

Awareness, Treatment and Control Rates of Hypertensive Patients in Ankara

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ABSTRACT

Aim: It was aimed to evaluate the awareness levels of patients about hypertension, treatment and control rates.

Methods: The descriptive study included 203 patients between ages of 35–80 with a previous diagnosis of hypertension to the primary care outpatient clinic of Ankara Numune Training and Research Hospital in September 2011–January 2012. A 42-item questionnaire was used and 19 questions were used to determine the level of awareness among them. Nine measurements were in the office by the researcher and 12 measurements at home by the patient.

Results: 25.6% of the patients were males and 74.4% were females. The median age was 59 years (IQR=13). The section for scoring the awareness levels revealed following: 27.1% of patients were non-aware, 58.6% had a low level of awareness and 14.3% had a high level of awareness. 72.9% of the patients were aware, 93.1% were taking antihypertensive treatment, while 42.4% measured blood pressures both at home and at office are under control. Awareness level is related to diet, exercise, education, salt usage, blood pressure measurement frequency, doctor referral frequency, education and knowledge level about hypertension, blood pressure monitoring branch, antihypertensive treatment status, hypertension duration, number of antihypertensive drugs and regular usage rates; but hypertension control was only associated with salt use, antihypertensive treatment and number of antihypertensive drugs.

Conclusion: Hypertension is a common problem in our country and as we have seen in our studies, awareness rates are insufficient. Although the treatment rates are high, the control rates are not sufficient. This suggests that patients' compliance with treatment is not at the desired level. The most important thing to do in this regard is to raise awareness by increasing public awareness about hypertension. In this respect, primary care physicians have a great responsibility.

Keywords: awareness, blood pressure, antihypertensive agents, primary care

Ankara'daki Hipertansiyon Hastalarının Farkındalık, Tedavi ve Kontrol Oranları

ÖZ

Amaç: Çalışmamızda hastaların hipertansiyon konusunda farkındalık düzeyleri, tedavi ve kontrol oranlarının değerlendirilmesi amaçlanmıştır.

Yöntem: Bu çalışmaya Kasım 2011-Ocak 2012 tarihleri arasında Ankara Numune Eğitim ve Araştırma Hastanesi Aile Hekimliği polikliniğine başvuran ve yaşları 35-80 arasında değişen, daha önceden hipertansiyon tanısı alan toplam 203 hasta dahil edilmiştir. Kırk iki soruluk bir anket ve farkındalık düzeyini belirlemek için bunların arasından 19 soru kullanıldı. Poliklinikte araştırmacı tarafından 9 ölçüm, evde ise hastalar tarafından 12 kez kan basıncı ölçümü yapıldı.

Bulgular: Hastaların% 25,6'sı erkek ve % 74,4'ü kadın olmakla birlikte, ortalama yaş 59 (CAG = 13) idi. Farkındalık düzeylerinin skorlanması sonucunda hastaların %27,1'inin farkındalığının olmadığı, %58,6'sının farkındalık düzeyinin düşük ve % 14,3'ünün farkındalık düzeyinin yüksek olduğu saptandı. Çalışmamızda hastaların %72,9'unun farkındalığı mevcut, %93,1'i antihipertansif tedavi almakta, %42,4'ünün ise hem ofiste, hem evde ölçülen kan basınçları kontrol altındadır. Farkındalık düzeyi diyet, egzersiz, eğitim, tuz kullanımı, tansiyon ölçüm sıklığı, doktora başvuru sıklığı, hipertansiyon hakkında eğitim ve bilgi düzeyi, tansiyon takip branşı, antihipertansif tedavi alma durumu, hipertansiyon süresi, antihipertansif ilaç sayısı ve ilacı düzenli kullanım oranlarıyla ilişkili bulunmuş, ancak hipertansiyon kontrolü sadece tuz kullanımı, antihipertansif tedavi alma ve antihipertansif ilaç sayısı ile ilişkilendirilmiştir.

Sonuç: Hipertansiyon ülkemizde sık görülen bir sorun olup çalışmamızda da görüldüğü üzere farkındalık oranları yetersizdir. Tedavi oranlarının yüksek olmasına karşılık kontrol oranları yeterli düzeyde değildir. Bu da hastaların tedaviye uyumlarının istenilen seviyede olmadığını göstermektedir. Bu konuda yapılması gereken en önemli şey, hipertansiyon konusunda toplumsal bilincin artırılması yolu ile farkındalığın artırılmasıdır. Bu hususta birinci basamak hekimlerine büyük görev düşmektedir.

Anahtar kelimeler: farkındalık, kan basıncı, antihipertansif ajanlar, birinci basamak

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Introduction

High blood pressure is a very important cardiovascular risk factor, and antihypertensive therapy is known to decrease the cardiovascular events to an important extent (1). The main cause of morbidity and mortality in the world is known to be cardiovascular diseases (2). Hypertension is identified as the major risk factor for myocardial infarction, stroke, heart failure and end-stage renal failure (3,4). 26.4% of the world's adult population in 2000 (972 million), is affected from hypertension, and this ratio is predicted to rise to 29.2% in 2025 (1.56 billion) (5).

Serious decrease in adverse events is observed with appropriate treatment and control of hypertension (6). There is a huge variation in control rates between countries. Japan and the United States's control rates are 58% and 53%, which puts them in the best position in the world, whereas Western Europe's control rate is in the range of 16-29%, UK having a 29% rate and Eastern Europe as low as 5-6%. Despite all the efforts towards hypertension awareness and treatment, control rates are still low (1). The situation in terms of controlling in Turkey is not heartwarming at all. Potential causes that have previously been discussed were lack of awareness, lack of appropriate regulation of treatment, non-compliance of the patients or lack of long term follow-up. According to PATENT -a nationwide study for hypertension in Turkey- only 40.7% of the patients were aware of their hypertension (HT), 31.1 % received a treatment and 8.1% were under control (7). An update of the study as PATENT 2 (2012) revealed ratios of 55.1%, 47.5% and 29.1% respectively. Within 9 years there was a big improvement but still did not reach a satisfactory level (8). Even among the patients who receive treatment the control rate is 20.7%; which actually means that 4 in 5 of the hypertensive patients in Turkey are still facing high cardiovascular risk, despite receiving a treatment for their condition. Other studies also give low control rates as 6-18% (9,10).

The purpose of this study was to measure the awareness level and to explore the associated factors for their low treatment and control rates of hypertensive patients admitting to primary care

services of a training and research hospital. Our secondary aim was to complement and fill in the gaps of knowledge from national studies on this aspect.

Methods

Ethics committee approval number 241 dated 28.09.2011 was obtained from Ankara Numune Education and Research Hospital. We conducted this descriptive study with the patients between ages of 35–80, who admitted with a diagnosis of hypertension to the primary care outpatient clinic of Training and Research Hospital in September 2011-January 2012. All patients with a previous diagnosis of hypertension in the defined age range were invited for the study. 203 patients included in the study. The study involved a questionnaire, some measurements by the researcher and an intensive protocol for blood pressure (BP) measurement. Written consent was received from each patient.

The questionnaire consists of 42 questions and was prepared by a team of researchers including a nephrologist and 2 family physicians, based on a broad literature review of existing questionnaires, but with additional 19 questions to further explore areas that were not previously covered, such as the degree of the awareness level. For the sake of understanding the strength of awareness levels of the patients, this section was divided into three groups, as A, B and C. Group A revealed a degree of very strong awareness, B is strong and C is a weaker degree. For group A, the maximum point was 6 whereas minimum was -2. For Group B the highest was 5, the lowest score was -2 and for Group C highest was 3, the lowest was -2 points (Table 1). As an overall assessment the highest score to be received was 100, whereas the lowest was -15. The patients whose scores are between 0-49 were considered as unaware, 50-74 were low level of awareness, 75-100 points were classified as the high level of awareness.

The questionnaire was followed by measurements of height, weight, waist circumference by the researcher and body mass index (BMI) was calculated. Height and waist circumference were measured with a tape measure, and weight with a platform scale.

Table 1: The strength of awareness levels

Group A	Score max/min	Group B	Score max/min	Group C	Score max/min
1 Frequency of admission	6↔-2	Dietary advice	5↔-2	Hiking time	3↔-2
2 The branche of blood pressure follow-up	6↔-2	Diet is effective for health care	5↔-2	Habit status	3↔-2
3 Training about HT	6↔-2	Consumption of salt	5↔-2	Use of cigarette, alcohol and drug	3↔-2
4 Duration of being hypertensive	6↔-2	Frequency of salt consumption	5↔-2	Doing sports	3↔-2
5 Rate of hypertension drug usage	6↔-2	The frequency of blood pressure measurements	5↔-2	Gymnastics, swimming, jogging and skiing	3↔-2
6 Knowledge of hypertension drug name	6↔-2	The person who put the diagnosis of hypertension	5↔-2	Hiking, football and basketball	3↔-2
7 Regular usage of drug	6↔-2	Sufficient level of knowledge on HT	5↔-2		
8		Aware of the most recently measured blood pressure	5↔-2		

Finally the patients went through an intensive blood pressure measurement protocol. The patients' blood pressure were measured with an OMRON 705IT (HEM-759-E, Omron Corporation, Kyoto, Japan) brand sphygmomanometer validated according to the British Hypertension Society protocol for Blood Pressure Monitoring and International Protocol of the European Society of Hypertension (11). The patient was invited to the office three consecutive days. Each day three measurements were taken with a 10 minutes interval. Each measurement was recorded in a follow-up card. The patient then received the measurement tool and was asked to measure self-blood pressure for 3 consecutive days for 4 times a day and record it to the follow-up card. This gave us 9 measurements in the office by the researcher and 12 measurements at home by the patient. The mean value for blood pressure values was taken for further comments. The patients who were under antihypertensive treatment and whose BP measurements were $\geq 130/85$ mmHg at home and $\geq 140/90$ mmHg in the office were considered not to be under control.

Normal distribution of the variables have been examined by the Shapiro-Wilk test and graphically, and it was observed that none complied with a normal distribution. Median (IQR- interquartile range) was

used in the representation of descriptive statistics for continuous variables (systolic and diastolic blood pressure, survey points, etc.). In the representation of categorical variables numbers and percentages were used along with cross tables. Kruskal-Wallis non-parametric analysis of variance was used for comparison of continuous variables according to the level of awareness. Where a significant difference is observed, Mann-Whitney test with Bonferroni-corrected and post-hoc pairwise comparisons were made to identify which group caused the difference. The relation between level of awareness and categorical variables were determined with Chi-square or maximum likelihood ratio chi-square (likelihood ratio). MS-Excel 2003 and SPSS for Win. Ver. 16.0 (SPSS Inc., Chicago, III., USA) were used for statistical analysis and calculations. P value of <0.05 was accepted as indicative of significant differences in all statistical decisions, except where bonferroni corrections were made.

Results

Our study was conducted on 203 hypertensive patients; 25.6% of the patients were males (n=52) and 74.4% were females (n=151). Range of age was 35 to 80 and the median age was 59 years (IQR = 13). The study findings are based on the three steps we have

used in methods: The questionnaire, other measurements and the intensive blood pressure measurement protocol. Findings for each are presented below:

Fifty-nine point one percent of the patients were aware of the most recently measured blood pressure while 93.1% took a medication for hypertension. While 75.9% of patients were using one drug for the treatment, 68% did not know the name of the drug. 43.1% of patients were using angiotensin receptor blocker + diuretic combination. 83.3% of patients were using drugs regularly, 53.2% expressed that they use an alternative therapy besides the drug. 22.2% of patients using alternative methods were using lemon and lemon juice. Patients' most commonly used alternative method was the use of garlic after lemon and its ratio is 13.3%. 61.1% of patients thought that their blood pressure is under control.

The section for scoring the awareness levels:

Twenty-seven point one percent of patients were non-aware, 58.6% had a low level of awareness and 14.3% had a high level of awareness. Relationship between awareness level and gender was examined. 27.8% of non-aware patients, 59.6% of low-aware patients and 19.2% of high aware patients were females. Level of awareness versus age, gender, BMI, smoking and control did not reveal any significant difference ($p=0.585$, $p=0.495$, $p=0.909$, $p=0.447$, $p=0.796$ respectively).

Regular exercise, diet, reduced salt use, increased frequency of BP measurement, increased frequency of admissions to physician, training about HT, have sufficient level of knowledge on HT, rate of HT drug usage, decreased number of HT drug, regular medication, knowledge of HT drug name, duration of being hypertensive increase level of awareness and

statistically significant ($p<0.05$).

No statistically significant difference was found in the comparison of treatment status with demographic characteristics ($p>0.05$).

Patients' waist circumference ranged between 62-131 cm, the median 95.0 (IQR = 15.0) cm. 55.7% of patients' BMI was 30.0 kg/m² and over and these were evaluated as obese. The median BMI was 30.8 (IQR = 6.6) kg/m².

Findings from intensive blood pressure measurement protocol:

The intensive protocol gave us 9 measurements in the office by the researcher and 12 measurements at home by the patient. A total of 21 BP measurement was made. The mean value for blood pressure values was taken for further comments. Office systolic blood pressure (SBP) mean is 135 ± 13.645 and office diastolic blood pressure (DBP) mean is 82.10 ± 7.680 . Home SBP mean is 130.59 ± 12.339 and home DBP mean is 79.66 ± 8.074 and these measurements were lower than clinical means. Office-home control rate difference was not statistically significant ($p<0.001$).

If we analyse the sample at an individual level, 42.4% ($n=86$) of all patients were under control according to both home and office measurements. Ten point eight percent ($n=22$) of all were not under control according to both home and office measurements. The patients with controlled values in both home and office measures have significantly higher awareness than the patients with uncontrolled values in both measures ($\chi^2=18.136$; $p<0.001$). Here is a statistically significant relation between salt consumption and office DBP ($p=0.020$). The relation between being under hypertensive treatment and controlled home DBP is also statistically significant ($p=0.045$).

Table 2. Control status according to the level of awareness

	Office SBP control		Office DBP control		Home SBP control		Home DBP control	
	Control	No control	Control	No control	Control	No control	Control	No control
Non-aware	56.4	43.6	85.5	14.5	40	60	70.9	29.1
Low awareness	61.3	38.7	86.6	13.4	49.6	50.4	68.1	31.9
High awareness	62.1	37.9	82.8	17.2	55.2	44.8	69	31

Discussion

It is important to detect and control HT in the early stages to prevent complications of hypertension. The majority of hypertensive patients are diagnosed in the late period of the disease, as HT is often an asymptomatic disease.

Awareness rates of HT are quite different in various countries of the world and this situation has been associated with socio-economic status, cultural structure and health care system (12). In Turkey the rate of awareness of HT was reported as 56.9-77.4% in different studies targeting different settings in the country (13-16). Our study results are similar with the work also carried out in İzmir (16). Early diagnosis of HT is very important to prevent vascular damage in early period of disease. Otherwise HT without control and treatment causes coronary heart disease, stroke and kidney dysfunction.

Although lack of awareness of HT isn't a risk factor for heart disease and stroke, awareness of HT is an important determinant to access successful treatment and control. Awareness is necessary and important to improve the health status of individuals and also it's essential for control of BP. In our study, patients divided into three groups; without awareness, low awareness and high awareness via questionnaire which evaluates degree of awareness. In literature various studies evaluates only if patients are aware or not. In these studies; health professionals asked to patients if they were informed about their disease (17-21). However in our study, patients who were previously diagnosed as hypertensive and were asked specific questions and answers were pointed via questionnaire. In our study, awareness rate is 72.9% if high - aware and low aware patients are assessed together in a group. This rate is similar to other studies in the world, but differ from such studies in our country. This difference can be caused because of different criteria while evaluating awareness. In literature, risk factors of high-awareness are; female gender, obesity, elderly, high educational levels, high income levels, non-smoker, exercise, diet, frequency of BP measurements, consumption of salt, frequency of physician control, being trainee of HT educations and having enough

information about HT, duration of being hypertensive (22-25). Our study is consistent with these studies' results.

In our study 93.1% of patients had been receiving antihypertensive treatment (n=189). In literature; this rate was evaluated by Jackson Heart Study (17), Howard et al. (20), Oliveria et al. (26), Abacı et al in TURKSAHA Study (18), PURE Study (22) and this rate was stated as respectively; 90.2%, 88.8%, 91% , 93.3%, 87.5%. These rates are similar to our study. With regard to results of PatenT and HinT studies; HT is extremely common in Turkey but treatment and also control of HT isn't sufficient. Hypertension control rates in all hypertensive patients (with and without treatment) were stated as 8% in PatenT Study in 2003, 28.7% in PatenT 2 Study in 2012 and 14% in HinT Study in 2007. Control rates in patients with antihypertensive treatment were stated as 20% in PatenT 2003, 53.9% in PatenT 2012 and 27% in HinT in 2007 (7,8,27) (Table 3).

Table 3. Ratio of awareness, treatment and control in Turkey

	Awareness	Treatment	Control (all patients)	Control (with treatment)
PATENT study (2003)	40	31	8	20
PATENT 2 study (2012)	54.7	47.5	28.7	53.9
HinT study (2007)	-	-	14	27
Our study (2012)	72.9	93.1	-	42.4

Recommendations of lifestyle changes are not enough and not applied adequately by patients. Prevention of HT, for early diagnosis and control in community-based strategies need to be developed as quickly as possible (28).

In our study, 42.4% of control rate (n=86) was determined. The other studies' control rates were 32.5%, 30% and 26% (21,29,30). Our results are higher and quite different from other studies but one study's control rate (44.6%) was similar to our study (31). The reason of difference could be based on difference in measurement techniques. In literature, researchers often use only office or only home

measurements and they did not have sufficient number of measurements. They also did not use combined measurements.

In our study, we observed that the treatment rates of the patients' have increased in parallel to their awareness levels and this relation is found to be statistically significant ($p=0.001$). We might assume that the patients who are more aware of their disease have more willingness to follow up their condition and are more conscious about the importance of treatment. Looking at the control rate of patients who are under treatment, in all groups under analysis the proportion of patients with uncontrolled blood pressure despite treatment is higher than the patients with controlled BP. Statistically, though, there is significant correlation in only between DBP measured at home and receiving treatment. Low compliance to treatment might lower control rates, but early screening and use of patient guidelines advocating regular treatment might be useful to increase compliance to treatment.

There are a number of studies on this topic in our country (7,8,13-16). But our study differs from the others in some aspects. In our study, awareness is evaluated in a different way from other studies. To assess the awareness, we created a form of partnership with nephrology. Questions in measuring the level of awareness has been divided into three groups according to their degree of resourcefulness. In other studies awareness has not been evaluated as comprehensive as in our study (13-16). In our study, both home and office measurements are more frequent than the other studies, which was designed as an intensive protocol. Therefore the reliability of the control rate is higher.

Since 2011, a special emphasis has been placed on the reorganization and strengthening of primary health care for noncommunicable diseases, with the launch of

the nationwide family medicine program and the recent regulation in the public health system, resulting in increased awareness and control rates (8).

Study limitations:

The major limitation of our study is that it is done in only one primary care service organization of a hospital, which is in Ankara –an urban area- and with a limited number of patients. The findings might not be generalizable to rural areas, other cities or other settings. This patient group is a selected patient group which admits to the hospital so might have a higher awareness level than a potential population out there with no health service admissions. Despite its limitation, our study has a major strength that complements national studies, could also be improved to be a pilot for future wider inquiry. This study gives a detailed overview of different awareness levels which could guide us through identification of educational needs and modification of health services approach. Secondly it gives us results of an intensive blood pressure measurement which might also reflect actual control rates in this population.

Conclusion

Although hypertension is a common problem in our country, awareness rates are insufficient. The most important way to increase awareness is increasing social consciousness about hypertension. In this regard, primary care physicians have a major role. A family doctor has an invaluable role as a first contact point to increase awareness, to improve prevention, to manage the disease and to have a consultancy role in all the process including life style changes. An improved collaboration between levels of care and increased dialogue between primary care doctors, cardiologists and nephrologists will take management of HT further and decrease social and economic burden due to the disease.

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