study would be conducted in 177 patients. Patients with gestational HT and secondary HT were excluded from the study.

A questionnaire consisting of questions including sociodemographic characteristics (age, gender, education status, marital status, employment status, monthly income, and living together), medical information (additional chronic disease, number of drugs used continuously, type of antihypertensive drug used (single, combined single, and multiple), duration of antihypertensive treatment, emergency admission due to HT in the last year, and blood pressure during examination), and lifestyle habits (smoking history and salt restriction) of the patients. In addition, the "Morisky, Green, and Levine's Adherence Scale" (MGL) was

used to determine their compliance with treatment. The MGL scale was developed by Morisky in 1986. This scale consists of four questions, in which drug use behaviour is evaluated with the patient's self-reported. In this scale, if all questions are answered "no," medication adherence is considered high; if "yes" is responded to for one or two questions, medication adherence is moderate; and if "yes" for three or four questions is answered, medication adherence is considered low. In this study, to identify individuals with low drug compliance according to the MGL scale, according to Morisky's suggestion, the scale scores of the group were determined as low drug compliance (non-adherent to drug therapy) and moderate-high drug compliance (adherent to drug therapy) according to the 80% cutoff point in the frequency distribution divided into two categories.^[9]

The values of systolic blood pressure and diastolic blood pressure were obtained by the mean of two blood pressure measurements, carried out by the researcher during the visit, according to the guidelines established in "HT Diagnosis and Treatment Guidelines," using a mercury sphygmomanometer calibrated with a minimum interval of 2 min between each measurement. The systolic blood pressure of the patients was above 140 mmHg and/or the diastolic blood pressure was above 90 mmHg, it was accepted that the blood pressure was not under control.^[1]

"IBM Statistical Package for the Social Sciences for Windows, Version 24.0 (IBM Corp., Armonk, NY)" was used for statistical analysis. Data were counted as frequency, percent, mean, median, standard deviation, and interquartile range. The normal distribution conformity of the data was examined using visual (histogram and probability graphs) and analytical methods (Kolmogorov-Smirnov/Shapiro-Wilk tests). The Student's t-test was used to compare normally distributed continuous variables. In addition, the Mann-Whitney U-test was used to compare abnormally distributed continuous variables. The Chi-square test was used to compare the qualitative data between the groups. A $p < 0.05$ was considered statistically significant.

RESULTS

A total of 186 patients were included in the study, and the mean age was 62.2 ± 10.5 years. The mean age of the women was 61.9 ± 10.8 years, and the mean age of the men was 62.6 ± 10.2 years ($p = 0.688$). The sociodemographic characteristics and lifestyle habits of the patients are summarized in Table 1.

The median value of the total number of drugs used by the participants was 3.0 [3.0] pieces. The median value of the duration of using antihypertensive treatment was 7.0

Table 1. Sociodemographic characteristics and lifestyle habits of the patients

| | n (%) |
|--|------------|
| Gender | |
| Female | 106 (57.0) |
| Male | 80 (43.0) |
| Education status | |
| Illiterate | 24 (12.9) |
| Literate | 19 (10.2) |
| Primary school | 69 (37.1) |
| Secondary school | 25 (13.5) |
| High school | 35 (18.8) |
| University and above | 14 (7.5) |
| Marital status | |
| Married | 160 (86.0) |
| Single | 5 (2.7) |
| Widow/widower | 21 (11.3) |
| Employment status | |
| None/retired | 158 (84.9) |
| Working | 28 (15.1) |
| Monthly income | |
| Minimum wage and below | 97 (52.2) |
| Above minimum wage | 89 (47.8) |
| Living together | |
| Alone | 7 (3.8) |
| With family | 179 (96.2) |
| Additional chronic disease | |
| Yes | 146 (78.5) |
| No | 40 (21.5) |
| Smoking | |
| Yes | 84 (45.2) |
| No | 102 (54.8) |
| Salt restriction | |
| Yes | 121 (65.1) |
| No | 65 (34.9) |
| Type of antihypertensive drug used | |
| Single | 49 (26.3) |
| Combined single | 66 (35.5) |
| Multiple | 71 (38.2) |
| Emergency admission due to HT in the last year | |
| Yes | 33 (17.7) |
| No | 153 (82.3) |

HT: Hypertension.

[11.3] years. When blood pressure measurements were evaluated, the median of systolic blood pressure was 135.0 [21.0] mmHg, and the median diastolic blood pressure was

determined as 81.5 [16.0] mmHg. According to the measurement results, 97 (52.2%) patients were within the target blood pressure values, and 89 (47.8%) patients' blood pressure was not under control. In addition, 160 (86.0%) of the 186 patients were found to be highly adherent to drug treatment, and 26 (14.0%) patients were found to be low medication adherence. The sociodemographic characteristics and lifestyle habits according to medication adherence are summarized in Table 2.

There was no significant difference in systolic and diastolic blood pressure between patients with and without drug adherence ($p=0.082$ and $p=0.820$, respectively). Systolic and diastolic blood pressures according to medication adherence are summarized in Table 3.

DISCUSSION

Considering the prevalence of HT worldwide and the severe complications it causes, it is understood that it is an important public health problem.^[2,3] Studies have shown that the frequency of patients whose blood pressure cannot be controlled is at high levels. Higher success in the control of HT is possible with lifestyle changes and compliance with medical and non-medical therapy. For this reason, it is essential for family physicians to know the factors that will increase adherence to drug treatment and take approaches for this in the follow-up of patients. In this study, it was aimed to determine the frequency of drug compliance and the factors affecting HT patients who applied to an education family health center. When sociodemographic characteristics, medical information, and lifestyle habits were evaluated, there was only a significant difference between educational status and medication adherence. However, it was observed that there was no significant difference between medication adherence and providing blood pressure control in patients.

It was observed that 86.0% of the patients with HT who participated in the study were adherent to drug therapy according to the MGL scale. A meta-analysis that evaluated medication adherence in hypertensive patients with the "Morisky Medication Adherence Scale-8" (MMAS-8) and included 25 studies, 15 countries, and 12,603 volunteers, conducted between January 2009 and March 2016, a significant proportion of hypertensive patients was found to be non-adherent to drug therapy, and approximately one-third of hypertensive patients with various comorbid diseases were found to be non-adherent to drug treatments.^[10] In a study conducted in Turkey by Mert et al., they evaluated medication adherence with the MMAS-8 scales and found that 86.8% of HT patients were adherent to drug therapy.^[8]

Table 2. Sociodemographic characteristics and lifestyle habits according to medication adherence

| | Non-adherent (n=26) | Adherent (n=160) | p |
|--|---------------------|------------------|--------------------|
| Age (years) | 60.5 [15.3] | 62.0 [14.0] | 0.884* |
| Gender | | | |
| Female | 17 (64.4) | 89 (55.6) | 0.351 [†] |
| Male | 9 (34.6) | 71 (44.4) | |
| Education status | | | |
| Illiterate | 7 (27.0) | 17 (10.6) | 0.035 [†] |
| Literate | 5 (19.2) | 14 (8.8) | |
| Primary school | 5 (19.2) | 64 (40.0) | |
| Secondary school | 4 (15.4) | 21 (13.0) | |
| High school | 5 (19.2) | 30 (18.8) | |
| University and above | 0 (0.0) | 14 (8.8) | |
| Marital status | | | |
| Married | 22 (84.6) | 138 (86.2) | 0.923 [†] |
| Single | 1 (3.8) | 4 (2.5) | |
| Widow/widower | 3 (11.6) | 18 (11.3) | |
| Employment status | | | |
| Working | 3 (11.5) | 25 (15.6) | 0.589 [†] |
| None/retired | 23 (88.5) | 135 (84.4) | |
| Monthly income | | | |
| Minimum wage and below | 18 (69.2) | 79 (49.4) | 0.060 [†] |
| Above minimum wage | 8 (30.8) | 81 (50.6) | |
| Living together | | | |
| Alone | 1 (3.8) | 6 (3.8) | 0.981 [†] |
| With family | 25 (96.2) | 154 (96.2) | |
| Additional chronic disease | | | |
| Yes | 24 (92.3) | 122 (76.3) | 0.065 [†] |
| No | 2 (7.7) | 38 (23.7) | |
| Smoking history | | | |
| Yes | 13 (50.0) | 71 (44.4) | 0.593 [†] |
| No | 13 (50.0) | 89 (55.6) | |
| Salt restriction | | | |
| Yes | 17 (65.4) | 104 (65.0) | 0.970 [†] |
| No | 9 (34.6) | 56 (35.0) | |
| Number of drugs used continuously (pills/day) | 2.5 [3.0] | 3.0 [3.0] | 0.186* |
| Type of antihypertensive drug used | | | |
| Single | 6 (23.1) | 43 (26.9) | 0.185 [†] |
| Combined single | 6 (23.1) | 60 (37.5) | |
| Multiple | 14 (53.8) | 57 (35.6) | |
| Duration of antihypertensive treatment (years) | 10.0 [10.0] | 7.0 [11.0] | 0.820* |
| Emergency admission due to HT in the last year | | | |
| Yes | 7 (26.9) | 26 (16.2) | 0.923 [†] |
| No | 19 (73.1) | 134 (83.8) | |
| Blood pressure during examination | | | |
| Normotensive | 10 (38.5) | 87 (54.4) | 0.132 [†] |
| Hypertensive | 16 (61.5) | 73 (45.6) | |

HT: Hypertension.

Data are presented as median [IQR] and n (%).

*Mann-Whitney U-test, [†]Chi-square test.

Table 3. Systolic and diastolic blood pressures according to medication adherence

| | Non-adherent (n=26) | Adherent (n=160) | p |
|---------------------------------|---------------------|------------------|-------|
| Systolic blood pressure (mmHg) | 140.0 [33.5] | 134.0 [20.0] | 0.082 |
| Diastolic blood pressure (mmHg) | 83.0 [18.5] | 81.0 [16.0] | 0.820 |
| Mann-Whitney U-test. | | | |

When the studies are examined, it is observed that the prevalence of adherence to drug treatment is affected by various factors. In this study, these factors were also examined, and when the effect of gender on adherence to drug treatment was evaluated, it was found that more women were non-adherent to drug treatment, but it was not significant. In other studies, no effect of gender on adherence to medication was found.^[8,11-13] In the meta-analysis conducted by Abegaz et al., it was shown that compliance was lower in women.^[10] However, in the study of Mollaoğlu et al., women were found to be more compatible.^[14] In addition, no significant difference was found between the mean age of adherent and non-adherent patients in this study. In the study of Mert et al., no significant relationship was found between medication adherence and age.^[8] Similarly, in the meta-analysis conducted by Abegaz et al., no significant relationship was found between age and medication adherence.^[10] However, in the study of Alhaddad et al., it was shown that medication adherence increased with increasing age.^[11] Similarly, in the study of Lee et al. and the study of Hashmi et al., it was found that medication adherence increased with increasing age.^[12,15] This result may be due to the fact that the mean age of the patients participating in this study was higher than in other studies.

In this study, no significant relationship was found between marital status and medication adherence. Similarly, in the studies of Mollaoğlu et al. and Lee et al., it was found that marital status was not related to medication adherence.^[12,14] In the study of Alhaddad et al., it was stated that being divorced or widowed was associated with poor medication adherence, and the absence of a reminder and social support at home about medical drug use could explain this.^[11]

A significant relationship was found between educational status and medication adherence, and it was observed that all of the patients who graduated from university and above were adherent to drug therapy. However, some studies did not find a relationship between educational status and medication adherence.^[8,11] In addition, in this study, although the medication adherence of the patients with minimum wage and below was lower, there was no significant difference between employment status or monthly

income and medication adherence. The results of the study are similar to other studies.^[8,11,14] In the study of Lee et al., medication adherence was significantly higher in retired and unemployed patients.^[12]

The type of antihypertensive drug used by the patients was examined in three groups in this present study; there was no significant difference between these groups using single, combined, or more than 1 antihypertensive tablet in terms of adherence to drug therapy. The results of the study are similar to other studies.^[11-13,16] However, in the study of Mollaoğlu et al., medication adherence was found to be significantly higher in patients receiving monotherapy.^[14] In the study of Hashmi et al., it was found that as the number of antihypertensives taken by the patient increased, medication adherence increased significantly.^[15] In this present study, although the duration of antihypertensive treatment was found to be lower in patients who were adherent to drug therapy, no significant difference was found. Research results similar to this result are also available in other studies.^[11,13] In the study of Mekonnen et al., medication adherence was found to be significantly higher in patients who had been using antihypertensives for more than 3 years compared to those who had been using them for <3 years.^[16] In the study of Lee et al., medication adherence was found to be significantly higher in patients who had been using antihypertensives for more than 10 years compared to other groups.^[12] In addition, no significant relationship was found between the total number of drugs used for HT and other chronic diseases and medication adherence in this study. In the study of Oliveira-Filho et al., it was reported that there was no relationship between the total number of drugs used daily and medication adherence.^[13] In this present study, no significant relationship was found between the presence of an additional chronic disease and medication adherence. In many studies in the literature, no relationship was found between the presence of additional chronic diseases and drug compliance.^[8,11,15] However, in the study of Mekonnen et al., medication adherence of patients with the absence of any comorbidity other than HT was found to increase significantly.^[16] On the other hand, in a qualitative study conducted by Unalan et al. on patients with HT, it was observed that patients who

used drugs for another chronic disease in addition to HT were more likely to adhere to drug treatment.^[17]

In this study, no significant difference was found between whether the patients had smoking and salt restriction according to their medication adherence. There are many studies that did not find a significant relationship between smoking behaviour and medication adherence.^[8,11,13,15] However, in a study conducted by Vatansever et al., the medication adherence score of patients with HT who complied with the recommended diet was found to be significantly higher.^[18]

Many studies have shown that systolic and diastolic pressures are significantly lower in patients who are highly adherent to drug therapy.^[11,13] In this study, the systolic and diastolic blood pressure values of patients who were adherent to drug therapy were found to be lower than those of patients who were non-adherent to drug therapy, but this difference was not significant. Similarly, in the study of Hashmi et al. and the study of Lee et al., no significant difference was found between the two groups that were adherent and non-adherent to drug therapy in terms of mean systolic and diastolic blood pressure.^[12,15] In the meta-analysis of Abegaz et al., non-adherent to drug therapy in patients with normotensive was detected in 59.7%, non-adherent to drug therapy in patients with hypertensive was detected in 83.7%; this difference was not statistically significant.^[10]

In this study, except for lifestyle changes, smoking history, and salt restriction, not investigating alcohol consumption, diet, exercise, and stress management can be counted among the limitations of the study. In addition, which may positively affect the adherence to drug therapy, the patient's knowledge about HT, the patient-physician relationship, and the attitude of the patients to drug therapy were not questioned in this study. This situation can be considered another limitation of the study.

CONCLUSION

In this present study, no relationship was found between the sociodemographic characteristics of the patients, except education level, and medication adherence. It was observed that all of the patients with a university or higher education level were adherent to drug treatment. However, it should be kept in mind that the effect of medication adherence on the control of HT is not a factor in itself. In primary care, in addition to the factors affecting their medication adherence, questioning lifestyle changes and informing patients about the importance of the disease and the importance and benefits of treatment will be more effective in the fight against HT.

Disclosures

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

Funding: None

Ethics Committee Approval: This study was approved by the University of Health Sciences İzmir Tepecik Education and Research Hospital, Non-Invasive Clinical Research Ethics (Approval date: May 24, 2018, and Approval number: 2018/5-15). "Informed Voluntary Consent" and verbal consent were obtained from the patients.

Authorship Contributions: Concept – O.Ç., Y.A.G., B.A.; Design – O.Ç., Y.A.G.; Supervision – Y.A.G.; Materials – O.Ç.; Data collection and/or processing – O.Ç., B.A.; Analysis and/or interpretation – O.Ç., Y.A.G., B.A.; Literature search – O.Ç., B.A.; Writing – O.Ç., Y.A.G., B.A.; Critical review – Y.A.G.

REFERENCES

1. Türkiye Endokrinoloji ve Metabolizma Derneği Obezite, Lipid Metabolizması ve Hipertansiyon Çalışma Grubu. Hipertansiyon tanı ve tedavi kılavuzu; 2019. Available at: https://temd.org.tr/admin/uploads/tbl_kilavuz/20190527160350-2019tbl_kilavuz64f1da66bf.pdf. Accessed Dec 21, 2021.
2. Danaei G, Finucane MM, Lin JK, Singh GM, Paciorek CJ, Cowan MJ, et al. National, regional, and global trends in systolic blood pressure since 1980: Systematic analysis of health examination surveys and epidemiological studies with 786 country-years and 5.4 million participants. *Lancet* 2011;377(9765):568–77.
3. Aydogdu S, Güler K, Bayram F, Altun B, Derici Ü, Abaci A, et al. 2019 Turkish hypertension consensus report. *Turk Kardiyol Dern Ars* 2019;47(6):535–46. [CrossRef]
4. Kepez A. Dirençli hipertansiyon tanısı ve sekonder nedenler. *Hipertans Haber Bülteni* 2015;3:5–7.
5. Mendis S, Salas M. Hypertension. In: *Adherencetolong-termtherapies: Evidence for action*. WHO; 2003. Available at: <http://apps.who.int/iris/bitstream/handle/10665/42682/9241545992.pdf?sequence=1&isAllowed=y>. Accessed Dec 21, 2021.
6. Sengul S, Akpolat T, Erdem Y, Derici U, Arici M, Sindel S, et al. Changes in hypertension prevalence, awareness, treatment, and control rates in Turkey from 2003 to 2012. *J Hypertens* 2016;34:1208–17. [CrossRef]
7. Anadol Z, Dişçigil G. Factors influencing treatment compliance of hypertensive patients. *Türkiye Klinikleri J Cardiovasc Sci* 2009;21(2):184–90.
8. Mert H. A multidisciplinary special study module research: treatment compliance of patients with hypertension. *Türkiye Aile Hekim Derg* 2011;15(1):7–12. [CrossRef]
9. Morisky DE, Green LW, Levine DM. Concurrent and predictive validity of a self-reported measure of medication adherence. *Med Care* 1986;24(1):67–74. [CrossRef]
10. Abegaz TM, Shehab A, Gebreyohannes EA, Bhagavathula

- AS, Elnour AA. Nonadherence to antihypertensive drugs a systematic review and meta-analysis. *Medicine (Baltimore)* 2017;96(4):e5641. [\[CrossRef\]](#)
11. Alhaddad IA, Hamoui O, Hammoudeh A, Mallat S. Treatment adherence and quality of life in patients on antihypertensive medications in a Middle Eastern population: Adherence. *Vasc Health Risk Manag* 2016;12:407–13. [\[CrossRef\]](#)
 12. Lee GKY, Wang HHX, Liu KQL, Cheung Y, Morisky DE, Wong MCS. Determinants of medication adherence to antihypertensive medications among a Chinese population using Morisky Medication Adherence Scale. *PLoS One* 2013;8(4):e62775.
 13. Oliveira-Filho AD, Barreto-Filho JA, Neves SJF, de Lyra DP. Association between the 8-item Morisky Medication adherence Scale (MMAS-8) and blood pressure control. *Arq Bras Cardiol* 2012;99(1):649–58. [\[CrossRef\]](#)
 14. Mollaoğlu M, Solmaz G, Mollaoğlu M. Adherence to therapy and quality of life in hypertensive patients. *Acta Clin Croat* 2015;54(4):438–44.
 15. Hashmi SK, Afridi MB, Abbas K, Sajwani RA, Saleheen D, Frossard PM, et al. Factors associated with adherence to anti-hypertensive treatment in Pakistan. *PLoS One* 2007;2(3):e280.
 16. Mekonnen HS, Gebrie MH, Eyasu KH, Gelagay AA. Drug adherence for antihypertensive medications and its determinants among adult hypertensive patients attending in chronic clinics of referral hospitals in Northwest Ethiopia. *BMC Pharmacol Toxicol* 2017;18(1):27. [\[CrossRef\]](#)
 17. Ünal PC, Çifçili S, Uzuner A, Akman M. Hastaların hipertansiyon ve antihipertansifler konusundaki algı ve inanışları. *Türkiye Aile Hekim Derg* 2005;9(4):153–8.
 18. Vatansever Ö, Ünsar S. Determination of medical treatment adherence, self-efficacy levels of patients with essential hypertension and affecting factors. *Turk Soc Cardiol Turkish J Cardiovasc Nurs* 2014;5(8):66–74. [\[CrossRef\]](#)