

Influence of knowledge on healthy lifestyle in the control of hypertensive*

Influência do conhecimento sobre o estilo de vida saudável no controle de pessoas hipertensas

Influencia del conocimiento sobre el estilo de vida saludable en el control de personas hipertensas

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ABSTRACT

Objective: Characterize lifestyle parameters and learn about them, associating the variables with the control of hypertension in people attending outpatient unit. **Method:** Is a descriptive study using interviews and measuring: blood pressure, weight, height and waist circumference, of 511 people with hypertension, being controlled in an outpatient unit. **Results:** The Body Mass Index was at the upper limit of overweight ($29.04 \pm 4.35 \text{ kg/m}^2$); 32.9% of men and 74.1% of women had waist over 102 cm and 88 cm, respectively; arterial pressure was greater than the limit that characterizes hypertension ($151.3 \pm 20.5 / 91.8 \pm 15.5 \text{ mmHg}$); 44% reported smoking or former smoking; 59% did not practice regularly physical activity, and 24% reported intake of alcohol or interruption - in these respondents the daily amount of ethanol was excessive ($71.4 \pm 83.2 \text{ g}$). Only 22% of hypertensive were controlled and those who knew that the treatment includes weight reduction were more controlled ($p < 0.05$, 24% vs. 9%). **Conclusion:** The knowledge about lifestyle can influence the control of hypertensive individuals

Keywords: Hypertension/therapy; Obesity; Life style

RESUMO

Objetivos: Caracterizar hábitos de vida e conhecimentos sobre eles associando variáveis estudadas com o controle da hipertensão arterial em pessoas atendidas em ambulatório. **Métodos:** Estudo descritivo utilizando entrevistas e mensuração da pressão arterial, peso, altura e circunferência abdominal de 511 pessoas hipertensas em controle ambulatorial. **Resultados:** Encontrou-se o Índice de Massa Corporal no limite superior da faixa de sobrepeso ($29,04 \pm 4,35 \text{ kg/m}^2$); 32,9% dos homens e 74,1% das mulheres tinham cintura maior que 102 cm e 88 cm, respectivamente; a pressão arterial era maior que o limite caracterizador da hipertensão arterial ($151,3 \pm 20,5 / 91,8 \pm 15,5 \text{ mmHg}$); 44% referiram tabagismo ou ex-tabagismo; 59% não praticavam atividade física regular; e 24% referiram ingestão ou interrupção de bebida alcoólica e, nestes, a quantidade de etanol/dia foi excessiva ($71,4 \pm 83,2 \text{ g}$). Apenas 22% dos hipertensos estavam controlados e, os que conheciam que o tratamento inclui a redução de peso estavam mais controlados ($p < 0,05$, 24% vs 9%). **Conclusão:** O conhecimento sobre o estilo de vida pode influenciar o controle de pessoas hipertensas.

Descritores: Hipertensão arterial/terapia; Obesidade; Estilo de vida

RESUMEN

Objetivos: Caracterizar hábitos de vida e conocimientos sobre los mismos, asociando las variables estudiadas con el control de la hipertensión arterial, en personas atendidas en ambulatorio. **Métodos:** Se trata de un estudio descriptivo utilizando entrevistas y midiendo: presión arterial, peso, altura y circunferencia abdominal, de 511 personas hipertensas, controladas en un ambulatorio. **Resultados:** El Índice de Masa Corporal se encontraba en el límite superior del intervalo de sobrepeso ($29,04 \pm 4,35 \text{ kg/m}^2$); 32,9% de los hombres y 74,1% de las mujeres tenían cintura mayor que 102 cm y 88 cm, respectivamente; la presión arterial era mayor que el límite que caracteriza la hipertensión arterial ($151,3 \pm 20,5 / 91,8 \pm 15,5 \text{ mmHg}$); 44% refirieron tabaquismo o ex-tabaquismo; 59% no practicaban actividades físicas regularmente; y 24% refirieron ingestión o interrupción de bebida alcohólica y, entre estos, la cantidad de etanol diaria fue excesiva ($71,4 \pm 83,2 \text{ g}$). Apenas 22% de los hipertensos estaban controlados y, los que conocían que el tratamiento incluye en la reducción de peso estaban más controlados ($p < 0,05$, 24% vs 9%). **Conclusión:** El conocimiento sobre el estilo de vida puede influenciar el control de personas hipertensas.

Descritores: Hipertensión arterial/terapia; Obesidad; Estilo de vida

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INTRODUCTION

Cardiovascular diseases are the main cause of mortality in Brazil and the set of illnesses provokes the highest health care spending. In this context, arterial hypertension has been acknowledged as the main risk factor for cardiovascular morbidity and mortality. In 2006, 302,682 deaths occurred in Brazil due to diseases of the circulatory apparatus, corresponding to 29.4% of all deaths⁽¹⁾. Besides, prevalence levels of arterial hypertension are high, with levels varying between 22% and 44%⁽²⁾.

Various risk factors contribute to arterial hypertension, among which obesity, alcohol consumption, lack of physical exercise and smoking stand out. Excess body mass is a factor predisposing to hypertension, and can be responsible for 20% to 30% of hypertension cases⁽³⁾; and 75% of men and 65% of women present hypertension directly attributable to overweight and obesity. Studies have been showing that weight and waist circumference increases are important prognostic indices of arterial hypertension. Central obesity is another important indicator of increased cardiovascular risk⁽⁴⁾ and weight loss leads to a reduction in blood pressure⁽⁵⁾. High consumption levels of alcoholic beverages like beer, wine and liquor increase blood pressure, the extent of which is associated with the quantity of ethanol and consumption frequency⁽⁶⁾. Alcohol consumption should be limited to at most 30ml/day for men and 15 ml/day for women or low-weight individuals. Sedentariness increases incidence levels of arterial hypertension and sedentary people present an approximately 30% higher risk of developing hypertension than active people. Smoking is the only totally avoidable risk factor of cardiovascular disease and death⁽⁷⁾. Avoiding this habit is one of the main challenges due to the chemical dependence nicotine causes.

It is questioned whether hypertensive people are duly alerted as to the influence of inadequate habits and lifestyles on the genesis and treatment of arterial hypertension. Avoiding or eliminating inadequate habits and lifestyles are essential measures in non-medication treatment, and the first step is to identify people's knowledge on the theme. In this context, nurses plays a fundamental role in characterizing these people's habits and lifestyles, so as to obtain real and concrete data to plan individualized nursing care with a view to effective control of the disease.

OBJECTIVES

The objectives of this study were to: characterize life habits, such as: smoking, alcohol consumption, physical exercise and presence of obesity; identify knowledge on these life habits and associate the study variables with

hypertension control in hypertensive patients under outpatient follow-up.

METHODS

A descriptive, exploratory and quantitative research was carried out. It was a sub-project of a study carried out in an Arterial Hypertension League of a public teaching hospital in São Paulo City, Brazil. Approval was obtained from the Institutional Review Board. Undergraduate students on a scientific initiation grant collected data between 2006 and 2008, through an interview in a convenience sample with 511 patients, during a consultation at the service's outpatient clinic, after participants gave their agreement and signed the Informed Consent Term. A form was used with identification data and assessment of habits like smoking, alcohol consumption and physical activity. In the assessment of smoking and alcohol consumption, both presence and whether the patient was a former smoker/drinker were considered, as well as the frequency and number of cigarettes and alcoholic beverages per day. With regard to physical exercise, type and frequency were taken into account. Blood pressure was measured with a validated automatic oscillometric device, with the patient sitting down and using an adequate cuff size. Weight (in kilograms) and height (in meters) were determined with mechanical anthropometric scales of 150 kg and precision of 0.5 kg, previously verified by a representative of Inmetro. To determine weight, patients were asked to wear light clothes and stand barefoot with their back turned to the scales display and looking towards the horizon. After verifying weight, height was determined with a metallic ruler (graduated every 0.5 cm) of the anthropometric scales to calculate the Body Mass Index (BMI), whose formula is the index between weight in kilograms and the square height in meters ($\text{weight}/\text{height}^2$). To determine the abdominal circumference, the patients were asked to stand up, breathe normally and raise their clothes in the abdominal region, locating the abdominal circumference at the middle point between the lower hip bone and the iliac crest, using a metric tape of 1.50 m, graduated every 0.5 cm, inelastic but flexible.

Classification variables are shown descriptively in tables, with absolute and relative frequencies. Quantitative variables are presented in tables with means and standard deviations. The significance level was set at 0.05. Data were processed in SPSS.

RESULTS

In total, 511 hypertensive patients were studied, mainly women, white, married, with low education level, who were housewives or worked in domestic services and

were retired. Little less than half gained revenues of up to five minimum wages, did not usually have their blood pressure measured, and those who did measured it at health services, at home or at the pharmacist's. With regard to diagnosis time, the majority (65.8%) had been hypertensive for more than 5 years. The interviewees' mean age was in the fifth decade (53.0 ± 11.0 years), with BMI levels in the upper limit of the overweight range (29.04 ± 4.35 kg/m²); and, with regard to waist circumference (97.7 ± 12.2 cm), it was observed that 32.9% of the men had a waist circumference of more than 102 cm and 74.1% of women more than 88 cm, which are the maximum tolerated limits. With regard to the blood pressure, predominated blood pressure levels above the limits characterizing hypertension ($151.3 \pm 20.5/91.8 \pm 15.5$ mmHg) (Table 1).

Table 1 – Biosocial and Anthropometric characteristics and blood pressure of hypertensive patients attended in an Arterial Hypertension League. São Paulo, 2006/2008.

Variables	Answers	
	N	%
Gender		
Female	347	67.9
Male	164	32.1
Color /ethnic origin		
White	288	56.4
Non White	223	43.6
Marital Status		
With partner	342	66.9
Without partner	169	33.1
Education		
Illiterate/ Reads and writes	109	21.3
Primary education	296	57.9
Secondary education	80	15.7
Higher education	26	5.1
Occupation		
Housework / domestic services	221	43.2
Retired	101	19.8
General and bureaucratic services	68	13.3
Specific functions	39	7.6
Self-employed	24	4.7
Maintenance services	22	4.4
Others	36	7.0
Family income (Minimum wage)		
< 5	286	56.0
5 -10	123	24.0
10 -20	92	18.0
? 20	10	2.0
Time of hypertension diagnosis (years)		
< 1	37	7.2
1 to 5	121	23.7
> 5	336	65.8
Does not know	17	3.3
Measures pressure regularly	248	48.5
	Mean ± Standard deviation	
Age (years)	53.0 ± 11.0	
Body Mass Index (BMI) (kg/m ²)	29.04 ± 4.35	
Waist (cm)	97.7 ± 12.2	
Arterial hypertension (mmHg)	$151.3 \pm 20.5/91.8 \pm 15.5$	

Table 2 – Smoking and alcohol consumption of hypertensive patients attended in an Arterial Hypertension League. São Paulo, 2006/2008.

Variables	Answers	
	N	%
Smoking		
No	287	56.2
Interrupted	156	30.5
Yes	68	13.3
Filtered Cigarettes	67	98.5
Unfiltered Cigarettes	1	1.5
Quantity per day		
? 5 cigarettes	29	42.6
6 - 10 cigarettes	17	25.0
11 - 20 cigarettes	22	32.4
	Mean ± Standard deviation	
Quantity of cigarettes	14.8 ± 14.4	
Smoking time (months)	220.9 ± 150.7	
Quit how long ago (months)	160.5 ± 140.7	
Alcohol consumption		
No	390	76.2
Interrupted	77	15.2
Yes	44	8.6
Wine consumption	20	16.0
Quantity of wines (glass)		
110ml/1 glass	13	65.0
220ml/2 glasses	3	15.0
330ml/2 ½ glasses	2	10.0
>440ml/3 glasses	2	10.0
Quantity of ethanol (g/day, Mean ± Standard deviation)	16.6 ± 11.5	
Liquor consumption	67	72
Quantity of liquor (dose=50ml)		
1 - 2	35	52,3
3 - 4	10	14,9
5 - 6	6	8,9
≥ 7	16	23,9
Quantity of ethanol (g/day, Mean ± Standard deviation)	57.3 ± 89.4	
Beer consumption	80	84,2
Quantity of beer (Glass=250 ml)		
≤ 1	8	10,0
2 to 4	44	55,0
5 to 8	19	23,7
≥ 9	9	11,3
Quantity of ethanol (g/day, Mean ± Standard deviation)	51.5 ± 56.1	
Total quantity of consumed ethanol (g/day, Mean ± Standard deviation)	71.4 ± 83.1	

Data in Table 2 show that little less than half mentioned being a smoker or former smoker. Almost all patients who mentioned being a smoker used filtered cigarettes (98.5%) and the majority smoked up to five cigarettes per day (42.6%), followed by up to one package (32.4%) per day and up to ten cigarettes (25.0%). The referred mean number of cigarettes was approximately 15, and the time patients had stopped smoking almost 13 years.

The majority of the study sample mentioned never having consumed any alcohol (76.2%). Among those who consumed or had already consumed alcohol, wine was the least mentioned beverage (16.0%); and sugarcane liquor and beer showed high consumption percentages

(72% and 84.2%, respectively). Of those who indicated wine, the majority mentioned drinking up to one glass per day, equivalent to 110 ml. Among people who mentioned the habit of drinking sugarcane liquor, only about half indicating one or two doses, while about a quarter (23.9%) indicated seven doses or more. Each dose is equivalent to 50 ml of distilled liquor. Beer consumption was the most frequent (84.2%) and little more than half (55%) drank two to four glasses per day. Each beer glass is equivalent to 250 ml. The mean quantity of ethanol consumed per day for wine was smaller (16.6 ± 11.54 g), while those for liquor and beer were higher and quite close (57.3 ± 89.4 and 51.5 ± 561 g, respectively). Considering total ethanol consumption among patients who indicated current alcohol consumption, the average level was high (71.4 ± 83.1 g).

Table 3 – Physical exercise among hypertensive patients attended in an Arterial Hypertension League. São Paulo, 2006/2008.

Variables	Answers	
	N	%
Physical exercise		
No	300	58.9
Interrupted	94	18.5
Yes	115	22.6
Activity types		
Soccer	81	70.4
Gymnastics/aerobics	53	46.1
Water gymnastics	23	20.0
Running/athletics	20	17.4
Basketball/baseball	12	10.4
Swimming	9	7.8
Walking/Cooper	6	5.2
Cycling	1	0.9
Frequency (times per week)		
1 - 2	56	48.8
3 - 4	29	25.6
5 - 6	12	10.6
Every day	17	15.0

Little less than half (58.9%) of the interviewees did not practice any regular physical exercise. Less than a quarter (22.6%) was active at the time of research and 18.5% had stopped. Among patients who practiced physical exercise, soccer was the most mentioned, followed by gymnastics. Exercise frequency was little less than half for once or twice per week (Table 3).

The research subjects' knowledge on non-medication treatment measures was high, including habits and lifestyles, regarding quitting smoking (85.5%) losing weight (89.2%), practicing physical exercise regularly (89.0%) and reducing alcohol consumption (92.6%). A statistically significant association ($p < 0.05$) was found between control and knowledge on hypertension treatment in relation to weight

loss, as patients with uncontrolled pressure ($\geq 140/90$ mmHg) had less knowledge that treatment included losing weight (Table 4). It is highlighted that this was the only research variable associated with blood pressure control. The other variables associated with knowledge on the influence of inadequate habits and lifestyles on arterial hypertension and its presence were not related with disease control ($p > 0.05$).

Table 4 – Knowledge of hypertensive patients attended in an Arterial Hypertension League on non-medication measures in anti-hypertension treatment. São Paulo, 2006/2008.

Knows that high blood pressure treatment includes	N	%	Controlled		Not Controlled	
			N	%	N	%
Quit smoking?						
Yes	437	85.5	96	22	341	78
No	74	14.5	16	21.6	58	78.4
Lose weight? *						
Yes	456	89.2	109	24	347	76
No	55	10.8	5	9	50	91
Exercise?						
Yes	455	89.0	100	22	355	78
No	56	11.0	12	26.1	34	73.9
Reduce alcohol consumption?						
Yes	473	92.6	110	23.3	363	76.7
No	38	7.4	4	10.5	34	89.5

* $p < 0.05$

DISCUSSION

Arterial hypertension is characterized as a multifactorial disease, with different factors interfering in its severity. The treatment approach should include, besides anti-hypertensives, non-medication forms, which often demand a change in habits and lifestyles. Thus, not adopting these changes contributes to the lack of control of the disease and represents a challenge for health professionals active in care delivery to hypertensive patients.

Anthropometric assessment, including the body mass index and abdominal circumference, contribute to identify alterations and assess whether a cardiovascular disease will develop. It has been verified that high abdominal circumference and body mass index levels are associated with arterial hypertension⁽⁸⁾. In this research, it was identified that most people under analysis showed BMIs in the upper limit of the overweight range and altered abdominal circumference levels, about 2.3 times more in women than in men. Women with high abdominal circumference levels tend to develop arterial hypertension 2.5 times more than women with normal levels. With regard to weight, arterial hypertension rates are six times higher among obese than non-obese people. For each 10% increase in body fat, systolic blood pressure rises by approximately 6 mmHg and diastolic pressure by 4 mmHg. In Brazil, obesity had grown from 2% in the 1970's to 7% in the 1990's among men, and from 7% to 12%

among women⁽⁹⁾. Today, overweight is considered present in almost one-third of the population⁽¹⁾.

Another important point that needs to be taken into account is excess abdominal fat. The android type presents accumulated fat tissue in the abdominal region, especially in internal visceral deposits, related to increased tissue lipolysis in response to catecholamine stimulation, increasing the risk for diabetes *mellitus*, hyperlipidemia, arterial hypertension and atherosclerosis. Gynoid obesity, on the other hand, shows peripheral fat accumulation at hip level. Fats accumulated in this region are less responsive to catecholamine action⁽¹⁰⁾. Abdominal obesity is associated with a characteristic pattern of comorbidities, including type 2 diabetes *mellitus* and cardiovascular disease⁽¹¹⁾.

Yet another important aspect that needs to be considered in the adoption of a healthy lifestyle is abstinence from smoking and decreased alcohol consumption. According to the 2002 report by the Pan American Health Organization, tobacco consumption is the main cause of avoidable death in the Americas and around the world. In Brazil, the prevalence of smoking appointed at that time was 19%⁽¹²⁾, little higher than what was found in the present research.

Arterial hypertension and smoking constitute isolated risk factors for cardiovascular diseases, that is, without cause-and-effect relation. In recent years, this association has been directed at difficulties to obtain adequate and stable blood pressure levels in hypertensive smokers, independently of the actual risk of cardiovascular events both conditions predispose to, as smoking stands out as a cause of difficulties in pressure control when adequate treatment is adopted in ideal conditions..

The Framingham study was one of the first to demonstrate the association between smoking and cerebrovascular accident, number of cigarettes smoked and the effect of quitting smoking. People who smoke more than 40 cigarettes/day present a relative risk twice as high as people smoking less than ten cigarettes/day. When people quit smoking, this immediately entails a significant risk reduction, reaching the level of non-smokers in five years⁽¹³⁾. Measures that stimulate abstinence from smoking should be adopted at all levels, both in the public and individual sphere, with a view to decreasing the impact of tobacco on cardiovascular diseases.

In this study, alcohol consumption was not predominant, as only 8.6% indicated current alcohol consumption, while 15.1% had interrupted drinking. Epidemiological evidence indicates a positive association between alcohol consumption and higher blood pressure, increased risk of vascular accident, mitigating the effect of anti-hypertensive drugs and increasing insulin resistance⁽¹⁴⁾. A study involving women in the South of Brazil, however, demonstrated that abstemious elderly

people or who consumed alcohol once per week at most, presented a higher gross chance of being hypertensive than those who drank more frequently⁽¹⁵⁾.

According to the V Brazilian Arterial Hypertension Guidelines⁽²⁾, alcohol consumption should be limited to 30g/day of ethanol for men and 15g/day for women. According to this parameter, only wine consumption remained within acceptable levels (16.6 ± 11.5), and ethanol levels for liquor and beer consumption were almost double as high as tolerated levels. It is also highlighted that, among people who consumed alcoholic beverage, the amount of ethanol greatly surpassed tolerated levels.

Despite evidence of countless benefits related with continuing and regular physical exercise, high prevalence levels of sedentariness are still observed. A study in the Brazilian Central-West investigated 2,912 people and found a hypertension prevalence level of 35.5%, while 61.9% were sedentary⁽¹⁶⁾, slightly higher than what was found in the present study. Physical exercise is recommended for all hypertensive patients, both for those using anti-hypertensive drugs and others who do not take medication treatment, as it reduces systolic blood pressure by 6.9 mmHg and diastolic pressure by 4.9 mmHg⁽²⁾.

As for the interviewees' knowledge on non-medication forms of hypertension treatment, this study evidenced high levels, as more than 80% knew about the benefic influence of giving up smoking, losing weight, practicing physical exercise and reducing alcohol consumption on hypertension. On the other hand, knowledge has been considered the first step for treatment observance, but insufficient to achieve control of the disease. A Brazilian study showed no association between hypertension control and knowledge on the disease and treatment⁽¹⁷⁾. The present study showed that only 22% of hypertensive people had their blood pressure under control (<140/90 mmHg), quite close to findings from another study carried out at a basic health unit in São Paulo City, published in 2005⁽¹⁸⁾, but less than half of findings from a recently published research⁽¹⁹⁾. Blood pressure control was better among patients who knew that treatment includes weight loss (24% vs. 9%, $p < 0.05$).

Various factors can influence treatment adherence and, consequently, hypertension control⁽¹⁹⁾. Among these, biosocial variables stand out, such as gender, age, color/ethnic origin, marital status, education and socioeconomic level. Health beliefs and life habits should also be highlighted. With regard to the disease, knowledge, chronicity, absence of symptoms and late consequences are underlined⁽²⁰⁾. Cost, unwanted drug effects, complex schemes and a worse quality of life are aspects related with anti-hypertensive medication treatment.

In view of these data, the main highlight is related to anthropometric measures, characterized by the increased body mass and abdominal circumference. The upward

trend in populations' mean body mass is a phenomenon disseminated across developed and developing countries. Obesity is the sixth most important factor for the global disease burden, affecting about 1.1 billion adults and 10% of children on the planet⁽¹⁾. The vectors that drive the expansion of obesity are complex. In developing countries, obesity is considered a pandemic connected with urban environments, with the adoption of unhealthy lifestyles, consumption of highly processed foods and changes that reduce populations' energy consumption pattern, leading to sedentariness. In this context, it is important to observe that, in those countries, obesity tends to be a strong factor that favors processes of health inequality even further. Health team members and particularly nurses' actions should include targets to modify this panorama.

CONCLUSION

Although most hypertensive patients who participated in this study did not mention a current or previous smoking and drinking habit, the group of people who did not practice physical exercise was considerable. Together with high body mass indices, these determining factors compromise the situation of arterial hypertension patients even more. Stimulating regular physical exercise and the adoption of an adequate diet pattern exert a

beneficial influence of anti-hypertensive treatment and the consequent control of arterial pressure levels. This study evidenced that knowledge, in this case about body weight loss, was a determining factor for blood pressure control. It is emphasized, however, that only knowledge on the need for lifestyle changes alone does not imply behavior changes. Although hypertensive patients indicate knowledge on important aspects of non-medication treatment, they did not make sufficient changes in their life habits to achieve blood pressure control. It is highlighted that knowledge is rational and that the desired change is a complex process, involving emotional factors and concrete practical and logistic barriers.

Getting to know the lifestyle of hypertensive patients, discovering their routines and habits is extremely important to deliver individualized care and propose a health intervention, considering this specific population's needs and peculiarities. Treatment adherence is a complex process and represents a challenge for patients and professionals. The importance of effective action by a multidisciplinary health team is undeniable. Constant intervention strategies are needed, encouraging people to change lifestyles and get adequate treatment. In this sense, nurses' role is essential, as care is considered a guiding principle of the profession, and also represents an attitude of concern, accountability and involvement with other people.

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