

Opinion of hypertensive patients on treatment effectiveness and disease-associated risk factors*

Opinião de pacientes hipertensos sobre efetividade do tratamento e fatores de risco associados à doença

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SUMMARY

BACKGROUND AND OBJECTIVES: To determine population knowledge about systemic high blood pressure (SHBP) and to know about hypertensives' opinion of their blood pressure levels and the effectiveness of blood pressure control they perform. **METHOD:** Cross-sectional study with interviewed volunteers from 18 to 65 years of age, excluding pregnant women; patients' subjective opinions about SHBP and treatment effectiveness were addressed, anthropometric measures were collected, and measurement of blood pressure (BP) was performed. All records were included in the research, being stored and analyzed through PAWS Statistics 18 software, using Odds Ratio and Pearson correlation with 95% confidence interval.

RESULTS: The sampling comprises 365 patients, 43.8% of males, with 29.6% being hypertensive. According to Pearson correlation, the systolic pressure was related to waist circumference (WC) (0.456), body mass index (BMI) (0.428) and neck circumference (0.326), with diastolic blood pressure (DBP) achieving similar relations but in lesser extent. The most statistically significant relations were between SHBP and diabetes (OR = 7.5), high women waist circumference (OR = 4.5) and BMI \geq 30 (OR = 3.0). A correlation was found between patients with high systolic and diastolic BP and their opinion that BP was high (OR = 10.2 and 7.2, respectively). There was a relation between being hypertensive and

having high systolic or diastolic pressure (OR = 5.4 and 3.5, respectively). When asked about the downsides of long-term SHBP, 20.3% could not inform about these consequences.

CONCLUSION: The authors concluded that antihypertensive therapy in this population does not meet the targets proposed by the VI Brazilian Guidelines on Hypertension. The hypertensive patients under treatment believe that their BP is high before having it measured, which was confirmed after the measurement, indicating insecurity and inadequate efficacy of the treatment. The main factors associated with SHBP in this study were, in descending order: WC, weight, BMI, neck circumference, age and blood glucose.

Keywords: Evaluation of the efficacy-effectiveness of interventions, Hypertension, Knowledge, Risk factors.

RESUMO

JUSTIFICATIVA E OBJETIVOS: Mensurar o conhecimento populacional acerca da hipertensão arterial sistêmica (HAS), conhecer a opinião do hipertenso sobre seus níveis tensionais e a eficácia do controle pressórico realizado por eles.

MÉTODO: Pesquisa transversal com entrevistados voluntários entre 18 e 65 anos, excluindo gestantes. Abordaram-se opiniões subjetivas do paciente sobre HAS e efetividade do tratamento, colhidas medidas antropométricas e aferição da pressão arterial (PA). Todas as fichas foram incluídas na pesquisa, sendo armazenadas e analisadas no programa PAWS Statistics 18, utilizando-se Odds Ratio e correlação de Pearson com intervalo de confiança de 95%.

RESULTADOS: Amostra composta por 365 pacientes, 43,8% do sexo masculino, 29,6% hipertensos. De acordo com a correlação de Pearson, pressão arterial sistólica (PAS) obteve relação com circunferência abdominal (CA) (0,456), índice de massa corpórea (IMC) (0,428) e circunferência do pescoço (0,326), tendo a pressão arterial diastólica (PAD) relações parecidas em menores escalas. As relações mais significativas estatisticamente foram entre HAS e: diabetes (OR = 7,5), CA feminina elevada (OR = 4,5) e IMC \geq 30 (OR = 3,0). Houve relação entre os pacientes com PAS e PAD elevadas e opinião de achar que a PA está elevada (OR = 10,2 e 7,2, respectivamente). Existiu relação entre ser hipertenso e estar com a PAS ou PAD (OR = 5,4 e 3,5, respectivamente). Quando perguntados sobre os males da HAS em longo prazo, 20,3% não souberam informar tais consequências.

CONCLUSÃO: A terapêutica anti-hipertensiva na população

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estudada está aquém das metas propostas pelas VI Diretrizes de Hipertensão. Os hipertensos em tratamento acreditam que sua PA está elevada antes de aferi-la, o que foi confirmado depois da medição, denotando a insegurança com a terapia e eficácia inadequada do tratamento. Os principais fatores associados à HAS neste estudo foram em ordem decrescente: CA, peso, IMC, circunferência do pescoço, idade e glicemia.

Descritores: Avaliação de eficácia-efetividade de intervenções, Conhecimento, Fatores de risco, Hipertensão.

INTRODUCTION

Systemic blood pressure (SBP) is the most common morbidity in emergency services in our country¹. In some Brazilian cities, the prevalence of SBP varies from around 32% in urban population between 30 and 69 years old, which shows how important and rife such pathology is². Hypertension is considered an independent risk factor for coronary heart disease, stroke, atherosclerosis, retinopathy and nephropathy, and the literature clearly shows that the treatment of arterial hypertension (AH) significantly reduces the risk of cardiovascular complications³.

In an article⁴ conducted in Brazil between January and November of 2005, it was reported that in five European countries analyzed together, the cost of cardiovascular incidents summed up 1.26 billion of Euros a year. In Brazil, in 2007⁵, there were 1.157.509 hospitalizations for cardiovascular disease (CVD) through the SUS (Sistema Único de Saúde), and in November 2009⁵ there were 91.970 hospitalizations for CVD, resulting in a cost of R\$165.461.644.33 (DATASUS), demonstrating that when SBP is left untreated, it becomes a problem both of public health and economy. Other socio-economic consequences of the complications of untreated SBP are: absenteeism, rehabilitation costs, post-disability healthcare costs, withdrawal from social life and leisure, loss of quality of life, and partial or full dependence for self-care, mobility or performing simple tasks and eventually leading to family problems⁶.

Although, in a survey conducted in two basic health units in Ribeirão Preto-SP, 57% of respondents did not know of any way to define what is hypertension, the rest defined what they thought was the pathology and all ended up resembling in their knowledge about the major complications of disease². Although the degree of knowledge about the disease and its complications in the sample studied was acceptable, it does not correlate with the degree of patient compliance with the treatment, with a rate of up to 77% for non-adherents in Brazil. This non-adherence to treatment rise such complications as cerebrovascular accident (stroke), ischemic heart disease, heart failure, renal failure and peripheral vascular ischemia⁶. The same study shows that among adherents, the most associated factor to the disregard of hypertension control was the neglect of the medication schedules.

Thus, we demonstrate the need to measure the common knowledge about SBP, as well as the influence that opinions related to the control of blood pressure of hypertensive patients have in attending to their treatment and effective control of the disease, reinforcing the need to stratify the relation between the existence of such belief and the prevalence of uncontrolled cases, showing possible associations between these two factors.

METHOD

The cross-sectional observational research was made with each individual on May 30, 2011 in the city of João Pessoa-PB, which has 723.514 inhabitants, with demographic characteristics similar to those of most urban cities in Brazil in terms of age, family income (average of R\$890,00) and educational level (7.4 years). We used exclusion criteria such as age (less than 18 and more than 65 years) and pregnancy. The respondents volunteered while attending a health promotion event, having their data collected under consent, and answered an individual form in a proper stall, aided by researchers trained to answer questions on how to fulfill the instruments research, accounting for a 15 minutes response time. There were no refusals and the respondents were informed that there would be no harm or benefit for him if he gave up or carried out filling the form; there were no information relating the patients and their respective answer sheet.

The questionnaire included personal aspects of the patient's opinion about their own condition; if hypertensive, if held control of blood pressure (BP) levels and the frequency of such control, if they thought it was effective or if the disease could kill him in the long term, as well as their weight and height to calculate body mass index (BMI) and BP measurement.

Height was measured with flexible tape measure, attached to a base for its total length. Body weight was measured on standard scales, brand new and approved by INMETRO. BMI was determined by the equation and BP was checked with an INMETRO certified sphygmomanometer. The value considered as normal for BP was below 140/90 mmHg; the BMI followed the World Health Organization recommendations: lower than 18.5 kg/m² for underweight individuals, eutrophia between 18.5 and 24.9 kg/m², 25 to 29.9 kg/m² for overweight, 30 to 34.9 kg/m² for obesity grade I, 35 to 39.9 kg/m² for obesity grade II, and values greater than or equal to 40 kg/m² for morbid obesity. For neck circumference, normal values were considered smaller than 34.2 cm for women and 40.5 cm for men. Waist abdominal circumference (AC) was considered high when it was greater than or equal to 102 cm in men and greater than or equal to 88 cm in women.

All records were included in the survey. These data were considered for statistical analysis. The total number of questionnaires was 365, which were stored and analyzed using the PAWS Statistics 18 software. To compare categorical proportions, the Chi-square was employed when necessary and the odds ratio of the relation was determined; for ordinal variables, we used the Pearson correlation with a 95% confidence interval for both relations.

The study was approved by the Ethics Committee of the Faculdade de Ciências Médicas da Paraíba (FCM-PB), under the number 004/2011.

RESULTS

The sampling consisted of 365 patients grouped according to gender (43.8% male and 56.2% female), where 29.6% reported being diagnosed with AH, 9.4% were smokers, 8% reported having been diagnosed with diabetes, 42.2% with overweight and 23.2% with obesity (being 16.7% class I obesity, 5% class

Table 1 – Characterization of the sample (n = 365).

Variables	Average	Standard Deviation
Age (years)	43.9	15
Neck circumference (cm)	33.6	3.7
Height (m)	1.63	0.09
Weight (kg)	72	14.9
Abdominal circumference (cm)	89.1	12.7
Body mass index (kg/m ²)	27	5.1
Overall systolic pressure (mmHg)	126.2	17.5
Overall diastolic pressure (mmHg)	82.1	12
Systolic blood pressure in hypertensives (mmHg)	138.5	17.7
Diastolic blood pressure in hypertensives (mmHg)	88.5	13.8
Blood glucose (mg/dL)	114.3	41.7

m = meter; cm = centimeter; kg = kilogram; mmHg = millimeters of mercury; mg/dL = milligram per deciliter; kg/m² = kilograms per square meter.

Table 2 – Variables association with Pearson's R (n = 365).

Variables	Association	r
Systolic pressure	Diastolic pressure	0.735
	Abdominal circumference	0.456
	Body mass index	0.428
	Weight	0.425
	Neck circumference	0.326
	Age	0.313
Diastolic pressure	Blood glucose	0.202
	Systolic pressure	0.735
	Abdominal circumference	0.401
	Body mass index	0.393
	Weight	0.383
	Neck circumference	0.327
	Age	0.165

r = Pearson's R.

II obesity and 1.5% class III obesity). The characteristics of the studied individuals are shown in table 1. By analyzing only the hypertensive patients, the average systemic blood pressure (SBP) found was 138.5 mmHg (standard deviation (SD) = 17.1) and diastolic blood pressure (DBP) 88.5 mmHg (SD = 13.8).

The following questions were asked obtaining the respective results: "You usually drink alcohol?" No: 61.7%, only in weekends: 16.5%, every day: 0.3%, parties and meetings: 19.2% and more than once a week: 2.4%; "Do you have hypertension?" Yes: 29.6% No: 58.1% and does not know: 12.3%; "If hypertensive, do you use antihypertensive medication?" Yes: 26.3%, No: 73.7%; "Do you regularly check your blood pressure?" Yes: 49.1% and No: 50.9%; "Do you think the frequency of your BP checking is adequate?" Yes: 49%, No: 46.4%, and Do not know: 4.6%; "What SBP downsides can you list?" Stroke: 38.7%, ischemic heart disease (IHD) 33.1%, renal failure: 2.4%, other: 5.4% and Do not know: 20.3% and "What is the frequency of BP control in hypertensive patients?" Every 2.7 months (SD = 4.2); 14% checking weekly, 49.5% monthly and 36.4% every two months or more.

Using the Pearson correlation, there were associations between several ordinal variables and SBP and DBP (Table 2). Associations were also made using the Chi-square, which resulted in data shown in table 3.

DISCUSSION

The results in table 1 show that the average SBP (126.2 mmHg) and DBP (82.1 mmHg) of the studied individuals are above the normal BP values proposed by the Brazilian Society of Cardiology, characterizing the group as being mostly at risk for having hypertension or pre-hypertension. Among the hypertensives, the average value (138.5 x 88.5 mmHg) is above the goals proposed by the VI Diretriz Brasileira de Hipertensão (2010). There was a prevalence of 29.6% hypertensive patients with previous medical diagnosis, which is compatible with the prevalence of SBP in the region (between 7.2 and 40.3%)⁷ and in relation to the national average (32.5%)⁵.

Table 3 – List of variables with the associations for the sample (n = 365).

Variables	Associations	p	OR	CI
Systemic arterial hypertension	Has diabetes?	0.000	7.5	3.2-17.5
	High systolic blood pressure	0.000	5.4	3.2-8.9
	Female abdominal circumference ≥ 88cm	0.000	4.5	2.4-8.4
	Blood glucose > 200 mg/dL	0.012	4.3	1.8-5.1
	High diastolic blood pressure	0.000	3.5	2.1-5.8
	Neck circumference > 34.2 in women	0.001	3.6	1.5-8.2
	Body mass index ≥ 25 kg/m ²	0.000	3.6	2.0-6.7
	Body mass index ≥ 30kg/m ²	0.000	3.0	1.8-5.1
	Smokers	0.027	0.3	0.1-0.9
	High systolic BP	Thinks that BP is high (before checking)	0.000	10.2
Thinks that needs treatment (after checking)		0.000	7.1	4.2-12.1
High diastolic BP	Thinks that BP is high (before checking)	0.000	7.2	4.3-12.2
	Thinks that needs treatment (after checking)	0.000	4.9	2.9-8.2

OR = Odds ratio; CI = Confidence interval; BP = Blood pressure.

The Pearson correlation was used to verify a significant association between systolic pressure and two measures: waist AC (0.456) and BMI (0.428), characterizing them as risk factors for high BP and thus to SBP. It also demonstrated the intrinsic relation between the prevalence of SBP with risk factors related to lifestyle already included in the medical literature⁸⁻¹⁰, such as: overweight (Odds Ratio[OR]=3.6), obesity (OR = 3.0), large waist circumference (OR = 4.5) and diabetes mellitus (OR = 7.5). It is known that overweight predisposes to obesity, which often progresses to insulin resistance, leading to compensatory hyperinsulinemia, which may cause hyperactivity and sodium retention, precipitating or exacerbating SHA. SBP and peripheral vasoconstriction eventually lead to decreased blood flow to skeletal muscles, worsening insulin resistance and determining the perpetuation of the vicious cycle¹¹. The highest value Odds Ratio occurred between SBP and diabetes mellitus (OR = 7.5 with CI = 3.2-17.5), which confirms the intrinsic association of the variables that compose the metabolic syndrome (diabetes, hypertension and dyslipidemia) and substantially increases the risk of morbidity and mortality¹² in the referred group. The evidence for an association between these factors and SBP emphasizes the need and importance of treating hypertensive patients with pharmacological therapy and, above all, non-pharmacological, often neglected by the physician and patient, which involves changes in lifestyle, such as exercises, weight control and glucose and blood pressure self-monitoring. Such attitudes are extremely important in preventing the incidence of SBP, since the modification of these factors directly affects BP⁹, besides it is low-cost and has minimal risk actions, which increase the effectiveness of drug therapy, contributing synergistically for glycemic control and to reduce cardiovascular risk¹³.

For hypertensive diagnosed individuals, the OR for having increased blood pressure levels at the time of the checking was greater than the normotensive population (OR SBP = 5.4 and DBP = 3.5), indicating treatment failure and suggesting poor blood pressure control levels. When asked if they felt that their BP was high before the checking by the examiner, participants with SBP showed higher OR (SBP = 10.2 and DBP = 7.2), proving that the hypertensive respondents believed that their blood pressure was high even before measuring it (although being under treatment), confirming the treatment failure, which can be explained by several factors, including: difficulty in following the diet, stress management difficulties, difficulty in taking the appropriate prescribed medications or non-adherence to the treatment because of its chronic nature¹³. This is confirmed by the absence of the use of antihypertensive medications in 11.1% of hypertensive subjects, as 29.6% of them declare their selves hypertensives and 26.3% report making use of drug therapy.

Among all the volunteers, hypertensive patients were more likely to believe they had a high systolic or diastolic pressure just before the measurement (OR = 10.2 and 7.2), and had lower OR when asked if they needed treatment after measuring a higher than average BP (OR SBP = 7.1 and DBP = 4.9), demonstrating that, in the opinion of those patients, the fact of identifying a high BP does not reflect in a compulsory treatment; the reason for that may be the absence of symptoms and late effects caused by the disease¹⁴.

As consequence of untreated SBP, respondents could list: stroke (38.7%) and IHD (33.1%), which was very close to the preva-

lence data recorded by DATASUS regarding Cardiovascular Disease mortality (31.4% stroke and IHD 30%)⁵.

By analyzing the frequency of BP measurement in the patients who declared themselves hypertensive, we found an average check every 2.7 months (SD = 4.2), where 49.5% check their pressure every month and 14% weekly. The suggested interval¹⁵ for ambulatory BP assessments can range from annual to weekly checks, and the criterion for choosing the interval is the SAP and/or DBP values found in the previous medical appointment.

A reliable measure that should be encouraged is the Blood Pressure Self Check (BPSC)¹⁵ or Home Blood Pressure Monitoring (HBPM)⁵, performed by relatives or by the patient himself at home, since HBPM can be performed by semiautomatic arm devices certified by INMETRO with a good reliability for diagnosing hypertension and monitoring therapy response⁵. The suggested HBPM measurement frequency is from 2 to 6 checks during the day, during seven days or more - the choice of the frequency measurement and the number of days is determined by the doctor, according to the purposes.

This study has some inherent limitations, because the diagnosis of SBP were not performed by its authors. It was up to the respondents to declare their previous medical diagnose, which can generate a small discrepancy between the actual number of hypertensive patients and those who said so. The same observation is valid for the data on diabetes mellitus.

CONCLUSION

That antihypertensive therapy for the surveyed sample is below the targets (BP < 130/80) proposed by Brazil's VI Diretrizes de Hipertensão⁷ for patients with high cardiovascular risk or with three or more risk factors. The hypertensives under treatment believe that their BP is elevated before measuring it, which was confirmed after the measurement, showing insecurity with the therapy and inadequate efficacy of the treatment. The main factors associated with SBP in this study were, in descending order: AC, weight, BMI, neck circumference, age and blood glucose.

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ACADEMIC LINK

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