

## EVALUATION OF THE REACHING TARGET VALUES IN PATIENTS WITH HYPERTENSION AND IMPORTANCE OF TENSION FOLLOW-UP CARDS

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### ABSTRACT

**Aim:** To detect the efficiency of the “tension follow-up cards”, which are used to follow tension, in achieving target values in the treatment of hypertension.

**Material and method:** The research planned as a multicenteral, noninterventional observe and follow-up. It was made in 15 different Family Health Care units in different 7 cities, in Turkey, between November 2011 and April 2012. Patients diagnosed as essential hypertension and who were already taking at least one antihypertensive medicine, who were above 18 years old, were informed about the study and accepted 529 patients were involved into the study. The patients involved were divided into two groups as “experimental group” and “control group”. The patients in the experimental group were given a tension follow up card while the control group were not. Both of the groups were given appointments for control at the end of the fourth week. For statistical analysis, chi-square test, t-test and multiple variable logistic regression analysis were used.

**Results:** Study was performed on 529 hypertensive patients; 247 (46.7%) were in the experimental, 282 (53.3%) were in the control group. In total; 332 patients (62.8%) were women and 197 patients (37.2%) were men. Mean age for the patients was  $58.15 \pm 10.68$  (min:32 max:90) and mean body mass index was  $30.76 \pm 5.18$  (min:18.31 max:52.07). No statistical difference was found between experimental and control groups for the beginning tension values, except for the first visit first systole measurement. After one month, all measurements were repeated. For all measurements in the second visit, tension values of the experimental group were statistically lower than the control group ( $p < 0.001$ ).

**Conclusion:** Patients who get treatment for hypertension but don't reach target blood pressure values constitutes high risk in the society. Data obtained from the study showed that; to control hypertension effectively, patients must be under control and must participate in the follow-up actively.

**Key words:** Family doctor, hypertension, follow-up card.

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### Introduction

Hypertension (HT) is an avoidable and controllable chronic disease which causes considerable mortality and morbidity because of its causing target organ damage. Considering its frequency within the realm and its cooccurrence with adherent disease and risk factors; HT is a crucial health problem in our country. Most of the hypertensive population are unaware of their hypertension and had no med-

ical treatment<sup>(1)</sup>. In addition to medical treatment for controlling the hypertension and its complications, treatment except from drugs and changing life style have an important role in order to reach the target values<sup>(2)</sup>.

It is stated in two important studies made in our country that HT prevalence is 33.7% and 31.8%<sup>(3,4)</sup>. On the other hand, it is noted that hypertension prevalence is getting higher in the developing countries in South Asia<sup>(5)</sup>.

In the internationally-valid resources, despite the differences in the situation of blood pressure under control, additional diseases and risk factors, 140 mmHg for systolic and 90 mmHg for diastolic are determined as the limit according to the measurements and the values under those are accepted as normal<sup>(6)</sup>. The target of the HT treatment is to prevent the organ damage which is possible in a long period and decrease the cardiovascular/renal morbidity and mortality<sup>(7)</sup>.

It is declared in the studies made in Turkey that the rate of taking treatment is 70% and the rate of the ones taking treatment of which blood pressure is taken under control is 20%<sup>(4)</sup>. In the studies, it is shown that the adaptance of the patients to the medicine is low and that results in inadequency of controlling blood pressure<sup>(8-15)</sup>. Diagnosing the patients with hypertension and starting antihypertensive treatment are not enough. The main aim must be reaching the target values of blood pressure. Antihypertensive treatment must be planned according to the patient, that is, it must be individualized<sup>(16)</sup>.

The most appropriate part where primary and secondary protections are applied is the first step for the hypertensive patients. Recommendation for changing life style such as making the patients give up somoking, struggle against obesity, decreasing salt consumption, managing diet, managing alcohol consumption and avoiding indolent life style can result in decrease for the hypertensive patients and even unnecessary for medicine treatment<sup>(17)</sup>.

In spite of the developed medical industry and effective medicine, the target point of HT treatment has not been able to be reached. In addition to recommendations for changing life style, following the patients regularly have an important role in the treatment as well.

The aim of the study is to observe the importance of following hypertensive patients who apply primary health care center in the process of reaching target values and to focus on the role of tension follow up cards which are given by the doctors to the patients in order to note down the measurements.

## Material and method

Study was performed in 15 Family Health Care Units which are in İstanbul, İzmir, Bursa, Trabzon, Ordu, Diyarbakır and Batman; as the first study planned by Vasco da Gama Movement

Turkey Research Team<sup>(18)</sup>. The team was chosen from volunteers. The target of the study, the features, the method, criteria for choosing the patients and working schedule were sent with an informative letter to the researchers. After the patients involved were informed about the study, they signed approval forms. The ethics committee approval for the study was taken from Tepecik Training and Research Hospital Ethics Committee on 12/10/2011 with the decision number 10.

The research planned as a multi-central, non-interventional observe and follow-up was made in Family Health Care units between November 2011 and April 2012. The patients diagnosed as essential hypertension and who were already taking at least one antihypertensive medicine, who were above 18 years old, were informed about the study and accepted patients were involved into the study. The ones who were diagnosed as secondary hypertension, the ones who left the research and the pregnant ones were excluded from the study. "Hypertension information level questionnaire" was prepared by the researchers in order to specify the patients' sociodemographic features, antihypertensive drug using features, diseases accompanying to hypertension, vital-physical findings and life styles by scanning the appropriate literature. The patients involved were divided into two groups as "experimental group" and "control group", but they were not told which group they were in. Providing randomization while choosing the patients, the first patient who applied was placed into experimental group and the second one was placed into control group. The groups were arranged in this way until the last patient.

In the study schedule, all of the patients were given "hypertension information level questionnaire" by the researchers in the first application. Afterwards, the patients in the experimental group were given "a tension follow up card" which is prepared for four weeks. They were asked to measure their tension with the same device and note the result down in their follow up cards. The patients in the control group were not given follow up cards. However, both of the groups were given appointments for control at the end of the fourth week.

The experimental group was reminded to bring their follow up cards with them. In the first application, tension arterial measurement were done with a device of which muff is in the appropriate length while the patients were sitting in a comfortable atmosphere, rested for five minutes and

their arms were in the same line with their hearts. At first, the measurements were done for both of the arms and higher value was saved. The next measurements were done from the arm which had given higher value. It was highly considered that the patients did not smoke or drink alcohol before the measurement. After five minutes, the second measurement was done and it was noted down. Besides, the height, weight and waist measurement of the patients were saved.

In the second application, the cards of the experimental group were taken back. Tension arterial measurements of the patients who came for the control were done appropriately within five minutes breaks.

During the statistical evaluation of the results, numerical variables were reported with average ± standard deviation and categoric variables were defined as percent (%). Chi-square test and t-test were used for comparisons between groups. The variables which were found meaningful in one-way analysis were taken to multiple variable logistic regression analysis. In the statistical evaluation, p<0.05 level was accepted as meaningful.

**Findings**

The research was made on 529 hypertensive patients; 247 (46.7%) of them were in the experimental group and 282 (53.3%) were in the control group. 135 (54.7%) of the patients were male and 112 (45.3%) were female in the experimental group. 197 patients (69.9%) of the control group were female and 85 (30.1%) of them were male. Total average age of the patients was 58.15±10.68 (min:32-max:90) and average body mass index was 30.76±5.18 (min:18.31-max:52.07). Average of the age, weight, height, waist measurements and body mass index of the patients were given in table 1.

	Experimental Group			Control Group			All patients		
	Min.	Max.	Av±SD	Min.	Max.	Av±SD	Min.	Max.	Av±SD
Age	33	90	58.04±10.45	32	89	58.24±10.89	32	90	58.15±10.68
Weight (kg)	42	120	82.26±12.49	50	150	80.69±13.70	42	150	81.42±13.16
Height (m)	1.44	1.87	1.63±0.08	1.45	1.87	1.62±0.08	1.44	1.87	1.62±0.08
BMI*	19.53	45.33	30.67±4.74	18.31	52.07	30.84±5.54	18.31	52.07	30.76±5.18
Waist (cm)	73	150	101.43±11.56	58	146	101.12±11.85	58	150	101.27±11.71

**Table 1:** Age and body measurements of the patients.

It was found that 83.7% of the patients were living in the urban area, 37.2% graduated from primary school, 51.6% have a monthly income

between 500 and 1000 TRY, 84.1% do not smoke, 35.3% have the diagnosis of HT for 1-5 years and 27.2% have this diagnosis for more than 10 years. The sociodemographic features of the experimental and control groups are given in Table 2.

	Experimental Group (n/%)	Control Group (n/%)	All patients (n/%)	
Living area	Rural	43 (17.4)	43 (15.2)	86 (16.3)
	Urban	204 (82.6)	239 (84.8)	443 (83.7)
Education level	Illiterate	33 (13.4)	77 (27.3)	110 (20.8)
	Literate	26 (10.5)	31 (11.0)	57 (10.8)
	Primary Sc.	95 (38.5)	102 (36.2)	197 (37.2)
	Secondary Sc.	21 (8.5)	25 (8.9)	46 (8.7)
	High Sc.	34 (13.8)	21 (7.4)	55 (10.4)
	University	38 (15.4)	26 (9.2)	64 (12.1)
Monthly income (TRY)	<500	33 (13.4)	49 (17.4)	82 (15.5)
	500-1000	113 (45.7)	160 (56.7)	273 (51.6)
	1000-2000	67 (27.1)	54 (19.1)	121 (22.9)
	>2000	34 (13.8)	19 (6.7)	53 (10.0)
Smoking	Yes	35 (14.2)	49 (17.4)	84 (15.9)
	No	212 (85.8)	233 (82.6)	445 (84.1)
Taking alcohol	Yes	32 (13.0)	29 (10.3)	62 (11.7)
	No	215 (87.0)	252 (89.4)	467 (88.3)
HT diagnosis (year)	<1	39 (15.8)	32 (11.3)	71 (13.4)
	5-Jan	73 (29.6)	114 (40.4)	187 (35.3)
	10-May	58 (23.5)	69 (24.5)	127 (24.0)
	>10	77 (31.2)	67 (23.8)	144 (27.0)

**Table 2:** Sociodemographic data.

Sixtysix percent of the experimental group and 74.5% of the control group emphasized that they don't know the reason of their illnesses. Patients were given the tension values as multiple choice and asked which one belonged to the hypertensive person (14<sup>th</sup> question of the questionnaire). It was seen that 8.1% of the experimental group and 8.3% of the control group don't know the hypertensive values. Related with the patients' life styles; 17.0% of the experimental group and 1.5% of the control group said that they don't add any salt into their meals. 40% of the experimental group and 47.2% of the control group declared that they never had a walk. 27.1% of the experimental group and 27.0% of the control group said that they chose low oily and salty meals when they ate out.

On the other hand; 18.2% of the experimental group and 14.9% of the control group did not care about it. 9.3% of the experimental group and 9.9 % of the control group declared that they preferred driving even for the closest destination. 15.8% of the experimental group and 14.5% of the control group said that they always used the elevator if there was one. 9.7% of the experimental group and 11.3% of the control group told that they were panning to give up smoking.

Questioning the hypertensive patients considering their additional diseases, it was seen that 19.4% had diabetes mellitus (DM), 14.2% had coronary arteries disease (CAD), 0.4% had cerebrovascular disease (CVD) and 13.4% had a depression in the experimental group. With regard to the control group; it was seen that 21.3% had DM, 12.1% had CAD, 3.5% had CVD and 9.9% had a depression. Examining all of the patients; 20.4% had DM, 13.0% had CAD, 2.1% had CVD, 11.5% had a depression. 31.9% of the patients told that they had dyslipidemia. Whereas 31.6% of the patients in the experimental group and 32.3% of the patients in the control group conveyed that their cholestrol levels were high; 5.7% of the former and 11.3 % of the latter told that they never had a check of cholestrol. It was also found that 11.3% of the experiemental group and 14.5% of the control group never controlled their eyes.

In the experimental group, 50.2% of the patients and in the control group, 37.2% of the patients told that they had a regular control in the Family Health Care Units. Considering all of the patients; it was seen that 10.0% of them did not have a regular control. 81.4% of the experimental group and 74.5% of the control group told that they took their drugs regularly but 30.4% of the experimental group 45.0% of the control group told that they did not know the name of their drugs. 50.2% of the patients in the experimental group told that they took one hypertensive medicine and 1.2% of them took four and more. 64.4% of the experimental group and 67.4% of the control group told that they don't know the side effects of the drug they took.

Except from the first systolic measurement in the first application; there could not be found any statistically meaningful difference between the starting tension values of the experimental group and control group. However; after a month, there could be found some statistically meaningful differences between the experimental and control group

when their tension values were measured. In the whole measurements in the second application, the tension values of the experimental group were lower than the control group in a statistically meaningful way. This observation tension follow up table submits proofs that the application have positive effects (Table 3) (t-test).

		1 <sup>st</sup> Visit (mmHg±SD)			2 <sup>nd</sup> Visit (mmHg±SD)		
		Experimental	Control	p	Experimental	Control	p
1 <sup>st</sup> measurement	Systole	139.72±18.83	136.22±17.32	0.026	129.37±13.35	132.65±12.47	0.004
	Diastole	84.24±10.94	83.87±10.57	0.693	79.29±8.79	82.16±8.76	0.001
2 <sup>nd</sup> measurement	Systole	134.45±17.73	132.62±14.59	0.202	125.52±11.95	129.51±11.89	0.001
	Diastole	81.93±10.51	81.54±9.85	0.659	77.60±7.93	80.75±8.47	0.001

**Table 3:** The meeting moment of the experimental and control groups (the first visit) and comparison of the tension arterial values after a month.

After first HT levels, demographic and physical data of the patients were checked in multiple regression equation, it was found that; first HT diastole measurement of the experimental group was -2.38 mm/hg (p=0.003), second diastole measurement -2.34 mm/hg (p=0.003), first systole measurement -4.46 mm/hg (p<0.001), second systole measurement -4.46 mm/hg (p=0.001) lower than the control group.

After a month, related with the hypertension measurements, some statistically meaningful changes were found between the experimental and control groups. In the whole measurements in the second application, hypertension values of the experimental group were lower than the control group in a statistically meaningful way. This outcome was found after beginning hypertension levels of the patients were taken under control in the multiple variant regression analysis. In addition to the beginning hypertension, the demographic and physical examination data of the patients were added into the regression analysis. The data includes the gender of the patients, their living area (urban or rural), cholestrol levels and the fact that how long they had been suffering from HT. Only in three of the four seperate multiple regression analysis done with independent variables, the patients being in the experimental group resulted in statistically meaningful change. Only in the multiple regression analysis for the second diastole measurement, a negative relation was found between the patients' BMI and HT levels (-0.18, p<0.05). This change shows that every one degree increase in BMI causes -0.18 mmHg decrease in the second diastole

measurement of HT. However, considering the extent of this change, it was seen that it is not meaningful practically. The results of these regression analysis including four variables present strong proofs for the fact that hypertension follow up table had statistically meaningful positive effects in the experimental group.

## Discussion

Although hypertension causes mortality and morbidity considerably, it has been a very common problem in our country as well. In Turkish hypertension prevalence studies, it is stated that one person in every three adult has hypertension<sup>(4)</sup>. Moreover, in TURDEP studies performed in our country, it is stated that hypertension has been affecting more than 29% of the adult population<sup>(19)</sup>. It is known that hypertension is seen more often in women and the prevalence increases as the age goes up<sup>(2,4,13,14,17,20,21)</sup>. In this study which was done with 529 patients, it was detected that the age average is  $58.15 \pm 10.68$  and majority of the patients were female. In Turkish society, it was found that the obesity prevalence is ( $BMI \geq 30$  kg/m<sup>2</sup>) 24.9% and BMI average is 29.8 kg/m<sup>2</sup> in hypertensive people<sup>(4)</sup>. In this study, BMI average is  $30.76 \pm 5.18$  and it is parallel to the literature.

In the study made by Çöl and his colleagues, the rate of the patients who had HT for more than 10 years was found as 47%<sup>(2)</sup>. In this study, this rate was found as 27.2%. Cingil and his colleagues detected the hypertension duration as approximately 6.3 years<sup>(21)</sup>. This situation shows that the patients will be under control and take treatment for hypertension for a long time after the diagnosis. All of the patients who came to the clinic must be examined in the light of this point of view and a follow up programme must be prepared according to that.

In the studies, the rate of the smoking hypertensive patients are between 20% and 50%<sup>(13,20)</sup>. In this study, the rate of smoking was found as 15.9%. Altun and his colleagues specify that 8.5% of the individuals involved in their studies have diabetes; total cholesterol levels of the hypertensive individuals were found high<sup>(4)</sup>. In the study made by Aydoğan and his colleagues, diabetes was found in the rate of 34.6% and dyslipidemia in the rate of 48.1%<sup>(22)</sup>. In this study, the patients who declared that they had diabetes is 20.4% and the ones who declared that they had dyslipidemia is 31.9%. The high mortality and morbidity resulted from hyper-

tension organ damage will get much higher with the addition of smoking and chronic illnesses. The patients must be encouraged to give up smoking and their chronic illnesses must be taken under control. In a study, it is stated that 17% of the patients applied to the family health care units and 28.8% applied to state hospitals<sup>(13)</sup>.

In this study, 50.2% of the patients in the experimental group and 37.2% of the patients in the control group told that they had their follow ups done in the family health care units. The patients must be directed to have their follow ups done in the first step health facilities. We think that it will not only help to decrease the density in the second and third steps of the health facilities but also will help the patients adapt to the treatment in the first step with a holistic paradigm.

In the study of Cingil and his colleagues, 71.7% of the patients said that they would join if any education was given in the family health care units and 75.8% of them said that they had already been informed about the medicine. The 74.8% of the patients who had been informed by the health staff told that they used their medicine regularly<sup>(21)</sup>. In this study, it was aimed to make the patients gain awareness about their illnesses. Especially, it was provided for the patients in the experimental group to have an active role in their treatment and follow ups with the help of follow up cards. Even the patients' being asked to come for a control had a positive effect on their illnesses. In all of the applications, patients must be informed about the medicine they use.

"National Health and Nutrition Research" in the United States of America shows that blood pressure is lower than 140/90 mmHg in only 34% of the hypertensive patients. This rate is much lower in developing countries<sup>(23)</sup>. In this study made in Turkey; despite the patients' taking medicine and the blood pressure control is closed to the rate in European countries, it is still not enough (Altun and his colleagues 20.7%, Aydoğan and his colleagues 26.9%, Abacı and his colleagues 24.1%)<sup>(4,22,24)</sup>. In treatment deficiency, one of the important points is not recommending lifestyle change enough and as a result of it, the fact that the patients do not obey this recommendation. Another factor is the fact that patients are not involved in treatment. Patients must be informed about their illnesses and they should take part in the processes of illness and treatment actively. Of course, all of the doctors involved in these treatments must be taken into training about

hypertension regularly and updated treatment guidances must be provided for them.

In Turkish hypertension prevalence study, it is thought that the most important factors of the low control rate in the patients who receive medical treatment are monotherapy application (68.4%) and medicine inadaptance.

In this study, 74.2% of the patients told that they used their medicine regularly<sup>(4)</sup>. In the study of Göçgeldi and his colleagues, it was detected that the rate of the patients who took monotherapy is 48.3%<sup>(20)</sup> and this rate was detected as 51.0% in this study. Taking medicine regularly in order to prevent hypertension and accompanying cardiovascular risks are important factors. Although it is known that adaptation to hypertensive medical treatment is essential, bad adaptation to antihypertensive treatment is still common<sup>(9)</sup>. Whereas 77.7% of the patients told that they took their medicine regularly, this rate is 28.9% in Cingil study. In the light of these, it is understood that only treatment is not enough to reach the target values. Hence, the importance of life style change, patients's being controlled regularly and patients' being active in treatment and follow ups was put on the agenda. The medical treatment must be started in the lowest dose and for long term effectiveness, taking medicine once a day should be preferred<sup>(25)</sup>.

In this study, patients were performed a multiple choice test and it was found that 12.1% of the patients don't know the hypertensive value. It is an indicator that patients do not know enough about their illnesses and they need to be informed. In a study searching for training programmes of measuring blood pressure at home and results of application, for high blood pressure measurement, it was proved that the individuals who attended individual or group training programmes have more theoretical and practical knowledge than the ones who try to learn on their owns<sup>(26)</sup>.

Most of the patients have basic information about hypertension but it is still necessary to deal with this topic. Information and hypertension follow up cards are influential on the patients' information like booklets<sup>(27)</sup>. According to a study made in North Caroline, most of the patients said that they had their blood pressure measured just because their doctors asked. It was found out that most of these patients did not even show the results to their doctors<sup>(28)</sup>. It was detected in our study that the patients' being followed in the process treatment had a positive effect on tension arterial values. It

was seen that the tension values of the experimental group who were given follow up cards and told to note down all of the measurements in a month and apply to the clinic for a control after a month were lower meaningfully. If the follow up cards which are given to the patients whose treatment is being planned or whose treatment is still going on are used according to their aims and if they are followed seriously, we believe that more effective blood pressure control will be possible for hypertensive patients.

As a result, our study emphasizes the importance of following up the patients and the patients' being active in the treatment process again. In order to get more meaningful results in our country and worldwide, new studies on a much larger scale about life style change, following up patients and patients' being active in the treatment process are needed.

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