What is the Awareness Level of the Hypertensive Elderly People on the Blood Pressure Measurement Follow-up and Device Calibration?

Hipertansif Yaşlıların Kan Basıncı Ölçüm ve Takipleri ile Cihaz Kalibrasyonu Farkındalıkları Ne Düzeyde?

 Fatma GENÇ, Çağla YİĞİTBAŞ

Giresun University Faculty of Health Sciences, Giresun, Turkey

ABSTRACT

Objective: Patient awareness about blood pressure (BP) measurement is important for the management of hypertension. This study was conducted to determine the level of awareness among hypertensive elderly patients regarding how to measure their blood pressure, following up and calibrating the device they use.

Methods: This descriptive and cross-sectional study was conducted between January and May 2018. The population examined in the study consisted of the elderly people who lived in the centre of a province in the Eastern Black Sea Region in Turkey. The study included 363 elderly people.

Results: This study revealed that despite using antihypertensive medicines, some of the elderly patients had out-of-range systolic (79.1%) and diastolic BP values (38.6%). The majority of the elderly people (83.6%) in this study did not have a properly calibrated device for home use. On average, the participants had their sphygmomanometers calibrated every 1.6±1.23 years.

Conclusion: It was concluded that hypertensive elderly patients were not fully aware of the importance of measuring BP, taking follow-up measurements and knowing how to properly calibrate their devices. Therefore, health personnel should train hypertensive elderly patients regarding follow-up on their blood pressure measurements.

Keywords: Elderly individual, hypertension, blood pressure measurement

ÖZ

Giriş: Kan basıncı (KB) ölçümü hakkındaki hasta farkındalığı, hipertansiyon yönetimi için önemlidir. Araştırma, yaşlı hipertansiyonlu hastalarının BP ölçüm ve takipleri ile kullandıkları cihazın kalibrasyonu hakkındaki farkındalıklarını tespit etmek amacıyla yapıldı.

Yöntemler: Tanımlayıcı ve kesitsel türde yapılan çalışma Ocak-Mayıs 2018 tarihleri arasında yürütüldü. Araştırma evrenini Türkiye'nin Doğu Karadeniz Bölgesi'ndeki bir il merkezinde yaşayan yaşlı bireyler oluşturdu. Çalışmaya 363 yaşlı birey dahil edildi.

Bulgular: Bu çalışmada antihipertansif ilaç kullandığı halde yaşlıların bir kısmının Sistolik KB (%79,1) ve Diastolik KB değerlerinin (%38,6) normal sınırlar içerisinde olmadığı tespit edildi. Araştırma, yaşlı hipertansiyonlu hastalarının KB ölçüm ve takipleri ile kullandıkları cihazın kalibrasyonu hakkındaki farkındalıklarını tespit etmek amacıyla yapıldı Katılımcıların %83,6'sının evinde kullandığı cihazın kalibrasyonunu yaptırmadığı, kalibrasyon yaptıranların kalibrasyon yaptırma sıklığı ortalamasının ise 1,6±1,23 yıl olduğu belirlendi.

Sonuç: Hipertansif yaşlı hastaların, KB ölçüm ve takipleri ile cihazlarını uygun şekilde kalibre ettirmenin öneminin farkında olmadığı sonucuna varılmıştır. Bu nedenle sağlık personeli, hipertansif yaşlı hastalara, BP ölçümlerini takip etme konusunda eğitim vermelidir.

Anahtar Sözcükler: Yaşlı birey, hipertansiyon, kan basıncı ölçümü

Introduction

Hypertension (HT) is a major risk factor for cardiovascular disease and was named the number one factor for overall mortality risk by the World Health Organisation. HT is a common medical condition that has a higher prevalence among elderly people. HT can lead to a number of cardiovascular complications in the elderly such as stroke, coronary heart disease, peripheral artery disease and cognitive impairment (1,2).

The global population is aging; by 2030, an estimated 20% of the global population will be 65 years of age or older. Therefore, the impact of high blood pressure (BP) on mortality rates among older adults is expected to grow over the coming decades (2). Each year, 7.5 million people die from complications due to high BP in the world, making HT responsible for 12.8% of all deaths globally (3). According to the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High BP (JNC-7), over two-thirds of individuals over the age of 65 years suffer from HT (4). In a representative population of adults in Turkey, the prevalence of HT was reported as 30.3% (5).

The accurate measurement of one's BP is essential to plan therapeutic strategy. The accurate measurement of BP requires the use of a properly calibrated sphygmomanometer (6,7). In a 2011 study, only 30% of the devices were acceptable for use, while 24% of the devices were inaccurate (8). Currently, it is accepted that home BP monitoring (HBPM), office measurement, and ambulatory BP monitoring play important roles in the management of BP (6). HBPM is gaining recognition as a vital tool for effectively managing HT, allowing patients to actively participate in their own treatment (9).

The HBPM offers extensive information about one's BP information that is obtained under fixed timeframes and conditions over a long period of time. It is also a simple procedure to repeat and track. HBPM can provide healthcare providers with timely and relevant clinical data and allows them to provide patients with direct and immediate feedback concerning the diagnosis and treatment of HT. HBPM allows patients to better understand how to manage their HT (10,11).

There are two groups of sphygmomanometers that are currently used for measuring BP: oscillometric and manometric devices. Oscillometric devices provide measurements in the fingers, wrist and above the elbow. There are three types of manometric devices in use: mercury, aneroid and electronic auscultation devices. Preferably, measurements should be carried out using the mercury sphygmomanometer. In addition to mercury manometers, it is also possible to use a calibrated aneroid manometer or electronic BP monitor. However, these devices need to be recalibrated every six months (12,13).

Inadequate sphygmomanometer maintenance and calibration results in systematic error in BP measurements. Furthermore, inadequate sphygmomanometer calibration may lead to untreated HT in some patients and unnecessary treatment in patients receiving antihypertensive treatment (7,14).

Patients' knowledge and attitudes have an impact on how well they manage their illnesses. Studying the level of awareness among patients is the first step when preparing a preventive program for any health problem (15). The present study focuses on hypertensive patients over the age of 65 years who seek healthcare at outpatient clinics within public hospitals in the centre of a province in Turkey. These patients were studied to determine their awareness of how to manage their BP, when to follow-up and how to calibrate their sphygmomanometers.

Methods

Study Design and Study Population

This descriptive and cross-sectional study was conducted in the centre of a province in Turkey between January and May 2018. The population examined in the study consisted of the elderly people over the age of 65 who lived in the centre of a province that was randomly selected in the Eastern Black Sea Region in Turkey (13.216 people- according to Turkish Statistical Institute data). The sample size to be included in the sample was calculated to be 282 with a 5% deviation in the reliability range of 95%. In order to increase the representation power of the sample, 846 elderly people were screened until 30% more than the sample size was reached. This study covered hypertensive patients who were diagnosed by a doctor and who used antihypertensive medicine according to the declarations (363 people - 30% more than the sample calculation). The data were collected from all outpatient clinics of the three hospitals in the city center. These hospitals were physical therapy, chest diseases and education research hospitals. Since hospitals were busier in the first and last days of the week, the data were collected especially on these days. BP of all patients reached in study were measured. In addition, all patients were informed about both BP measurement and device calibration.

Patients to be included in the study group;

- Aged 65 and above

- Diagnosed as having HT by a doctor

- Using antihypertensive medicine

- Having their BP monitored (by himself/herself or someone else's measurement)

- Voluntarily participating in the survey

Patients to be excluded in the study group;

Having a physical, mental or social disease that would impair cooperation

Having an auditory, visual or cognitive function disorder that would impair cooperation

Refusing to participate in an interview

Blood Pressure Evaluation

Within the scope of the project, BP was measured at the outpatient clinics by the researchers using the BP Monitor

with Stroke Risk Detection (BP A6 PC). This device has been reported to detect Atrial Fibrillation (AFIB) and HT with an accuracy of 97-100% (16,17). The device used contains coloured bars, which are referred to as "traffic light indicators", to indicate whether the patient's BP is within an acceptable range. A green-coloured bar within the display panel of the device indicates an optimum BP, yellow indicates a high BP, orange indicates a very high BP and red indicates that the patient's BP is dangerously high. BP measurements were performed according to recommended guidelines (18).

Independent variables of the study: Sociodemographic properties and medical histories are the independent variables of the study.

Dependent variables of the study: Awareness regarding how to measure BP, follow-up measurements and whether the device is properly calibrated are the dependent variables of the study.

Data Collection

The researchers collected data through face-to-face interview methods from elderly people meeting the inclusion criteria. The survey form questions were drafted based on relevant literature. The survey form consists of a total of 26 questions. The form consists of sociodemographic characteristics of the patients, awareness of HT, BP follow-up (type of the device used in BP follow-up, knowing the normal ranges of BP, frequency of BP follow-up, place/person of BP follow-up, points of attention in the BP measurement) and questions about the calibration of the BP device (how often and where the calibration is performed).

The BP measurements of the participants within the survey (846 people) were performed using the BP Monitor (BP A6 PC). The survey was collected from 363 people who met the inclusion criteria, over a period of 30 minutes. After data collection, participants were informed about BP follow-up and control as well as the importance of the calibrating their sphygmomanometers. They were also informed regarding which matters to pay attention to concerning BP. The participating elderly people were informed both verbally and in writing that they could take their personal BP measurement devices to a pre-contracted company for calibration.

Statistical Analysis

The data were evaluated using SPSS 22.0. Normality of the data was analyzed using the Kolmogorov-Smirnov test. Continuous variables with normal distribution were expressed as mean (± standard deviation) values and were compared using the independent t-test/ One-Way ANOVA. Continuous data without normal distribution were compared using the Mann-Whitney U test/ Kruskal-Wallis and logistical regression analysis. The χ2-test test was used for the categorical data. Tukey's HSD (honestly significant difference) test/Mann-Whitney U test was performed for post hoc analysis to determine individual differences between the groups. Pearson's correlation analyses were used to determine the direction and level of the relationship between the continuous variables. Statistical significance was determined to be p value <0.05.

Ethical Considerations

"Clinical Research Ethics Committee Approval" (KAEK 2017/03) and "institution approval" were obtained for conducting the study and "informed consent form" (in accordance with the Helsinki Declaration Criteria) was verbally declared to the voluntary participants. Written consent was not requested from the voluntary participants since it could reduce participation in the study.

Results

The average age of the elderly people in this research study was 73.96±7.55 years [minimum (min): 65; maximum (max): 103]. Of the participants 61.4% were woman and 38.6% were man. The percentage of the people living in rural areas was 77.4%, 46.1% of the participants were illiterate, 53.2% of participants lived with spouses and 37.5% stated that they found their income sufficient to support their lifestyle.

A total of 52.9% of the participants had a chronic disease other than HT and 48.0% of the participants reported that they were hypertensive for at least 11 years, while 85.1% of them considered HT to be a dangerous condition. The percentage of participants who reported that they didn't know the consequences of not following their treatment protocol for HT was 65.5%.

In this study, 8.5% of the individuals who claimed to be familiar with the normal ranges of BP (44.9%) could not determine the correct systolic BP (SBP) and 6.1% could not determine the correct diastolic BP (DBP). Patients stated that their average SBP value was 123.19±11.74 mm Hg (min: 80, max: 200) and their average DBP value was 77.66±8.99 mmHg average (min: 60, max: 150). According to the results of BP measurements, the percentage of patients within the normal range of SBP was 20.9%, with the percentage with pre-hypertensive values was 38.3%, the percentage in the first stage of HT was 27%, and the percentage of participants in the second stage of HT was 13.8%. The percentages of participants in each range for DBP values were 61.4%, 23.4%, 12.4%, and 2.8%, respectively. A total of 41.6% of the participants stated that they measured their BP themselves, while 22.3% stated that their BP was measured by healthcare personnel. Out of participants who stated that their devices were calibrated, 41.3% preferred having their measurements taken at the pharmacy, 30.5% preferred having the measurements taken at a private institution, 24% preferred a company, and 4.3% preferred to have their BP measured at a health organisation. On average, the participants had their sphygmomanometers calibrated every 1.6±1.23 years (min: 1; max: 6) (Table 1). In this study, the results from the A6 PC measurement results did not provide AFIB warnings to any of the persons.

The following variables were found to be independently effective with respect to having a follow-up BP screening: time since diagnosis of HT, marital status, perception of HT, use of antihypertensive medication and feeling symptoms of high BP (p<0.05) (Table 2).

Table 1. Distributions of the Elderly People Related to their Qualities on BP follow-up (n=363)

Variables	Number	%
Knowing the normal ranges of BP		
Knows	163	44.9
Doesn't know	200	55.1
Having BP follow-up		
Yes	201	55.4
Sometimes	63	17.4
Rarely	99	27.2
Place of BP follow-up		
Home	275	75.8
Pharmacy	16	4.4
Community clinic	17	4.7
Hospitals	55	15.2
Person doing the BP follow-up		
Himself/herself	151	41.6
Spouse	37	10.2
Child	72	19.8
Relative	22	6.1
Health personnel	81	22.3
Type of the device used in BP follow-up		
Digital wrist	208	57.3
Digital elbow	90	24.8
Aneroid	65	17.9
Having the device calibrated (n=281)		
Yes	46	16.4
No	233	83.6
Training on blood pressure measurement (n=347)		
Yes	58	16.7
No	289	83.3
Person providing training on blood pressure measurement (n=51)		
Doctor	6	29.4
Nurse	15	11.8
Pharmacy	24	47.1
Company official	6	11.8
Attention paid to in blood pressure measurement*		
Holding the arm aligned with heart	104	28.7
Keeping silent	146	40.2
Being rested	42	11.6
Nothing eaten or drunken	2	0.6
Keeping still	50	13.8

Table 1. Continued

Variables	Number	%
Recording the BP value		
Yes	29	8.0
No	265	73.0
Recording only when high	69	19.0
SBP classification according to BP A6 PC		
Normal	76	20.9
Pre HT	139	38.3
Stage 1 HT	98	27.0
Stage 2 HT	50	13.8
DBP classification according to BP A6 PC		
Normal	223	61.4
Pre HT	85	23.4
Stage 1 HT	45	12.4
Stage 2 HT	10	2.8

*Multiple replies, BP: Blood pressure, PC: Preventive cardiovascular, HT: Hypertension

The statistically significant variables of the study with regards to having the BP measurement device calibrated were the education level of the participants in the study, an awareness of the consequences of not following up their treatment and feeling the symptoms of high BP (p<0.05) (Table 3).

Discussion

Compliance with HT treatment protocols will increase the quality of life among elderly patients. Therefore, controlling HT and following up BP screenings are important for determining HT-related risks early on and providing early intervention for these risks. According to the Data of Turkish Adult Cardiovascular Disease Risk Factor, the prevalence of HT among people between the ages of 60 and 69 years is 67.3% among men, and 78.2% among women. For people aged 70 years or above, this value increases to 73.5% among men and 85.6% among women. In Turkey, three out of four people over the age of 60 are reported to be hypertensive (19).

The mortality risk increases significantly when the SBP value is ≥160 mmHg or the DBP value is ≥100 mmHg. The Cardiovascular Disease and Expanded-Cardiovascular Disease mortality risk was lowest when the SBP values were between 120 to 129 mmHg, compared with SBP value <120 mm Hg. This mortality risk also increases when DBP value is ≥90 mm Hg, compared with DBP value <80 mmHg (2). In a study by Framingham, patients with SBP readings between 130-139 and DBP readings between 85-89 mmHg were twice as likely to experience mortality compared to patients with BP readings below 120/80 mmHg with regards to cardiovascular death risk (20).

Table 2. Factors affecting the BP follow-up of the elderly people (n=363)

Variable	β	p	OR	95% CI
Age (in number)	0.09	0.097	1.10	1.10-0.98
SBP (in number)	-0.09	0.825	0.91	0.40-2.03
DBP (in number)	-0.33	0.516	0.71	0.25-1.97
HT time (in number)	-0.07	**0.049**	0.92	0.86-1.00
Sex				
Male			1.00	
Female	0.14	0.865	1.15	0.21-6.15
Place where the most of life is spent				
Rural			1.00	
Urban	0.29	0.696	1.34	0.30-6.02
Marital status				
Married			1.00	
Single, widow, divorced	-1.83	**0.026**	0.16	0.03-0.79
Education level				
Illiterate			1.00	
Literate, no school completed	-1.28	0.116	0.27	0.05-1.37
Primary school	-0.14	0.868	0.86	0.15-4.86
Secondary school	-0.65	0.674	0.51	0.02-11.16
High school	0.19	0.906	1.22	0.04-32.71
University	17.66	0.999	4.7	
Income level perception				
Sufficient			1.00	
Insufficient	-0.48	0.553	0.61	0.12-2.86
Equal	-0.43	0.569	0.64	0.14-2.86
Presence of another chronic disease				
No			1.00	
Yes	1.21	0.097	3.36	0.80-14.11
HT perception				
Dangerous			1.00	
Not dangerous	0.30	0.835	1.35	0.07-24.01
I do not know	-2.27	**0.019**	0.10	0.01-0.68
Awareness on the result of not following HT treatment				
Aware			1.00	
Unaware	0.36	0.606	1.44	0.35-5.85
Use of antihypertensive medicine				
Regular			1.00	
Not regular	-3.54	0.058	0.02	0.00-1.13
Taking when BP is high	-2.47	**0.007**	0.08	0.01-0.50

Table 2. Continued

Variable	β	p	OR	95% CI
Feeling high BP				
Yes			1.00	
No	-2.79	**0.001**	0.06	0.01-0.34
Sometimes	0.62	0.55	1.87	0.23-15.05
Presence of HT patient in the family				
Yes			1.00	
No	1.27	0.08	3.48	0.83-14.59

OR: Odds ratio, CI: Confidence interval, HT: Hypertension, SBP: Systolic blood pressure, DBP: Diastolic blood pressure, BP: Blood pressure

In the present study, the average BP value of the elderly people receiving HT treatment was found to be 136.06±21.44 mmHg for SBP (min: 84, max: 207) and 76.51±11.07 mmHg (min: 42; max: 112) for DBP. According to the results of the A6 PC measurements, 79.1% of the elderly people had out-of-range SBP values and 38.6% of them had out-of-range DBP values. In another study, Oliveria et al. (21) demonstrated that many patients did not know their BP levels, nor could they accurately determine whether they had elevated or normal BP. Furthermore, 41% of patients reported that were not in the normal range, but in fact they were hypertensive (21). Dastan et al. (22) showed that 59% of individuals were on HT treatment. The percentage of hypertensive individuals whose BP levels were under control was 30% (22).

In this study, the following variables were found to be independently effective with respect to having BP follow-up readings: time since diagnosis, marital status, perception of one's HT, use of antihypertensive medication and feeling symptoms of high BP (p<0.05).

The low level of awareness regarding hypertensive status may also be due to the insufficient measurement of BP. With regards to BP follow-up, the percentage of people who do not follow-up with their initial measurements in Turkey is reported be higher in those living in rural areas and in women (23).

In a study conducted by Tokem et al. (24), it was found that hypertensive individuals had a low level of compliance regarding their BP follow-up and only one-fifth of the individuals who claimed to know their BP values and measurement techniques had regular BP measurements. Furthermore, the majority of these hypertensive individuals only had their BP measured when they felt symptoms of HT (24).

The study by Dereli and Baybek (25) stated that the frequency of measuring BP varied with regards to SBP and DBP; it also showed that 18.5% of the patients with high SBP ,and 6.5% of the patients with high DBP didn't have regular BP checks.

In a study where the average participant age was 61.5 years and all patients had been diagnosed as having HT for at least a year, it was found that sex, marital status and education didn't cause any

Table 3. Distribution of having the BP measurement device used by the elderly people calibrated according to some variables

| Variables | n | BP device calibration (n=281) | | Test and p values |
		Calibrated Number (%)*	Not calibrated Number (%)*	
Education level				
Illiterate	131	111 (84.7)	20 (15.3)	
Literate, no school completed	38	33 (86.8)	5 (13.2)	
Primary school	80	71 (88.8)	9 (11.3)	
Secondary school	12	8 (66.7)	4 (33.3)	x^2=12.614
High school	10	6 (60.0)	4 (40.0)	**p=0.027**
University	10	6 (60.0)	4 (40.0)	
Awareness of the outcome of not following HT treatment				
Aware	107	82 (76.6)	25 (23.4)	x^2=6.175
Unaware	174	153 (87.9)	21 (12.1)	**p=0.013**
Ability to feel high BP				
Yes	229	185 (80.89	44 (19.2)	
No	28	28 (100.0)	0 (0.0)	x^2=7.966
Sometimes	24	22 (91.7)	2 (8.3)	**p=0.019**

*Line percentage is taken.
BP: Blood pressure, HT: Hypertension

statistical difference with respect to having BP under control (i.e. having follow-up). In this same study, the SBP and DBP values were found to be statistically different with regards to keeping BP under control; those participants who kept the BP under control had lower readings (26).

In a study conducted by Sozmen (27), 33% of the participants stated that they had a follow-up BP reading. This study showed that the variables associated with high levels of BP control were; being female, having a chronic disease and having a family member with cardiac disease. The reason for the differences in these studies could be due to the fact that participants came from different sociodemographic backgrounds.

A total of 57.3% of the elderly people in this study used a wrist digital sphygmomanometer, 24.8% used an elbow digital sphygmomanometer, and 17.9% used an aneroid sphygmomanometer to measure their BP. In addition, 83.6% of participants did not have their home devices calibrated. Of those who did get their devices calibrated, the average calibration frequency was every 1.6±1.23 years.

Within Turkey, approximately 46.6% of the hypertensive patients have BP measuring devices within their homes (28). In the study conducted by Erdem (29) focusing on individuals between 21 and 93 years of age, 46% stated that they used an automatic wrist sphygmomanometer, 19% used an automatic arm sphygmomanometer, 25% used an aneroid sphygmomanometer and 7% used a mercury sphygmomanometer. This study demonstrated that having a sphygmomanometer at home was associated with an increased level of education among the participants.

According to the study by Zahid et al. (9), 51.3% of participants owned a digital sphygmomanometer and 48.8% owned a manual sphygmomanometer. For those who owned a digital device, 70.0% preferred wearing it on their arm, 25.6% preferred wearing it on their wrist and 4.4% preferred wearing it in of another area. Although 61.7% the participants used a home sphygmomanometer, less than 25% performed HBPM regularly and more than half of the participants recalibrated their devices. These figures might be due to a lack of instruction for recalibrating a device and lack of knowledge regarding the importance of repeat measurements by healthcare professionals.

In recent guidelines from the European Society of HT (ESH) and European Society of Cardiology (ESC) regarding the management of arterial HT, it was stated that BP should be measured using sphygmomanometers that complied with standardised conditions and protocols (18). Although performing BP measurement directly through an arterial catheter is the most accurate method of measurement; it is often not possible to choose this method in routine applications as it is an invasive procedure (30). Therefore, three types of sphygmomanometers are currently used for routine BP measurement: mercury, aneroid and electronic. The literature emphasises the necessity of conducting the BP measurement with mercury sphygmomanometers, which are accepted to be the golden standard for measuring BP (12,30-32). However, they are less preferred due to the toxic consequences of mercury exposure and difficulties in their use and transportation. Today, hypertensive patients more commonly use aneroid sphygmomanometers or electronic sphygmomanometers for BP monitoring. If the aneroid sphygmomanometers are calibrated every six months, their results should be comparable to readings achieved by a mercury sphygmomanometer (12,29,30). On the other hand, the measurements with frequently preferred electronic devices were reported to be higher than the measurements with the mercury

devices. It was reported that the aneroid sphygmomanometers needed to be calibrated for correct measurement (32). The calibration of sphygmomanometers should be performed every 12 months and rechecked every 6 months for optimum readings (7). Uncalibrated sphygmomanometer error is responsible for between 20-28% of all undetected adult systolic and diastolic HT cases, as well as 15-31% of all falsely detected adult systolic and diastolic HT cases (33). In the study, the BP monitoring of most of the hypertensive elderly people with their home BP device highlights the importance of device calibration. The majority of the elderly participants did not have their devices calibrated, and those who did have them calibrated did not perform the recalibration as frequently as they should. A common excuse for this situation was that patients didn't have sufficient and correct information on the importance of BP measurement, follow-up and control.

Today, BP measurement and follow-up are carried out frequently in locations other than clinics, since many patients prefer to measure their BP at home or at the pharmacy. Performing follow-up BP readings at home is practical since it prevents the occupation of health organisations, helps patients maintain the highest level of compliance to their treatment regimen, avoids the white coat effect and meets the criteria of being a part of clinical practice (16,29,34).

Study Limitations

According to the study by Godwin et.al, home measurement did not make any difference with respect to BP control (35). In another study conducted in China, the follow-up BP measurements taken at home better reflected the real BP value. Therefore, home measurement was encouraged among patients (36). According to the 2008 Guide of the American Heart Association, the American Society of HT and the Preventive Cardiovascular Nurses Association (AHA/ASH/PCNA), 38% of the patients carried out BP follow-up at home during the year 2000. However, this value increased to 55% of patients in 2005. The percentage of patients who had a BP monitor increased from 49% to 64% between the years of 2000 and 2005 (29). In the study by Herpin et al. (37), 19% of the individuals over 35 years of age in France performed BP measurement at home, and this rate increased to 36% among those who received treatment.

Conclusion

Almost half of the elderly people were familiar with the normal ranges of BP and carried out the BP follow-up readings themselves. Four out of five participants did not have any training regarding the importance of BP measurements and follow-up. The majority of the elderly people in this study did not have a properly calibrated device for home measurement of BP.

Ethics

Ethics Committee Approval: "Clinical Research Ethics Committee Approval" (KAEK 2017/03) and "institution approval" were obtained for conducting the study and "informed consent form" (in accordance with the Helsinki Declaration Criteria) was verbally declared to the voluntary participants.

Informed Consent: Written consent was not requested from the voluntary participants since it could reduce participation in the study.

Peer-review: Externally peer reviewed.

Authorship Contributions

Concept: F.G., Ç.Y., Design: F.G., Ç.Y., Data Collection or Processing: F.G., Analysis or Interpretation: Ç.Y., Literature Search: F.G., Ç.Y., Writing: F.G., Ç.Y.,

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