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ORIGINAL ARTICLE

MEASUREMENT OF PRESSURE LEVELS OF HYPERTENSIVE ELDERLY PEOPLE IN A PRIMARY CARE REFERENCE PROGRAM

MENSURAÇÃO DOS NÍVEIS PRESSÓRICOS DE IDOSOS HIPERTENSOS EM UM PROGRAMA DE REFERÊNCIA DA ATENÇÃO PRIMÁRIA

MENSURACIÓN DE LOS NIVELES PRESÓRICOS DE ANCIANOS HIPERTENSOS EN UN PROGRAMA DE REFERENCIA DE LA ATENCIÓN PRIMARIA

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ABSTRACT

Objective: to compare the pressure levels of elderly hypertensive patients in two nursing visits. ***Method***: this is a quantitative, descriptive, observational study, case study type, developed with 80 elderly patients with hypertension, who underwent two nursing consultations during May 2015 to May 2016 registered in a reference unit and attended to in the Program of Education and Control of Systemic Arterial Hypertension. ***Results***: participants had elevated pulse pressure, even though systolic and diastolic blood pressures were controlled. Also, they used one or more antihypertensive drugs. ***Conclusion***: blood pressure levels were maintained in prehypertension values. However, the pulse pressure was high and increased progressively from the first to the second measurement. Therefore, the sample studied had increased cardiovascular risk. ***Descriptors***: Arterial Pressure; Hypertension; Aging; Blood Pressure Monitors.

RESUMO

Objetivo: comparar em duas consultas de enfermagem os níveis pressóricos de idosos hipertensos. ***Método:*** estudo quantitativo, descritivo, observacional, tipo estudo de caso, desenvolvido com 80 pacientes idosos com hipertensão, os quais foram submetidos a duas consultas de enfermagem durante os meses de maio de 2015 a maio de 2016, cadastrados em uma unidade de referência e atendidos no Programa de Educação e Controle de Hipertensão Arterial Sistêmica. ***Resultados:*** os participantes apresentaram pressão de pulso elevada, mesmo estando com a pressão arterial sistólica e diastólica controladas, além disso, faziam uso de um ou mais anti-hipertensivos. ***Conclusão:*** os níveis pressóricos se mantiveram em valores de pré-hipertensão, entretanto, a pressão de pulso estava elevada e aumentou progressivamente da primeira para segunda aferição. Portanto, a amostra estudada apresentou risco cardiovascular aumentado. ***Descritores:*** Pressão Arterial; Hipertensão; Envelhecimento; Monitores de Pressão Arterial.

RESUMEN

Objetivo: comparar en dos consultas de enfermería los niveles presóricos de ancianos hipertensos. ***Método:*** estudio cuantitativo, descriptivo, observacional, tipo estudio de caso, desarrollado con 80 pacientes ancianos con hipertensión, los cuales fueron sometidos a dos consultas de enfermería durante los meses de mayo de 2015 a mayo de 2016 registrados en una unidad de referencia y atendidos en el Programa de Educación e Control de Hipertensión Arterial Sistémica. ***Resultados:*** los participantes presentaron presión de pulso elevada, mismo estando con la presión arterial sistólica y diastólica controladas. Además de eso, usaban uno o más anti-hipertensivos. ***Conclusión:*** los niveles presóricos se mantuvieron en valores de pre-hipertensión, sin embargo, la presión de pulso está elevada y aumentó progresivamente de la primera para segunda medición. Por lo tanto, la muestra estudiada presentó riesgo cardiovascular aumentado. ***Descriptores***: Presión Arterial; Hipertensión; Envejecimiento; Monitores de Presión Sanguínea.

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INTRODUCTION

Systemic arterial hypertension (SAH) is a multifactorial clinical condition presented by elevated and sustained levels of systemic blood pressure (SBP).[1-3] In attributable deaths, the main worldwide risk factor is hypertension (responsible for 13% of deaths in the world), followed by smoking (9%), hyperglycemia (6%), sedentary lifestyle (6%), overweight and obesity (5%).[4]

There are several traditional cardiovascular risk factors (CVR) that contribute to the occurrence of cardiovascular diseases (CVD), represented by age, smoking, inadequate diet and physical inactivity.[4-5] These behaviors lead to metabolic, physiological alterations with increased SBP, overweight and obesity, hyperglycemia, and may progress to diabetes mellitus (DM) and hyperlipidemia.

The physiology of aging in human beings is of great importance to understand the regression of cardiovascular properties and also their clinical consequences. The structural changes of the arterial wall in the great elastic arteries are associated with aging and have been well characterized in the increase of the arterial stiffness caused by a decrease of the elastin and collagen in the arteries and, consequently, the elevation of the SBP. Thus, blood pressure systolic (SP) increases progressively with age, while diastolic blood pressure (DP) increases until the 6th decade of life, and then stabilizes or reduces gradually.[7-8]

Pulse pressure (PP) is strongly described as an early and independent marker of CVR and it is considered to be the difference in systolic blood pressure (SP) than diastolic blood pressure (DP).[6-7,9-11] In the elderly people, the progressive arterial stiffening and the early reflection wave, amplify the PP and elevate the SP.[9,12]

Prospective studies have shown that PP is able to identify future cardiovascular events, becoming an independent predictor of CVR.[10-1] Strong Heart Study[13] researchers confirmed that PP was more related to vascular hypertrophy and the extent of atherosclerosis than SP. PP presented a relationship with subclinical manifestations of CVD, even when the absolute values of SP and/or DP were not above the upper limits of normality.[14]

The reduction of PP values decreases CVR, and incorrect diagnosis of hypertension leads to abusive or indiscriminate use of medications, exposing the patient to serious side effects with impairments in quality of life, hindering to comply with treatment.[15-7] However, it is estimated that the national studies to demonstrate the PP values in hypertensive elderly individuals are rare, and this study may contribute to guiding future research. In this sense, the question that guided this investigation is << How are the pressure levels in patients monitored in the Program of Education and Control of Systemic Arterial Hypertension? >>

OBJECTIVE

- To compare the pressure levels of elderly hypertensive patients in two nursing consultations.

METHOD

This is a quantitative, descriptive, observational study of case-study type, developed from the follow-up of the elderly people in two nursing consultations at a reference unit of the Family Health Strategy (ESF), of the municipal health network, in a municipality of Southwestern Goiás, Brazil, of medium size (approximately 100 thousand inhabitants), headquarters of the Southwest II health region, with an estimated coverage of 73% with the ESF.

The study population consisted of elderly patients with a confirmed diagnosis of hypertension, enrolled in the Program of Education and Control of Systemic Hypertension (PECHAS). The period between May 2015 and May 2016 was necessary to include 80 patients, in which each patient underwent two consultations to compare the first and second measurements of SBP. In 100 patients registered in the PECHAS, the sample calculation was applied, attending 95% confidence and 5% error, totaling 80 participants.

The selection criteria were men and women who met the inclusion criteria: to maintain a monthly bond with the unit, to participate frequently in the programmatic actions of at least one monthly consultation, adherence to PECHAS and to be ≥ 65 years old, and not to have any exclusion criteria such as hemodynamic instability and severe infections. All patients received information from the research and guidelines regarding the signing of the Informed Consent Term (TCLE) for their consent.

The two consultations were held monthly and the data collected in the first and second consultations occurred in the ESF. In the first consultation, a semi-structured questionnaire was applied, with questions (*check-list A*) related to socio-demographic, economic and clinical profile (weight, height, waist circumference, the circumference of the upper limbs and SBP measurement). In the

second consultation (check-list B), there was a new assessment of SBP and there were questions about patients´CVR, according to the I Brazilian Directive of Cardiovascular Prevention[2] such as eating habits, overweight/obesity, alcohol intake, smoking, physical inactivity, DM and hypercholesterolemia (laboratory tests).

The SBP measurement followed the norms of the VII Brazilian Hypertension Guideline.[1] The hemodynamic parameters of SBP (SP, DP, and PP), peripheral perfusion evaluation, and lower limb edema were verified in each patient. The non-invasive HEM 4030 - Omron, oscillometric, semi-automatic and validated according to the national guideline was used.[1] After the first consultation, the patient had the return appointment in the following month by the researcher.

The results for the variables were expressed as a mean ± standard deviation. Categorical variables were expressed as proportion or percentage. Initially, BioEstat 3.0 for the D'Agostino-Pearson normality test was used to determine whether the data set of a random variable is well structured by a normal distribution or not, or to calculate the probability of the underlying random variable is normally distributed. Student's t-test was applied to analyze the comparison between the values of the first and second visits according to the normality of the sample. They were considered significant when the p-value was <5%. Statistical analysis was performed using the Statistical Package for Social Sciences SPSS software version 20.

This study is in accordance with Resolution 466/12 of the National Health Council (CNS) and the Research Ethics Committee (CEP) of the Federal University of Goiás, which corresponds to the Protocol number: 1,008,808/2015.

RESULTS

There were 30 men and 50 women identified of the 80 patients surveyed, where 75% completed elementary school, 50% declared themselves white, 75% had a monthly family income lower than two minimum wages, according to Table 1.

Table 1. Socio-demographic characteristics of users with SHP participants of FHS unit. Jataí (GO), Brasil, 2015. (N=80)

Variables	n	%
Skin color/ethnicity		
	20	25
Brown	40	50
White	20	25
Black		
Education	20	25
Incomplete elementary school	60	75
Complete primary education		
Monthly family income	60	75
<2 minimum wages	20	25
2-5 minimum wages		
Occupation	45	55
Retired from occupation	16	20
Retired without occupation	19	25

%=Porcentagem; n= número de pacientes; <=menor que. Valores expressos em porcentagem.

The mean age of both genders was 65 years old, 25% reported being diabetic. The most commonly used class of medication was diuretics, as shown in Table 2.

Table 2. Clinical characteristics of patients of the PECHAS program. Jataí (GO), Brazil, 2015. (N=80).

Parameters	n	%
Sedentary lifestyle	51	41
Smoking	20	25
Stress	41	33
Diabetes Mellitus	20	25
Hypercholesterolemia	54	42
Qualitative	Mean ± SD	
(Age in years)	65 ± 10	
Weight (Kg)	71 ± 12	
Height (m)	1,57 ± 0,1	
WC (cm)	99 ± 15	
BMI (kg/m^2)	29 ± 5	
Antihypertensive amount	n	%
Daily use of antihypertensive medicine	1,7	100
Beta-adrenergic block.	24	19
Adrenergic inhibitors	8	6
Block of the calcium channel	14	11
Block of the angiotensin receptor	18	14
Vasodilator	8	6
ACE Inhibitor	14	11
Diuretics	41	33

n = number and daily quantity; WC= Waist circumference; BMI= Body mass index; Bloq.= Blockers; ACE= angiotensin converting enzyme. Values expressed as mean standard deviation proportion and percentage.

Regarding drug therapy, 83% of patients reported following antihypertensive treatment indicated in the reference program. Therefore, it can be seen in Table 3 that SP and DP values remained within prehypertension, however, PP increased from the first to the second visit.

Table 3. Parameters of SBP components of patients from the PECHAS program. Jataí (GO), Brazil, 2015. (N=80)

Paramenters (mmHg)	1ª Measure	2ª Measure	*P-value*
SP	138±10	138±13	0.29
DP	84±9	81±4	0.18
PP	54±14	57±14	0.04*

PS= systolic blood pressure; PD= diastolic blood pressure; PP= pulse pressure; *p ≤ than 5%. Values expressed as a mean and standard deviation.

DISCUSSION

It was verified that 41% of the interviewees did not perform physical activity, 25% were smokers and 33% considered themselves stressed. Smoking is one of the main risk factors for CVD, triggering the release of catecholamines, which contributes to the elevation of heart rate and SBP, through the nicotinic acid present in tobacco.[18]

Obesity is an important cardiovascular risk factor. Thus, 33% of the patients presented obesity and 42% were in the pre-obese stage[1-2]. Also, 99 cm was the mean waist circumference (WC), and 42% had hypercholesterolemia confirmed in laboratory tests. Increased visceral fat leads to metabolic risk, insulin resistance and, to a hyperadrenergic state, which leads to vasoconstriction of the musculature, consequently to an increase in SBP.[19]

Studies have shown that low family income and low levels of education are associated with difficulty in treating chronic non-communicable diseases, as well as hypertension, compromising access and understanding of health education/guidelines.[20] In this sense, patients receive less than two minimum salaries and 75% only complete elementary education.

PP is a consequence of the interaction between the ejection fraction and the hemodynamic properties of the great arteries.[14] With aging, there is an alteration of arterial function, aortic diameter increase, elastin fragmentation and an increase in collagen content, consequently the loss of distensibility and compliance of the aorta.[6,18] Due to these structural changes in the arteries, after 50 years old, the SP tends to increase, while the DP remains constant or decreases, causing the increase of PP in the

elderly due to difference between SP and DP.[6-8,18]

The PP value of the patients studied presented significance from the first to the second measurement, which represents a progressive increase and persistence of the high CVR. The predictive value of PP was confirmed in individuals aged 60 years or older.21 Prospective studies performed with patients with coronary artery disease showed that PP is able to identify future cardiovascular events, becoming an independent predictor of RCV.10,22

A study[23] based on 24-hour SBP outpatient monitoring showed that hypertensive patients with normal nocturnal and PP ≤53 mmHg had intermediate CVR, while those who did not have nocturnal lowering or had PP> 53 mmHg were categorized as high CVR, even that the absolute values of SP and/or DP were not above the upper limits of normality. Patients in this study had PP values higher than 53 mmHg in the first and second measurements, placing them in a high CVR.

Another study in men and women with PP ≥ 50 mmHg presented a double increase in risk/future cardiovascular events, even when other factors of CVR were discarded[13], and in patients in this study, PP was elevated from the first to the second measurement (54 ± 14 and 57 ± 14 mmHg). According to Table 3, the patients presented high PP measurements, even though SP and DP were controlled at both measurements (SP <140 mmHg and DP <90 mmHg), all patients were hypertensive elderly patients and or more antihypertensive agents, that is, the medication may not be effective in controlling PP values.[24]

As a way to minimize these damages and improve the quality of life of the population, strategies such as health education for SAH patients have been used to promote health, is one of the main activities of nursing. Therefore, there is a need for these professionals in guiding all patients to better daily habits such as the practice of physical activities, adherence to medication, strict diet control, restriction of the use of tobacco and alcohol, and stimulate pleasurable activities in an attempt to reduce stress, and consequently pressure levels.[15-20,25] Therefore, nurses are fundamental in reducing SBP, not only because they integrate systematic care in health prevention, but because they are a member of changes, in which their collaboration can influence changes in the routine of the primary care patient.[15-20,25] The institutionalization of a space of participation of social subjects in health services, one of the premises of the Unified Health System (SUS), goes through the critical reflection of the educational practices developed with the population. Thus, for an educational practice to approach the dialogism, it needs to position the participation of the patient in the centrality of the process.

To our knowledge, national studies to demonstrate and compare the components of SBP in elderly hypertensive patients are rare. It is worth mentioning that this is a preliminary study with the inclusion of 80 patients, which will contribute to guiding future research.

Limitations of the study

It is a cross-sectional and observational study with the inherent limitations of this type of design. The studied patients used several classes of antihypertensive agents, probably some medications, such as the beta-adrenergic blocker prescribed for 19% of the total population, would not effectively reduce PP.[11-3,32] Finally, it is possible that the differences of the PP found were specific to the analyzed population. On the other hand, some patients examined could present acute elevations of PP against stress during measurement.

CONCLUSION

The SP and DP levels remained controlled, while the PP remained high. Moreover, they progressively increased from the first to the second gauging. Even if the absolute values of SP and/or DP were not above the upper limits of normality, elevated PP is considered an independent marker of cardiovascular mortality, so the patients studied had an increased CVR.

Also, the results presented in this study are the best evidence available in the Brazilian scenario when comparing the components of SBP. New studies should collect data prospectively to better describe the impact of increased blood pressure levels and to associate with CVR.

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