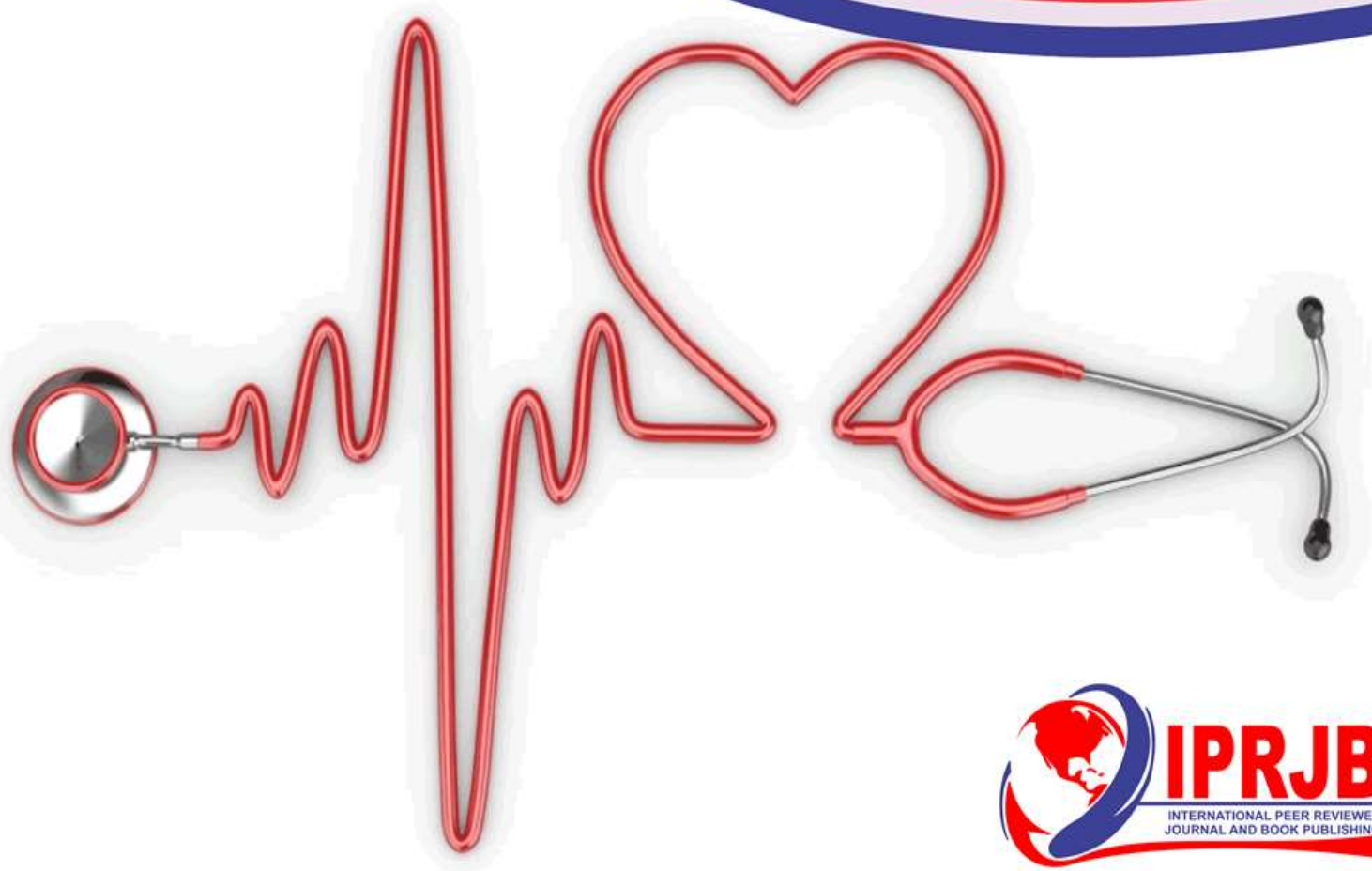


Journal of Health, Medicine and Nursing (JHMN)

**The Effect of Nursing Education Given to Hypertensive Elderly Individuals on
Medication Adherence, Self-Efficacy, and Covid-19 Fear**

Tuğba Duzcu and Mustafa Ayyıldız



The Effect of Nursing Education Given to Hypertensive Elderly Individuals on Medication Adherence, Self-Efficacy, and Covid-19 Fear



^{1*}Tuğba Duzcu

Department of Medical Services and Techniques,
Kastamonu University, Tosya Vocational School,
Kastamonu, Tosya, Turkey



²Mustafa Ayyıldız

Department of Physiology, Faculty of Medicine,
Ondokuz Mayıs University, Samsun, Turkey

Article History

Received 5th June 2026

Received in Revised Form 3rd July 2026

Accepted 4th August 2026



How to cite in APA format:

Duzcu, T., & Ayyıldız, M. (2026). The Effect of Nursing Education Given to Hypertensive Elderly Individuals on Medication Adherence, Self-Efficacy, and Covid-19 Fear. *Journal of Health, Medicine and Nursing*, 12(4), 19–27. <https://doi.org/10.47604/jhmn.3901>

Abstract

Purpose: This study aimed to examine the effects of nursing education provided to hypertensive individuals aged 65 years and older on medication adherence, self-efficacy, and fear of Covid-19.

Methodology: This randomized controlled study with a pretest–posttest design was conducted between March and December 2021 in Family Healthcare Centers located in the Tosya district of Kastamonu Province. The sample consisted of 140 hypertensive elderly individuals, including 70 participants in the intervention group and 70 in the control group, who volunteered to participate and had no speech impairment. Participants in the intervention group received a structured nursing education program. Data were collected using a Patient Information Form, the Medication Adherence Self-Efficacy Scale, and the Covid-19 Fear Scale before the intervention and one month after the education. Statistical analyses were performed using Shapiro–Wilk, Kolmogorov–Smirnov, t-test, Mann–Whitney U, one-way ANOVA, Duncan, Kruskal–Wallis, and Dunn tests.

Findings: A statistically significant difference was found between pretest and posttest median scores of the medication adherence scale ($p < 0.001$). The median medication adherence score increased from 24 before the intervention to 35 after the intervention. Additionally, a statistically significant decrease was observed in the Covid-19 Fear Scale scores ($p < 0.001$), with median scores decreasing from 23 to 12.5 following the nursing education.

Unique Contribution to Theory, Practice and Policy: The findings indicate that nursing education provided to hypertensive elderly individuals is effective in improving medication adherence and reducing fear of Covid-19.

Keywords: Covid-19, Nursing Education, Hypertension, Elderly

©2026 by the Authors. This Article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license

<http://creativecommons.org/licenses/by/4.0>

INTRODUCTION

As defined by the World Health Organization, hypertension is responsible for 6% of all adult deaths worldwide and is the cause of 1 of every deaths. Furthermore, it is the 8th-most lethal disease. Hypertension is a preventable risk factor (Önal and Tümerdem, 2011).

Hypertension is a major health problem for more than 50% of individuals aged 65 years or older. Blood pressure level increases in parallel with advancing age. If not controlled, this disorder which is widely seen among elderly people causes severe complications such as cardiac failure, myocardial infarction, stroke, and chronic renal failure (Önal and Tümerdem, 2011). In our country and the world, patients' noncompliance to treatment is the most important factor for the fact that blood pressure control couldn't be increased above 25% (Kaplan, 2003). Considering the patient behaviors, adherence is defined as implementing the diet, adopting the lifestyle changes, and using the medications. Noncompliance is defined as not having a prescription or not using the medication. The most widely seen form of noncompliance is to take medication less than required and not take the medication for consequent days occasionally. Other most common forms of noncompliance include the use of cigarette and alcohol, inadequate exercise, unhealthy diet, and not regularly going to visits (Izzo and Black, 2004).

In order to appropriately manage the hypertension, it is necessary to not neglect the regular controls and to comply with the other suggestions, in addition to the medical treatment (Kaplan, 2003). There are some intervention options for hypertensive patients to increase their quality of life and take their blood pressure under control. These interventions include consulting, supporting, providing information, family therapy, reminders, and self-monitoring (Kaplan, 2003).

In previous studies, it was determined that, in order to take the blood pressures of hypertensive patients under control, eating salt-free and fat-free food, doing exercise for 1-2 times a week, eating plenty of vegetables and fruits positively affected the blood pressure values (Bosworth et al., 2005; Clark et al., 2000; Swetkey et al., 2005). Nurses and nursing education play an important role in the management of hypertensive patients. In a previous study, it was found that blood pressure reached the normal levels in 71% of the hypertensive patients after the education given by nurses (Clark et al., 2000). It was revealed in many studies that hypertensive patients complied with their medical therapies and diseases after education and regular follow-up (Bogden et al., 1998; Grandi et al., 2006).

At the end of the year 2019, it was determined that 6 Coronavirus strains caused respiratory tract diseases (McIntosh & Peiris, 2009; Pena et al., 2001). The first Covid-19 case in Türkiye was seen on 10 March Mart 2020; 1,006 deaths and 47,029 cases were seen within a period shorter than 1 month and the infection became a pandemic (Worldometer, 2020). The effects of the pandemic negatively influenced all individuals. The course of infection was worse among elderly individuals and mortality rates were higher in comparison to the other age groups (W & McGoogan, 2020; Ji et al., 2020).

METHODOLOGY

Designed as an experimental model with a pretest-post-test design and control group, the present study was carried out between March 2021 and December 2021 in Family Healthcare Centers affiliated to Tosya District Directorate of Health in Kastamonu province. The universe and sample of the study consist of 140 (70 in the intervention group and 70 in the control group)

patients, who applied to Family Healthcare Centers in Tosya district of Kastamonu Province and met the inclusion criteria. Participants were randomly assigned (1:1 ratio) to the intervention or control group using computer-generated random block numbers managed by an independent researcher. As a result of the analysis performed using GPower version 3.1 statistical software, it was determined that the minimum number of participants should be 130 (confidence level of 95% and power ratio of 0.95). Considering the relevant literature, the data were collected by researchers by using patient information form, Medication Adherence – Self-Efficacy Scale for Hypertension Patients, and Coronavirus Fear Scale.

The research data were divided into intervention and control groups according to the order of arrival from the Research Randomize software in parallel with the time of patients' application to family healthcare center. As the pretest, patient information form, Medication Compliance Self-Efficacy Scale for Hypertension Patients, and Coronavirus Fear Scale were conducted. In the intervention group, nursing education was given and the same forms were used as post-test 1 month after the education. In the control group, the patients were given the post-test forms after 1 month without giving an education. Ensuring the safety of patients, the data were collected with a face-to-face interview in an environment, where they could comfortably express their emotions and thought, by providing them with sufficient explanations. It took approx 5 minutes to fill in the data collection instruments. The total duration of nursing education was 40 minutes. All application is shown in detail in Table 1.

Table 1: Hypertensive Elderly Individuals' Medication Adherence and Coronavirus Fear Education Plan

Objective	Session	Duration	Content	Educational Method
Preparation	Session 1	5 min.	- General briefing about the content of education - Implementation of measurement instruments	
Theoretical Briefing	Session 2	10 min.		- Verbal Lecture -Question & Answer
	Session 3	10 min.	-Hypertension risk factors - Hypertension symptoms and findings	- Verbal Lecture -Question & Answer
	Session 4	10 min.	- Medication adherence in hypertension	- Verbal Lecture -Question & Answer
	Session 5	10 min.	- Coronavirus fear	- Verbal Lecture -Question & Answer
Assessment	Session 6	5 min.	Re-application of measurement instruments	

The data were analyzed using IBM SPSS V23. Fitness to normal distribution was tested using Shapiro-Wilk's Test and Kolmogorov-Smirnov Test. The comparison between scale scores in paired groups fitting to normal distribution was made using the Independent Samples t-test, whereas the comparison between scale scores not fitting to normal distribution was made using Mann Whitney U Test. The scale scores of three or more groups fitting to normal distribution were compared using the One-Way Variance Analysis, whereas multiple comparisons were performed using Duncan's Test. The Kruskal-Wallis Test was used in comparing the scale scores of three or more non-normally distributed groups, whereas multiple comparisons were performed using Dunn Test. The mean $\pm$ standard deviation was used in expressing the data fitting to the normal distribution, whereas median (minimum–maximum) values were used in

expressing the non-normally distributed data. Statistical significance was set at $p < 0.05$. Before the study, ethics committee approval was obtained from Kastamonu University's Social and Human Sciences Ethics Committee on 01.18.2021 (E-16498365-050.01.04-2100002105) and official approval was obtained from Tosya District Directorate of Health. Verbal and written consents were obtained from all the participants volunteering to participate. Written approval was obtained from the authors of the study in order to use the scales.

RESULTS

Table 2: Comparison between Pretest Scores

Scales	Intervention	Control	Test Stat.	p
	Median (min-max)	Median (min-max)		
Medication Adherence Scale Pretest	24 (13 - 52)	23 (13 - 39)	U= 2285	0.491
COVID-19 Fear Scale Pretest	23 (7 - 32)	24 (7 - 35)	U= 2079	0.121
U: Mann Whitney U Test				

As seen in Table 2, there was no statistically significant difference between the median pretest scores of the groups in the Medication Adherence Scale ($p=0.491$).

Table 3: Comparison between Post-Test Scores

Scales	Intervention	Control	Test Stat.	p
	Median (min-max)	Median (min-max)		
Medication Adherence Scale Post-test	35 (18 - 52)	23 (13 - 39)	U= 735	<0.001
COVID-19 Fear Scale Post-test	12.5 (7 - 31)	24 (7 - 35)	U= 663.5	<0.001
U: Mann Whitney U Test				

The results shown in Table 3 show that a statistically significant difference was found between the median post-test scores of the groups in the Medication Adherence Scale ($p < 0.001$); while the median post-test score of the intervention group in the Medication Adherence Scale was 35, and it was 23 for the control group. Considering the Covid-19 Fear Scale, the median post-test score of the intervention group was 12.5 and 24 for the control group.

Table 4: comparison between the scale groups of groups

Groups	Scales	Pretest	Post-test	Test Stat.	p
		Median (min-max)	Median (min-max)		
Intervention	Medication Adherence Scale	24 (13 - 52)	35 (18 - 52)	Z= -6.834	<0.001
	COVID-19 Fear Scale	23 (7 - 32)	12.5 (7 - 31)	Z= -6.729	<0.001
Control	Medication Adherence Scale	23 (13 - 39)	23 (13 - 39)	Z= -3.147	0.002
	COVID-19 Fear Scale	24 (7 - 35)	24 (7 - 35)	Z= -1.095	0.273
Z: Wilcoxon Test					

Given the results presented in Table 4, there was no statistically significant difference between the median pretest scores of the groups in the Covid-19 Fear Scale ($p=0.121$), while there was a statistically significant difference between the median post-test scores of the groups ($p < 0.001$).

In the intervention group;

A statistically significant difference was found between the median pretest and post-test scores in the Medication Adherence Scale ($p < 0.001$); the median pretest score was 24 and the median post-test score was 35. In the Covid-19 Fear Scale, however, there was a statistically significant difference between the median pretest and post-test scores ($p < 0.001$); the median pretest score in the Covid-19 Fear Scale was 23 and the median post-test score was 12.5.

In the control group;

A statistically significant difference was found between the median pretest and post-test scores in the Medication Adherence Scale ($p=0.002$); the difference here originates from the mean ranks. While the mean rank of the pretest scores in the Medication Adherence Scale was 5, it was 10.40 for the post-test score. There was no statistically significant difference between the median pretest and post-test scores in the Covid-19 Fear Scale ($p=0.273$).

Discussion

No statistically significant difference was found between the median pretest scores of the groups in the Medication Adherence Scale ($p=0.491$), whereas there was a statistically significant in between the median post-test scores of the groups ($p<0.001$). While the median post-test score of the intervention group was 35, it was 23 in the control group. Considering the Covid-19 Fear Scale, there was no statistically significant difference between the median pretest scores of the groups ($p=0.121$), whereas the median post-test scores of the groups were determined to be statistically significant different ($p<0.001$). It was determined that the median post-test score of the intervention group was 12.5 and it was 24 in the control group.

In the experiment group, there was a statistically significant difference between median pretest and post-test scores in the Medication Adherence Scale ($p<0.001$); while the median pretest score was 24, the median post-test score was found to be 35. Furthermore, there was a statistically significant difference between median pretest and post-test scores in the Covid-19 Fear Scale ($p<0.001$). While the median pretest score in the Covid-19 Fear Scale was 23, the median post-test score was found to be 12.5.

In the literature, it can be seen that nursing education played an effective role in the regular use of medication in the treatment plan, as well as improving the adherence to medication (Çakır, 2003). In a previous study carried out by Malhotra et al. on elderly individuals (aged 60 years and older) having chronic diseases, similar to the present study, it was determined that regular use of medications and medication adherence levels increased in intervention groups after the education. In a study carried out by Cingil et al. on the medication use of hypertension patients, it was reported that hypertensive patients given education by healthcare personnel had a higher rate of regular use of medications in the treatment plan and, consequently, a higher level of medication adherence. Regular use of medication and medication adherence is very important in the management of hypertension. It was emphasized that the quality of life of hypertensive elderly individuals increased after regular use of the medication (Şarlı, 2011). Blood pressure of hypertensive elderly people can be taken under control in this way.

In previous studies carried out by Castro et al. and Hunt et al. , it was reported that the education programs offered significantly increased the adherence to medication among patients having hypertension. In a study carried out by Bostworth et al. , the authors stated that adherence to treatment increased after giving education by phone call to individuals diagnosed with hypertension. In a study, Aslan (21) reported that the prevalence of hypertension in the intervention group decreased after the education in comparison to the control group.

Similarly, in a study carried out by Çakır, the author stated that blood pressure levels significantly decreased in the intervention group of hypertension patients given an education, while there was no change in the control group. In their study, Gögen and Özdemir reported that the medication adherence rate increased after the education on hypertension given to the hypertensive patients. Swetkey et al. observed a decrease in systolic and diastolic blood

pressure after education on hypertension. Clark et al. determined that there were decreases in the blood pressure of individuals having treatment adherence education from nurses. In an experimental study carried out by Pena et al. , education was offered to hypertensive individuals in the intervention group during the home visits and decreases were observed in blood pressure levels. In their study carried out by Stergio et al., the interventions made by practitioners to increase the adherence to medication for the patients diagnosed with hypertension were observed to remarkably increase the adherence of patients. In their study, Rudd et al., reported that the medication adherence of the participants in the intervention group significantly increased after the medication adherence education given by nurses. Lee et al., in their experimental study, determined that the medication adherence percentage of the participants in the intervention group increased after 6-month medication adherence education. In studies carried out by Tokem and Karadakovan and Arslan and Eşer, medication adherence of the individuals increased after the education. In a study carried out on hypertensive individuals by Aşilar and Gözüm, the mean total score in MASES-SF was found to be 41.9 ± 10.5 . In another study carried out on hypertensive individuals, the mean MASES-SF score was 39.90 ± 7.08 .

In a literature review, no study examining the relationship between hypertensive elderly patients' medication adherence and Covid-19 fear could be found. Furthermore, no randomized controlled study providing hypertensive elderly patients with education and having a pretest-post-test design was found. However, in the present study, there was a statistically significant difference between the median pretest and post-test Covid-19 Fear Scale scores in the intervention group ($p < 0.001$); the median pretest score in Covid-19 Fear Scale was 23, whereas the median post-test score was found to be 12.5. In the control group, however, there was no statistically significant difference between the median pretest and post-test scores in the Covid-19 Fear Scale ($p = 0.273$). The results revealed that the nursing education given on Covid-19 fear reduced the level of coronavirus fear by decreasing the total scores. In the literature, there are mainly the descriptive studies examining the coronavirus and coronavirus fear among elderly individuals. In this case, the null hypothesis in the present study was accepted.

CONCLUSION AND RECOMMENDATIONS

At the end of the present study, it was determined that;

No statistically significant difference was found between the median pretest scores of the groups in the Medication Adherence Scale ($p = 0.491$), whereas there was a statistically significant difference between the median post-test scores of the groups ($p < 0.001$); while the median post-test score was 35 in the intervention group, it was found to be 23 in the control group.

There was no statistically significant difference between the median pretest scores of the groups in the Covid-19 Fear Scale ($p = 0.121$), whereas there was a statistically significant difference between the median post-test scores of the groups in the Covid-19 Fear Scale ($p < 0.001$). While the median post-test score was 12.5 in the intervention group, it was found to be 24 in the control group.

There was a statistically significant difference between the median pretest and post-test Medication Adherence Scale scores in the intervention group ($p < 0.001$); while the median pretest score was 24 in the intervention group, the median post-test score was found to be 35.

There was a statistically significant difference between the median pretest and post-test scores in the Covid-19 Fear Scale ($p < 0.001$); while the median pretest score was 23, the median post-test score was found to be 12.5.

Suggestions

Previous studies and the present study suggest that nursing education given to hypertensive elderly individuals on medication adherence and coronavirus fear inevitably would increase medication adherence in hypertension and reduce coronavirus fear.

In order to increase the medication adherence of elderly hypertensive individuals, nurses should frequently check the patients and support them with nursing education and briefings. Furthermore, it is necessary to inform hypertensive elderly individuals about the coronavirus in detail during the pandemic, support them about what to do in case of an emergency and where to apply in which cases, and offer continuous education.

REFERENCES

- Arslan GG, Eşer İ. Yaşlılara verilen eğitimin ilaç kullanım uyumuna etkisinin incelenmesi. *Turk J Geriatr*, 2005;8(3):131-40.
- Aşilar RH, Gözüm S. Hypertensive individuals' use of complementary health approaches and its effect on adherence with antihypertensive medication treatment. *TJFMPC*, 2017;11(4):235-44. DOI: 10.21763/tjfmpe.359689
- Bogden P, Abbott R, Williamson P, Onopa J, Koontz L. Comparing standard care with a physician pharmacist team approach for uncontrolled hypertension. *J Gen Intern Med*, 1998;13:740-5. DOI: 10.1046/j.1525-1497.1998.00225.x
- Bosworth H, Olsen M, Gentry P, Orr M, Dudley T, McCant F, et al. Nurse Administired Telephone Intervention for Blood Pressure. *Patient Educ Couns*, 2005;57(1):5-7. DOI: 10.1016/j.pec.2004.03.011
- Clark M, Curran C, Noji A. The effects of community health nurse monitoring on hypertension identification and control. *Public Health Nurs*, 2000;17(6):452-9. DOI:10.1046/j.1525-1446.2000.00452.x
- Çakır H. Hipertansiyon Hastalarına Verilen Eğitimin Sağlıklı Yaşam Biçimi Davranışları ve Hipertansiyon Yönetimine Etkisi [Yüksek Lisans Tezi]. İstanbul: Marmara Üniversitesi Sağlık Bilimleri Enstitüsü, 2003. Danışman: Doç. Dr. Rukiye Pınar.
- Castro MS, Fuchs FD, Santos MC, Maximiliano P, Gus M, Moreira LB, et al. Pharmaceutical care program for patients with uncontrolled hypertension. *Am J Hypertens*, 2006;19(5):528-33. DOI: 10.1016/j.amjhyper.2005.11.009
- Cingil D, Delen S, Akseoglu A. Karaman Merkezinde Yaşayan Hipertansiyon Hastalarının İlaç Kullanım Durumlarının ve Bilgilerinin İncelenmesi. *Turk Kardiyol Dern Arş*, 2009;37(8):551-6. DOI: 10.5543/tkda.2009.47135
- Grandi A, Maresca A, Sessa A, Stella R, Ponti D, Barlocco E, et al. Longitudinal study on hypertension control in primary care. *Am J Hypertens*, 2006;19(2):140-5. DOI: 10.1016/j.amjhyper.2005.06.034
- Gögen S, Özdemir Y. Birinci basamak sağlık kuruluşlarında hipertansif hastaların takibi. *TSK Koruyucu Hekim Bül*, 2005;4(1):8-15.
- Hunt JS, Siemieniczuk J, Touchette D, Payne N. Impact of educational mailing on the blood pressure of primary care patients with mild hypertension. *J Gen Intern Med*, 2004;19:925-30. DOI: 10.1111/j.1525-1497.2004.40046.x
- Izzo J, Black H. Essentials Hypertension. İstanbul: Nobel Tıp Kitapevleri, 2004. p. 1-536.
- Ji Y, Ma Z, Peppelenbosch M, Pan Q. Potential association between COVID-19 mortality. *Lancet Glob Health*, 2020;8(4):2214-9. DOI: 10.1016/S2214-109X(20)30068-1
- Kaplan N. Clinic Hypertension. İstanbul: Turgut Yayıncılık, 2003.
- Lee JK, Grace KA, Taylor AJ. Effect of pharmacy care program on medication adherence and persistence, blood pressure and low-density lipoprotein cholesterol. *JAMA*, 2006;296:2563-71. DOI: 10.1001/jama.296.21.joc60162

- Malhotra R, Angelique C, Malhotral C. Prevalence, awareness, treatment and control of hypertension in the elderly population of Singapore. *Hypertens Res*, 2010;33:1223-31. DOI: 10.1038/hr.2010.177
- McIntosh K, Peiris J. Coronaviruses. *Clin Virol*. 2009;3rd Ed:1155-71.
- Önal E, Tümerdem Y. Yaşlılıkta Hipertansiyon *Türk Geriatri Derg*, 2011;4(4):141-5.
- Pena GC, Thorogood M, Armstrong B, et al. Pragmatic randomized trial of home visits by a nurse elderly people with hypertension in Mexico. *Int J Epidemiol*, 2001;30(6):1485-92. DOI: 10.1093/ije/30.6.1485
- Rudd P, Miller NH, Kaufman J, et al. Nurse management for hypertension. *Am J Hypertens*, 2004;17(10):921-7. DOI: 10.1016/j.amjhyper.2004.06.006
- Swetkey L, Erlinger T, Wollmer W. Effects of lifestyle modifications on blood pressure by race, sex, hypertension status and age. *J Hum Hypertens*, 2005;19(1):21-31. DOI: 10.1038/sj.jhh.1001770
- Şarlı Ş. Hipertansiyon Hastalığı Olanlarda Tedaviye Uyum, Etkileyen Faktörler ve Yaşam Kalitesinin Değerlendirilmesi [Tıpta Uzmanlık Tezi]. Kayseri: Erciyes Üniversitesi Tıp Fakültesi, 2011. Danışman: Doç. Dr. İskender Gün.
- Stergiou GS, Karotsis AK, Symeonidis A, Vassilopoulou VA. Aggressive blood pressure control in general practice study: can the new targets be reached?. *J Hum Hypertens*, 2003;17:767-73. DOI: 10.1038/sj.jhh.1001610
- Tokem Y, Karadakovan A. Yaşlı bireylere verilen bireyselleştirilmiş ilaç eğitim programının ilaç yönetimleri üzerine etkisinin incelenmesi. *Sağlık Toplum*, 2004;79-87.
- Worldometer. Worldometer: <https://www.worldometers.info/coronavirus/>. 2020 Apr.
- W Z, McGoogan J. Characteristics of and important lessons from the coronavirus. *JAMA*, 2020;323(13):1239-42. DOI: 10.1001/jama.2020.2648