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An Assessment of the Awareness of Lifestyle Changes in Patients with Hypertension

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Abstract

Aim: In this study it was aimed to evaluate the awareness of lifestyle changes (LC) of patients with hypertension (HT).

Method: The study included patients who were diagnosed with HT in the cardiology and family medicine polyclinics between September- December 2013. A questionnaire consisted of 63 items in 4 sections was used to assess socio-demographic properties, cardiovascular risk factor analysis, LC awareness, effects of HT.

Results: A total of 301 patients with a mean age of 59.6 ± 10.9 years were included. The rate of blood pressure (BP) under control was 48%. Awareness rates of 6 basic LC were diet at 18%, alcohol at 48%, cigarette smoking at 50%, exercise at 45%, obesity at 65%, salt restriction at 91%. From the total patient group 44% were aware of 4 or more LC, frequency of LC awareness was greater in males (54%) than females (40%) (p=0.02). LC awareness was seen not to affect BP control (p=0.4). The patients were found to have a high level of awareness about target organ damage in HT. While patients were aware of the necessity of a salt-free diet, they did not know how much salt should be restricted each day and while they were aware that they should exercise, they did not know what kind of exercise or for what duration. Patients who applied 4 or more of LC were determined at a rate of 71%. No significant difference was determined in respect of the application of LC between those who were aware or not aware of 4 or more LC.

Conclusion: The results of this study have shown the necessity for patients to be as willing to implement LC as to be aware of them and for healthcare personnel to give more detailed explanations when recommending LC to patients.

Keywords: Hypertension; Life style changes; Awareness

Introduction

Hypertension (HT) is the most widely known correctable risk factor for stroke, congestive heart disease, myocardial infarct, peripheral vascular disease and end-stage renal failure and cardiovascular disease. According to the PatenT2 study (2012), the prevalence of HT in Turkey was reported as 30.3%, awareness of HT 5.1%, those taking treatment 47.5%, blood pressure under control 29.1% and the rate of blood pressure under control in those taking anti-hypertensive treatment 54.1% [1]. In the EURIKA multi-national, cross-sectional study of 17 European countries including Turkey, the rate of HT patients taking treatment with blood pressure under control was approximately 40% in several countries and similarly, the rate in Turkey was reported as 40.3% [2].

A low level of awareness has as much of an effect on the low rate of blood pressure under control as patients not receiving effective and adequate treatment and not taking medications regularly. Other important points are that there are not sufficient recommendations for lifestyle changes (LC) and these are not sufficiently implemented by patients. It is difficult to bring blood pressure under control with medication only, without making LC. The implementation of LC by everyone is of critical importance in preventing HT and cannot be ignored by HT patients [3].

With the use of antihypertensive medication, to prevent or delay HT and to reduce the risk of cardiovascular disease, the European Society of Cardiology (ESC) guidelines recommends these lifestyle changes [4]:

1. 30-45 mins of moderate intensity aerobic physical activity, 4-7 days per week,

2. A diet rich in fruit and vegetables and low in saturated fat, cholesterol and total fat (the most popular diet is the Dietary Approaches to Stop Hypertension –DASH),

3. Reducing daily sodium intake to <100 mmol (2.3 gr sodium or 6 gr sodium chloride)

4. Restricting alcohol intake to no more than 2 glasses/day for males and 1 glass/day for females and the underweight,

5. Losing weight and maintaining a normal body weight (Body Mass Index – BMI- 18.5-24.9 kg/m2),

6. Stopping smoking to reduce the general cardiovascular risk.

With the implementation of at least 1 of these 6 basic LC combined with antihypertensive medication, it would seem to be possible to reduce blood pressure [5,6].

The aim of this study was to investigate the awareness and implementation of LC in HT patients and to evaluate the effectiveness of these changes on blood pressure control.

Materials and Method

This cross-sectional, descriptive study was conducted at the Cardiology and Family Medicine polyclinics of Kecioren Training and Research Hospital between September and December 2013. The patients included were being monitored in the clinics for a diagnosis of HT (those taking antihypertensive medication) or were newly-diagnosed (at least 2 measurements at different times of mean systolic blood pressure 140 mmHg and/or diastolic blood pressure

90 mmHg or above). Informed consent was obtained from all the study participants. Approval for the study was granted by the Ethics Committee of Keçiören Training and Research Hospital (decision no: B.10.4.ISM.4.06.68.49).

Measurements were taken of the height, weight, waist circumference, pulse and blood pressure of each patient. Body weight was measured on electronic scales and height with a standometer. BMI was calculated as weight/height [kg/m^2]. Blood pressure was measured with the Riva-Rocci method before and after the questionnaire was applied and the mean value of the two measurements was recorded. Pulse measurement was made by counting for 1 minute from the radial artery. Waist circumference was measured with a tape measure around the abdomen parallel to the floor at the midpoint between the lowest rib and the upper iliac spine with the patient taking a deep breath without pulling the abdomen in. The tape measure was seen to approximately pass the umbilicus. Waist circumference of >88 cm in females and >102 cm in males was accepted as abdominal obesity. The World Health Organisation (WHO) criteria were used for the classification of obesity according to the BMI values [7]. These are BMI <18.5 is accepted as underweight, 18.5-24.9 normal weight, 25-29.9 overweight and >30 obese. The target blood pressure values in HT were systolic <140 mmHg and diastolic <90 mmHg as stated in the Eighth Joint National Committee (JNC8) guidelines [8].

A questionnaire comprising 63 items in 4 sections was applied in face-to-face interviews to obtain sociodemographic information, analyse the cardiovascular risk factors and to evaluate the level of awareness and implementation of LC and the level of knowledge of the damage of HT. On the form, the implementation of 6 LC were defined corresponding to the 6 basic LC. Questions were asked as to whether or not fruit and vegetables were eaten each day to see whether or not the DASH diet was implemented, whether a minimum of 2.5 hours per week regular exercise was undertaken to maintain ideal weight, whether or not the patient conformed to ideal waist measurements based on the NCEP-ATPIII 2001 and Turkey Endocrinology and Metabolism Association 2005 criteria of <88cm for females and <102cm for males, whether or not a salt-free diet was followed, and whether or not the patient smoked or drank alcohol [9,10]. To evaluate awareness of target organ damage, all participants were questioned about the relationship of HT with cerebrovascular events, congestive heart failure, kidney failure and eye involvement and male participants were questioned about the relationship of HT with erectile dysfunction.

Statistical Analysis

The study data were evaluated with the SPSS (Statistical Package for Social Sciences) 15.0 statistical program. Numerical variables were stated as mean ± standard deviation with normal distribution and as median (minimum-maximum) when distribution was not normal. Categorical variables were stated as percentage (%). To compare categorical variables and define relationships, the Pearson Chi Square test was applied. In the comparison of the mean of numerical variables with normal distribution, the Mann Whitney U-test was applied, and in the comparison of multiple means, the Tukey test. The effects of independent variables on dependent variables were determined by logistic regression analysis A value of p<0.05 was accepted as statistically significant.

Results

A total of 301 patients were evaluated in the study, comprisng 208 (69%) females and 93 (31%) males. HT was determined as present for

less than 10 years in 146 (49%) patients and as a new diagnosis in 17 (6%). The age, systolic and diastolic blood pressure values, pulse, height, weight and waist circumference of the patients according to gender are shown in Table 1. The obesity rate in females (64%) was greater than in males (40%) (p=0.001). Abdominal obesity was determined as 79% in females and 37% in males and the difference was statistically significant (p=0.008). There was no difference between the genders in the other parameters.

According to the JNC 8 guidelines [8] of target blood pressure values of systolic BP<140 mmHg and diastolic BP <90 mmHg, 48% of the study participants had blood pressure under control. No statistically significant difference was determined between those with blood pressure under control and those with blood pressure not under control in respect of age (p=0.1), gender (p=0.9), marital status (p=0.2), monthly income (p=0.7) and BMI (p=0.2).

Before questioning the participants about their awareness of each of the 6 basic LC recommended in the ESC 2013 guidelines, a general question was asked of 'Do you know the role of LC in HT treatment?'. While a response of 'yes' was given to this question by 157 (52%) patients and 'no' by 144 (48%), no statistically significant difference was determined between the two groups in respect of controlled blood pressure (p=0.06). Of those who responded 'yes' to the general question, the level of awareness of the 5 basic LC apart from salt restriction, was seen to be significantly higher than those who responded 'no'.

The awareness of LC was measured by questioning the participants about the relationship of HT with regular exercise, a low-salt diet, the DASH diet, alcohol, cigarette smoking and obesity. The highest level of awareness was seen to be regarding salt restriction (91%) and the lowest was on the subject of the DASH diet (18%) (Figure 1). While 91% of the patients were aware of the need to restrict the daily intake of salt, 16% correctly knew the maximum amount of salt which could be consumed daily and 11% knew their daily intake. An awareness of 4≥ of the 6 basic LC was reported by 44% of the patients and awareness of <4 LC by 56%. When the implementation of LC was evaluated, 71%

	Female (n=208)	Male (n=93)	p*
Age (years)	59.3 ± 10.8	60.3 ± 11.1	0.48
Systolic BP (mmHg)	137.6 ± 20.9	137.9 ± 23.2	0.9
Diastolic BP (mmHg)	81.1 ± 11.1	81.8 ± 11.4	0.64
Pulse (bpm)	77.7 ± 10	76 ± 12.0	0.18
Height (m)	1.58 ± 0.5	1.60 ± 0.6	**0.001**
Weight (kg)	80.8 ± 13.1	84.5 ± 14.4	**0.03**
Waist circumference(cm)	98.5 ± 10.6	99.7 ± 11.6	0.39

Table 1: The distribution of age, blood pressure values, pulse, height weight and waist circumference according to gender (*Independent samples t test).
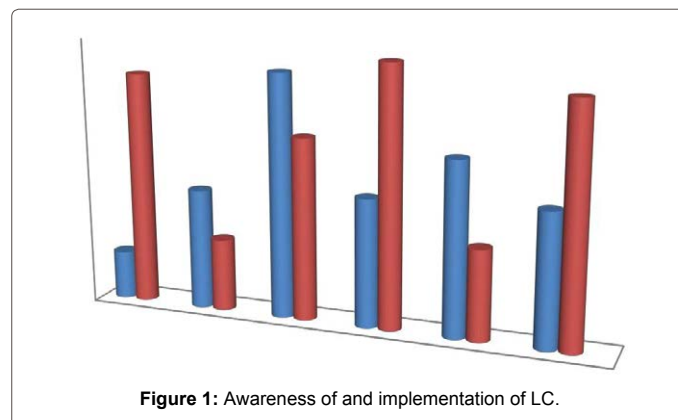

Figure 1: Awareness of and implementation of LC.

stated implementation of 4≥ LC and 29% implemented <4 LC. The least implemented LC was regular exercise (27%) and the most widely implemented was not consuming alcohol (97%) (Figure 1).

When the relationship between awareness of and implementation of LC was examined, 68% of the participants aware of ≥4 LC applied 4 ≥ LC and 73% of those aware of <4 LC implemented 4 ≥ LC. According to this result, there was no statistically significant difference between those who were aware or unaware of LC in the implementation (p=0.4). Similar results were obtained when the LC were evaluated separately.

When the differences in LC awareness were compared according to gender, awareness of salt, alcohol and cigarettes was at a higher level in males than females (Table 2). The rate of males aware of 4≥ of the 6 basic LC was determined as 54% and for females, the rate was 40%. The total awareness of LC of male patients was found to be statistically significantly greater than that of female patients (p=0.02).

When the relationship between awareness of and implementation of LC and blood pressure control was evaluated, the rates of those with blood pressure under control were 50% in those aware of ≥4 LC, 46% in those aware of <4 LC, 47% in those implementing ≥4 LC, and 51% in those implementing <4 LC. According to these results, the awareness and implementation status had no effect on the control of blood pressure (p=0.4, p=0.4, respectively).

When evaluation was made of the awareness of participants of target organ damage, 73% were aware of ≥ 3 of 4 target organs, of which the greatest awareness was for cerebrovascular events (90%). Rates of awareness for other target organ damage were 75% for myocardial infarct and congestive heart disease, 61% for kidney failure, 78% for eye involvement and 54% of male participants were aware of erectile dysfunction.

When the effects of independent variables on dependent variables were determined by logistic regression analysis, it was found that LC awareness was increased by education, HT duration and to be informed by health professionals, LC implementation was increased by age and low BMI (Tables 3 and 4).

Discussion

In this study conducted to investigate the awareness of and implementation of LC of HT patients and the effect on blood pressure control, the most well-known of the 6 basic LC recommended in the ESC 2013 guidelines was salt restriction and the least well-known was the DASH diet. The awareness of males was determined to be at a higher level than that of females. The least implemented LC was found

LC	Awareness	Female	Male	p*
DASH Diet	Yes	34 (16%)	20 (21%)	0.28
	Don't know	174 (84%)	73 (79%)	
Exercise	Yes	89 (43%)	45 (48%)	0.36
	Don't know	119 (57%)	48 (52%)	
Salt	Yes	21 (10%)	26 (28%)	**0.001**
	Don't know	187 (90%)	67 (72%)	
Alcohol	Yes	86 (41%)	57 (61%)	**0.001**
	Don't know	122 (59%)	36 (39%)	
Obesity	Yes	117 (60%)	78 (40%)	0.15
	Don't know	37 (38%)	61 (62%)	
Cigarett-es	Yes	94 (45%)	56 (60%)	**0.001**
	Don't know	114 (55%)	37 (40%)	

Table 2: Comparison of awareness rates according to gender (p*: Pearson Chi-Square test).

Independent variables	B	p	OR	95% C.I.for OR	
				Lower	Upper
Education	0.548	0.001	1.729	1.376	2.173
HT duration	0.034	0.049	1.034	1	1.07
Informed by health care personnels	1.712	0.001	5.537	2.208	13.888

Table 3: Effects of education, HT duration and source of information on LC awareness.

Independent variables	B	p	OR	95% C.I.for OR	
				Lower	Upper
Age	0.026	0.034	1.027	1.002	1.052
BMI	-0.418	0.049	0.658	0.434	0.997

Table 4: Effects of age and BMI on LC implementation.

to be regular exercise and the most widely implemented was abstention from alcohol. No effect on blood pressure control was determined of awareness or implementation of LC.

Despite population-based studies conducted to increase awareness and control of HT, the rates of blood pressure control have not reached the desired levels. According to current studies, rates of those receiving treatment for blood pressure control in Turkey are 40.3% (EURIKA) [2] and 54.1% PatenT2 [2]. These can be said to be similar to rates in Europe. According to the results for Turkey in EUROASPIRE III applied by the European Cardiology Association, 44.8% of those with coronary artery disease (CAD) had blood pressure under control [11]. The current study reached similar results as 48% of participants were seen to have reached target blood pressure values.

Striking results have been reached in respect of salt. In the PatenT study by Altun et al, 91% of the participating patients had previously heard of the recommendation to reduce salt intake and 63% reported that they were following the recommendation [1]. Similarly in the current study, while 91% of the patients were aware of the need to reduce salt intake, only 68% reported a salt-free or low-salt diet. However, when patients were questioned as to the daily amounts of salt consumed, 89% did not know. Although 91% of the patients stated that too much salt increases blood pressure, only 16% were able to correctly respond to the question of maximum daily consumption. These data are valuable in terms of showing a subconscious awareness of salt. According to the SALTURK2 study, which was conducted to define the relationship of HT and salt consumption in Turkey, the mean salt consumption was reported to be 14.8 gr per day [12].

In a similar study in Japan, the results were similar for awareness of salt consumption in HT (81%), undertaking regular exercise (32%) and implementation of the DASH diet (79%) but in the current study, the rates of not smoking cigarettes and not consuming alcohol were higher [13]. In the same study, the obesity rate was 38% with the criteria of obesity accepted as BMI ≥ 25, while in the current study the obesity threshold was BMI ≥ 30 and the rate was found to be 57%. From these results it can be said that Turkish HT patients are more aware of cigarettes and alcohol and Japanese HT patients have a greater awareness of obesity. In the Japanese study, participantts were separated into two groups as those who ate fruit and vegetables daily with an awareness of the DASH diet and those who had a poor diet with cholesterol and saturated fat. The patients were questioned in respect of a total of 7 LC and 20% of the patients were reported to need to change 3 or more LC, while in the current study, 29% of patients needed to change 3 or more of the total 6 LC.

In a study in the USA which investigated how much attention HT patients paid to the recommendations for LC given by healthcare personnel, patients were questioned whether or not they had received recommendations about 4 LC and whether or not they implemented those 4 LC [14]. Salt intake restriction was implemented by 88% of patients who had been recommended to restrict salt intake and by 57% of those who had not been recommended to do so; these rates in the current study were 76% and 61% respectively.

Regular exercise was taken by 72% of the patients to whom it was recommended and by 51% of those who had not received the recommendation and in the current study, these rates were 45% and 30% respectively. Of patients who had been previously recommended at least once to reduce their alcohol intake, 78% had done so and 44% of patients who had not received the recommendation had reduced their alcohol intake. In the current study, as 97% of patients had no alcohol intake, a comparison could not be made. Changing eating habits in line with the content of the DASH diet was implemented by 82% of those to whom it had been recommended and by 51% of those who had not received the recommendation. In the current study, the rates of those with daily fruit and vegetables were approximately 90% for both the patients who had and had not heard about the DASH diet. It can be seen from these data that there were higher rates of LC implementation by those who had previously heard about the LC or received a recommendation on this subject, even if slight, compared to those who had not received any advice.

The results of both the PatenT and the TEKHARF studies have shown significant improvements in HT control rates in Turkey [1,15]. However, despite the improvements, it must not be forgotten that the rates of blood pressure under control are still not very good. To raise the levels of HT control and awareness, there must be an increase in LC awareness of both patients and physicians. In the current study, 56% of patients were aware of 3 or more of the total 6 LC of which they should have been aware, and the rate of those not implementing 3 or more of the necessary LC was 29%. The true rate in the current study of those not implementing 3 or more LC could have been higher than the 29% reported, as there was a greater number of females in the study and in this region it is not customary for females to smoke and drink alcohol and although only 15% of patients knew the maximum amount of salt which could be consumed daily, 75% reported that they had a salt-free diet in the LC implementations.

The patients in the current study were aware of the necessity of a salt-free diet but did not know how much salt could be consumed and while aware of the necessity of regular exercise, did not know what kind of exercise or for what duration was necessary. Similarly, although 65% were aware that obesity increased blood pressure, 66% were determined with abdominal obesity. The metabolic syndrome is not recognized anymore as independent risk factor in ESC 2013 guidelines but all its components are considered as single factors. The authors of the new guidelines considered only the single features of metabolic syndrome in the general assessment of the patient suffering from hypertension. Scicchitano et al. [16,17] suggested that as the metabolic syndrome gathers features and conditions that increase too much the cardiovascular risk profile of hypertensive patients, much more attention should be paid to the patient suffering from metabolic syndrome.

Therefore it is necessary for healthcare personnel to give more specific advice, so that rather than simply recommending salt-free food, they should be advising, 'no more than a teaspoon of salt per day', 'avoid pickled food', 'on food labels, multiply the Na amount by 2.5 to give the amount of salt' and in respect of exercise, rather than saying 'go for a walk', they should more clearly state what is required in the form of 'walk at a brisk pace for 30-45 mins at least 3-5 days per week'.

Despite the important findings, some limitations must be mentioned. First, a questionnaire was used for data collection, second a detailed risk assessment for CV risks was not done. Further investigations are needed to obtain more information guiding us to elucidate our patients.

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