

ORIGINAL ARTICLES

CARDIOVASCULAR RISK FACTORS: THE STUDY INCLUDED HYPERTENSIVE PEOPLE IN A POPULAR NEIGHBORHOOD IN THE AMAZON REGION

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ABSTRACT

Cross-sectional study, retrospective and quantitative character that aimed to estimate the cardiovascular risk factors of 145 users with hypertension of a Amazon community in Belém-PA. The collected data were from the Registration Form of HIPERDIA. The U test, by Mann-Whitney was applied for comparison between genders and the chi-square test to identify the influence of some variable. The software SPSS. 16® was used on the descriptive analysis and MINITAB. 15® to perform the tests. Were identified: high blood pressure, both systolic (89.4%) and diastolic (64.1%), increased abdominal circumference (male: 63.2% female: 88.6%), presence of cardiovascular family history (45.5%), smoking (27.6%), sedentary (57.9%) and overweight and obesity (75.2%). The U Mann-Whitney test showed that showed the average risk factor is equal for men and women and that there is greater influence of sedentary lifestyle in people who had a stroke. The coexistence of risk factors with hypertension is present in 91.1% of the sample. These findings underscore the need for more effective action to control the disease in the study group such as, reduce and control body weight; recommend and encourage proper nutrition and physical activity, controlling blood pressure values, as well as global ratings of living conditions, which would sustain the best recommendations to this group.

Keywords: Cardiovascular Disease. Chronic Disease. Risk Factors. Hypertension. Blood Pressure.

INTRODUCTION

Systemic arterial hypertension (SAH) is a non-transmissible chronic disease that is considered a public health problem worldwide. In the United States, it is estimated that hypertension prevalence is two times greater in obese individuals than in individuals with normal weight; 62% to 65% of patients with arterial hypertension do not maintain adequate control of the disease⁽¹⁾. In Brazil, this prevalence is around 22.7%, it is higher in women (25.4%) than in men (19.5%), it has become more common in women between 18 and 24 years of

age (5.9%), and over 55 years old (50%)⁽²⁾.

In some populations from the Amazon region, located in Northern Brazil, the prevalence of hypertension is currently equivalent to that of cities of medium to large sizes. This region differs mainly by the diversity provided by the forest. This diversity was recognized in a study about the consequences from its residents entering modern life. The use of processed foods, drift from extractivism, and reduction in physical activity were changes that happened and led to changes in blood pressure, a fact reported for more than a decade⁽³⁾, which still has its

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importance because it is re-incident.

The Amazon region presents a special case in the Brazilian reality because while it has a large part of its population living isolated with river depending habits, it also has urban centers where large cities problems are predominant. Even with these specificities, we know that hypertension is a non-transmissible chronic disease and considered a serious public health problem that has affected various population segments determining cardiovascular diseases⁽⁴⁾. Thus, the increased number of people with chronic diseases, *particularly arterial hypertension* [our emphasis] reinforces the need for a health model that allows professionals to assess reality and trace intervention strategies⁽⁵⁾ directed towards controlling cardiovascular risk factors.

Based on the above, this study aimed to estimate cardiovascular risk factors in individuals presenting SAH who were registered in the HIPERDIA Program from a health unit in a community in Belém do Pará, Brazil.

METHODOLOGY

This was a retrospective, descriptive, and quantitative study performed at the Satellite Municipal Health Unit (UMS) in a community in Belém do Pará, Brazil.

The sample included 145 registration forms from individuals with arterial hypertension registered in the HIPERDIA Program. Out of 322 existing records in the period of data collection (12/19/2007 to 2/10/2008), 160 were selected from individuals presenting SAH diagnose; records showing diagnosis of diabetes mellitus and with incomplete data were excluded from these 160 records.

The information collected from the Registration Form were: age, gender, blood pressure, waist circumference (WC), weight and height, cardiovascular family history, smoking, sedentary lifestyle, and the presence of associated diseases such as Cerebrovascular Accident (CVA), Acute Myocardial Infarction (AMI), and renal diseases.

The blood pressure records were those taken at the time of registration in the HIPERDIA Program. These measurements were taken after data collection to fill out the forms, which results in approximately 15 minutes of rest for each

individual. The measurement was taken in the right arm, with the individual in a sitting position. An aneroid sphygmomanometer and stethoscope were used. The classification of blood pressure values were in accordance with the determinations of the Ministry of Health⁽⁶⁾ for individuals 18 years old and older: Normal (systolic BP < 120 and diastolic BP < 80); Pre-hypertension (systolic BP between 120-139 or diastolic BP between 80 -89); Stage 1 Hypertension (systolic BP between 140-159 or diastolic BP between 90 -99); and Stage 2 Hypertension (systolic BP $\geq$ 160 or diastolic BP $\geq$ 100).

The Body Mass Index (BMI) was calculated using body weight and height ($BMI = \text{Weight (kg)}/\text{height in m}^2$) taken in a professional anthropometric scale considering the following parameters: normal (18.5 -24.9 Kg/m²); overweight (25-29.9 Kg/m²); and obese ($\geq$ 30 Kg/m²)⁽⁶⁾. WC measurements were taken using a flexible measuring tape with 150 cm length, with the point of reference at the umbilical scar level, considering the following parameters: 102 cm for men (WC > 94 cm established as increased risk and WC > 102 cm established as very increased risk); 88 cm for women (WC > 80 cm established as increased risk and WC > 88 cm established as very increased risk)⁽⁶⁾.

The variables were presented in tables and graphs. The significance test was applied (Mann-Whitney U test) for the inferential comparison between genders; the Chi square test was applied to identify whether there was influence of some variable on the results. The significance level of 5% was used ($p \leq 0.05$).

The composition of results was obtained with the SPSS 16® statistical software for the descriptive analysis; MINITAB® 15 was used to perform tests. The assessment of correlations between physical inactivity and cerebrovascular accident as risk factors was performed by the Chi square test of independence at 5% level of significance to test the hypotheses.

This study was authorized by the Municipal Health and Environment Secretary (SESMA) from Belém and complied with the 196/96 resolution of the National Health Council through Ordinance No. 432/2007. The study was also approved by the Research Ethics Committee from the "João de Barros Barreto"

University Hospital from UFPA under protocol No. 3243/07.

RESULTS AND DISCUSSIONS

Table 1 presents profiles of individuals with hypertension, in treatment at the health unit, according to the identified risk factors.

Table 1. Sample profiles according to cardiovascular risk factors (gender, age group, education, DBP, SBP, and BMI). Belém, 2007-2008 (n = 145).

Risk Factors	N	%
Gender		
Male	57	39.3
Female	88	60.7
Systolic BP		
Normal	07	4.8
Pre-Hyp	20	13.8
S1H	44	38.4
S2H	74	51.0
Age		
≤ 50 years old	25	17.2
51 to 60 years old	40	27.6
61 to 70 years old	50	34.5
≥ 71 years old	30	20.7
Diastolic BP		
Normal	16	11
Pre-Hyp	35	24.1
S1H	35	24.1
S2H	59	40.0
Education		
None	07	4.8
Illiterate/Incompl Elem	69	47.6
Compl Elem/Incompl Middle Sch	30	20.7
Compl Middle Sch/Incompl College	37	25.5
Complete College	02	1.4
BMI		
Normal	36	24.8
Overweight	65	44.8
Obesity	44	30.4

Source: Registration form – HIPERDIA

Out of the 145 hypertensive individuals in the study, 39.3% (n = 57) were males and 60.7% (n = 88) females with an average age of 61.86 years ($\sigma = 11.48$). The fact that the sample was composed mostly by women (60.7%) brings us to the consideration that women use public health services more than man. Studies indicate that this differential can be associated with social and cultural determinants, such as those linked to the

relationships between genders and the senses attributed to manhood, characterized by the adoption of risk behaviors and neglect and/or lack of information about self-care, which collaborates as causes for mortality and diseases⁽⁷⁾.

Table 2. Sample profiles according to cardiovascular risk factors (WC, smoking, cardiovascular family history, physical inactivity, and complications). Belém, 2007-2008 (n = 145).

Risk Factors	N	%
WC		
Males (n = 87)		
Normal	21	36.8
Risk↑	16	28.1
High Risk ↑	20	35.1
Females (n = 88)		
Normal	10	11.4
Risk↑	24	27.3
High Risk ↑	54	61.3
Physical inactivity		
Yes	84	57.9
No	61	42.1
Smoking		
Yes	40	27.6
No	105	72.4
Complications		
CVA	09	6.21
AMI	05	3.45
Cardiovascular Family history		
Yes	66	45.5
No	79	54.4
Other Coron	02	1.4
Renal Diseases	02	1.4

Source: Registration form – HIPERDIA

The formal education in this sample was concentrated at low levels, with only literacy or incomplete elementary school level in 52.4% (n = 76) of the sample. The low level of education shows the inversely proportional relationship between this variable and hypertension, also reported in other studies⁽⁸⁻¹⁰⁾. This same association demonstrates the low level of education in the prevalence of SAH, and the existence of a relationship between social

inequality and prevalence of chronic health conditions⁽¹¹⁾.

The systolic blood pressure (SBP) levels were elevated in 89.4% (n = 118) of the records; similar result was observed in the diastolic blood pressure (DBP) levels (64.8%/94) showing measurements concentrated in hypertension stages 1 and 2. It is worth noting that these figures are from a group of individuals in treatment in the health unit, therefore, such high values of blood pressure could not occur. It is important to consider that the treatment of hypertension leads to better control of the disease, and thus, to improved quality of life⁽¹²⁾.

Physical inactivity was present in 57.9% of the records, cardiovascular family history in 45.5%, and smoking in 27.6%. These results express elevated values if compared to the reference values from the VIGITEL data from the city of Belém, which showed 13.3% of sedentary adults and 13.5% smokers⁽²⁾. Another study, the INTERHEART, evaluated the effect of nine risk factors associated with AMI in 52

countries, including Brazil, in the period from February of 1999 to March of 2003. One of the results was the demonstration that these three risk factors are among those responsible for the highest incidence of AMI⁽¹³⁾.

Another study compared a group of 65 indigenous from an isolated village in the State of Rondônia with two other populations with urban characteristics (in Poland and Italy) and showed that the natives presented normal values of blood pressure that did not increase with age (46%), and normal cholesterol (100%) and glucose values (90%). These findings can be explained by the fact that this indigenous population does not have contact with civilization, consume a diet based on complex carbohydrates and vegetables, and spend high levels of body energy performing daily activities⁽¹⁴⁾. All these studies show that the transition from a rural to urban lifestyle leads to greater cardiovascular risk and suggest that the environment played an important role in the presented relations.

Table 3. Distribution of risk factors according to gender. Belém, 2007-2008.

Risk Factor	Means $\pm$ standard deviation			Confidence interval (95%)	p Significance (5%)
	Total sample	Males	Females		
Age (in years)	61.86 $\pm$ 11.48	62.17 $\pm$ 10.75	61.76 $\pm$ 12.04	(-7.00; 0.999)	0.222
SBP (in mmHg)	160.62 $\pm$ 25.69	160.00 $\pm$ 23.72	161.06 $\pm$ 27.13	(-10.00; 10,00)	0.958
DBP (in mmHg)	92.07 $\pm$ 18.02	92.83 $\pm$ 14.74	91.53 $\pm$ 20.03	(0.00; 10.002)	0.389
BMI (in kg/m ²)	28.19 $\pm$ 4.21	28.18 $\pm$ 3.73	28.20 $\pm$ 4.54	(-1.30; 1.60)	0.841

Source: Registration form – HIPERDIA

The significance test applied to assess the relationship between gender and some of the risk factors showed that, on average, the risk factor is equal in hypertensive men and women for the four variables: age, SBP, DBP, and BMI. Therefore, the hypotheses were:

H₀: On average, the risk factor is equal for men and women with hypertension;

H₁: On average, the risk factor is different for men and women with hypertension. Thus, measures should be applied to both genders without distinction in order to control blood pressure and BMI values because age is a non-modifiable risk factor.

Figure 1 shows that the highest arterial pressure limits are closely related to measurements that indicate overweight (BMI 25-29) and obesity (BMI $\geq$ 30), i.e., individuals with higher blood pressure values feature higher BMI values too, even without the identification of a significant statistical association for this correlation.

Obesity, which is a modifiable risk factor for CVD is mentioned among other risk factors (alcohol use, smoking, and physical inactivity) as one of the main causes of hypertension nowadays⁽¹⁵⁾; it is considered by some authors as probably the worst risk factor for the development, not only of hypertension,

but also of acute myocardial infarction⁽¹⁾. Therefore, reduction in body weight, in particular in central body fat, is a vital

measure to decrease blood pressure values and reduce the risks of CVD.

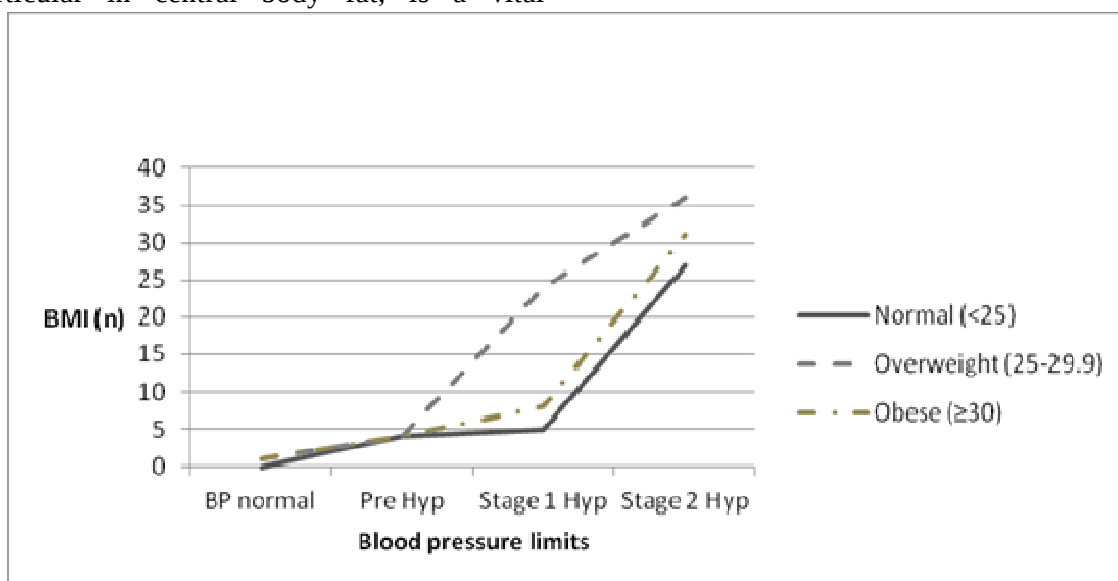


Figure 1. Presentation of blood pressure limits and MBI in the studies sample. Belém 2007-2008.

Obesity is a worldwide epidemic, which when associated with cardiovascular risk factors, calls for immediate interventions to reduce bodyweight. Thus, differentiated actions are required for individuals with high blood pressure to be motivated in changing habits to achieve control of body weight⁽⁵⁾, which is a factor that would generate important impact on the prevalence of SAH. Such recommendations

apply to the studied group because their demands need the interventions punctuated here.

In addition, the coexistence of SAH with other risk factors indicate troubling results because a large portion of the sample were in this situation, in addition to the relationship established between physical inactivity and CVA (Table 4).

Table 4. Coexistence of risk factors with hypertension and the relationship between physical inactivity and cerebrovascular accident in the studied sample. Belém, 2007-2008.

Risk Factors	n	%	Physical inactivity	CVA				Total	
				*p significance (5%) 0.006				N	%
				No	%	Yes	%		
1 to 2 factors	13	8.9	No	61	100.0	00	0.0	61	100.0
3 to 4 factors	63	43.5		75	89.2	09	10.7	84	100.0
5 to 7 factors	69	47.6							
TOTAL	145	10.0	Total	136	100.0	09	100.0	145	100.0

Source: Registration form – HIPERDIA

Risk factors such as smoking, physical inactivity, overweight/obesity, increased WC, cardiovascular family history, and advanced age coexisting with SAH were identified in the present study as increasing the risk for cardiovascular complications. In the studied sample, the presence of 3 to 4 risk factors lies in 43.5% (63); and of 5 to 7 in 47.6% (69). Such

findings are worrisome because the association of risk factors increases the possibility of CVD. However, these values could be justified by the elevated presence of individuals over 60 years of age (55.2%, n = 80). It is important to consider that when hypertension becomes one of the main population risk factors for cardiovascular

disease⁽¹⁾, these associations become even more critical.

The aggravating factor in this study is that all individuals were hypertensive, thus, increasing the risk for CVD. Actions such as reducing and controlling body weight; encouraging proper nutrition and physical activity; controlling blood pressure; reducing the use of tobacco and alcoholic beverages to reduce modifiable risk factors are important in this group of hypertensive individuals. In addition, global assessments of their living conditions could support the recommendations addressed to this group.

CVA was correlated with physical inactivity when considering the complications arising from the pathology. Table 4 present the distribution of hypertensive patients who reported being sedentary and the relationship between this risk factor and CVA. The influence of physical inactivity was observed in individuals who presented this complication because all who were affected by this pathology (10.8%/9) were sedentary, corroborating H_1 (hypothesis 1). It is reported here that the testing hypotheses were:

H_0 : There is no influence of one variable over another;

H_1 : One variable has influence over another. Therefore, hypothesis H_0 is rejected in the presence of p with significance of 0.006.

The VI Brazilian Arterial Hypertension Guidelines recommend the maintenance of good cardiovascular health to improve quality of life. The authors indicate and warn that regular practice of physical activity is necessary and that every adult should perform it at least five times a week, 30 minutes of moderate physical activity in a continuous or accumulated fashion, as long as they are in good conditions⁽¹⁶⁾.

Other studies point to the likely interference of obesity in the relationship between hypertension and level of practiced physical activity; these studies indicate that a modulator effect of obesity on this relationship has been reported. This means that the intervention programs aimed at controlling blood pressure levels should involve regular practice of physical activities in intensities aimed at reducing body mass⁽¹⁷⁾.

Thus, we consider that regular physical exercise helps both in treating hypertension and reducing the risk of developing it. Improving physical fitness leads to the exertion of significant influence on the control of hypertension, thus avoiding the harms from the disease.

CONCLUSION

When estimating the risk factors of the studied group, we observed that the individuals with SAH registered at the studied UMS, present multiple risk factors (overweight/obesity, smoking, high blood pressure, physical inactivity, high waist circumference, cardiovascular family history, and advanced age) associated with the situation of lack of blood pressure control, which expose them to increased risk of developing cardiovascular complications.

We highlight that these hypertensive individuals, even receiving treatment, present high blood pressure values, showing that the control of the disease is not achieving the established standards, which inevitably will contribute to increased risk of CVA, coronary events, and loss of renal function among other diseases.

An important reflection that arises upon such results is the identification of how health professionals are providing care to these hypertensive individuals and as how their blood pressure is being measured. Among the many possibilities are the lack of an effective dialogue that promotes the understanding of treatment for the proper use of medicines is highlighted; the acceptance of the limits imposed by a hyposodic diet that often can be opposed to community habits; and the difficulty in accessing services offered by institutions.

Considering these issues, it is believed that there is a need to implement strategies for the discussion of the relationships between health professionals and their attitudes when caring for users with more accurate blood pressure control, careful treatment monitoring, revision of preventive measures and adopted treatments, and focus on risk factors and their association in individuals with hypertension.

The fact that the obtained data came from registration forms was a limitation in this study;

these forms were sometimes incomplete and precluded their use due to lack of information.

Further studies are needed to enable better understandings of the factors identified here and of others involved in the lack of hypertension control, especially in individuals who are part of a program developed in health services that

integrates the Unified Health System, which has hypertension as one of its priorities.

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FATORES DE RISCOS CARDIOVASCULARES: ESTUDO COM PESSOAS HIPERTENSAS, DE UM BAIRRO POPULAR NA REGIÃO AMAZÔNICA

RESUMO

Estudo transversal, retrospectivo e quantitativo, cujo objetivo foi estimar fatores de risco cardiovasculares de 145 usuários portadores de hipertensão arterial de uma unidade de saúde, numa comunidade amazônica em Belém do Pará. Os dados foram coletados do Formulário de Cadastro do HIPERDIA. Aplicou-se teste U de Mann-Whitney para comparação inferencial entre gêneros e teste qui-quadrado para identificar influência de alguma variável. Utilizou-se o software SPSS.16® na análise descritiva e o MINITAB.15® na realização dos testes. Foram identificados: pressão arterial elevada, tanto sistólica (89,4%) quanto diastólica (64,1%); circunferência abdominal aumentada (homens: 63,2%; mulheres: 88,6%); presença de antecedentes familiares cardiovasculares (45,5%); tabagismo (27,6%); sedentarismo (57,9%); sobrepeso e obesidade (75,2%). O teste U de Mann-Whitney evidenciou que, em média, o fator de risco é igual para homens e mulheres, e que existiu influência do sedentarismo em pessoas que apresentaram acidente vascular encefálico. A coexistência dos fatores de risco com a hipertensão arterial, está presente em 91,1% da amostra pesquisada. Esses achados ressaltam a necessidade de ações mais efetivas para o controle da doença do grupo estudado, tais como, reduzir e controlar o peso corporal; recomendar e estimular alimentação adequada e atividade física; controlar os valores pressóricos; além de avaliações globais das condições de vida, o que sustentaria melhor as recomendações dirigidas a este grupo.

Palavras-chave: Doenças Cardiovasculares. Doença Crônica. Fatores de Risco. Hipertensão. Pressão Arterial.

FACTORES DE RIESGO CARDIOVASCULAR: EL ESTUDIO INCLUYÓ A PERSONAS HIPERTENSAS EN UN BARRIO POPULAR EN LA REGIÓN AMAZÓNICA

RESUMEN

Estudio transversal, retrospectivo y cuantitativo, cuyo objetivo fue estimar factores de riesgo cardiovasculares de 145 usuarios portadores de hipertensión arterial de una unidad de salud, en una comunidad amazónica en Belém do Pará. Los datos fueron recolectados del Formulario de Catastro del HIPERDIA. Se aplicó la prueba U de Mann-Whitney para la comparación inferencial entre los géneros y prueba chi-cuadrado para identificar la influencia de alguna variable. Se utilizó el software SPSS.16® en el análisis descriptivo y el MINITAB.15® en la realización de las pruebas. Fueron identificados: presión arterial elevada, tanto sistólica (89,4%) como diastólica (64,1%); la circunferencia abdominal aumentada (hombres: 63,2%, mujeres: 88,6%); la presencia de antecedentes familiares cardiovasculares (45,5%); tabaquismo (27,6%); sedentarismo (57,9%); sobrepeso y obesidad (75,2%). La prueba U de Mann-Whitney evidenció que el factor de riesgo promedio es igual para hombres y mujeres, y que ha existido influencia del sedentarismo en las personas que tuvieron un accidente cerebrovascular. La coexistencia de los factores de riesgo con la hipertensión arterial está presente en el 91,1% de la muestra investigada. Estos resultados resaltan la necesidad de acciones más efectivas para el control de la enfermedad del grupo estudiado, tales como, reducir y controlar el peso corporal; recomendar y estimular una alimentación adecuada y la actividad física; controlar los valores de presión arterial, así como las evaluaciones globales de las condiciones de vida, lo que sustentaría mejor las recomendaciones dirigidas para este grupo.

Palabras clave: Enfermedades Cardiovasculares. Enfermedad Crónica. Factores de Riesgo. Hipertensión. Presión Arterial.

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