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RESEARCH ARTICLE

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SYSTEMIC ARTERIAL HYPERTENSION AND RISK FACTORS IN QUILOMBOLAS FROM THE DOWNTOWN OF MARANHÃO, BRAZIL

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ABSTRACT

A Systemic Arterial Hypertension is understood as one of the major public health problems in the world and in Brazil. Thus, Quilombola Communities are a minority, consequently they develop diseases, with arterial hypertension being the most frequent. To identify systemic arterial hypertension and risk factors in quilombolas in Maranhão, Brazil. Cross-sectional study, using instruments adapted to the National Health Survey and the Surveillance of Risk and Protection Factors for Chronic Diseases Survey and the significance of 5%. 177 quilombolas participated, of which 55.9% were women. The average age of the population was 43.89 years (SD = 17.82). The prevalence of arterial hypertension was 22.2% (95% CI: 16.1-28.3%). Risk factors that were associated with arterial hypertension: age (≥ 60 years; 95% CI: 1.11 - 7.90; $p < 0.030$), Body Mass Index - obesity (95% CI: 1.33 - 7.85; $p < 0.001$), greatly increased waist circumference (95% CI: 2.47 - 34.54; $p < 0.010$), physical inactivity (95% CI: 1.04 - 10.87; $p < 0.043$), and irregular consumption of vegetables (95% CI: 0.4 - 6.87; $p < 0.041$). The risk factors for arterial hypertension were significant for the studied population.

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INTRODUCTION

The remaining Quilombola Communities are recognized as ethnic-racial groups with their own historical trajectory, endowed with specific territorial relations, with a presumption of black ancestry related to the resistance to the historic oppression suffered, with the Fundação Cultural Palmares as responsible for their registration and certification¹. There are currently 3,386 communities across the country, 63% of which are located in the Northeast², mainly in the states of Maranhão (with 816 certified communities - the largest concentration in the country), Bahia, Minas Gerais, Pará and Pernambuco³. The process of inequalities and inequities experienced by quilombolas, unhealthy hygienic-sanitary conditions, disguised, inhuman and unacceptable slavery as in the past⁴ caused impacts that conditioned their bioanthropological health indicators⁵. It is in this context that arterial hypertension appears as one of the most prevalent chronic diseases among quilombolas, however, the risk factors

involved in this scenario is the subject of discussion in the literature that deals with behavioural, social, environmental and genetic factors⁶. Despite the scarcity of studies, there was a prevalence of reported hypertension from 25.3% to 44.1% 7-8 considered high when compared to the general population. Socioeconomic conditions, inequities in access to health, physical inactivity, abdominal obesity, overweight, unhealthy lifestyle habits, among others, are recognized as important risk factors for the development of arterial hypertension⁹. This study, therefore, sought to identify systemic arterial hypertension and risk factors in quilombolas in Maranhão, Brazil.

MATERIALS AND METHODS

This is a cross-sectional study, carried out in the Quilombola Community of Santana dos Pretos, from July to November 2018. The community consists of 200 families and 452 inhabitants, according to

data from the Family Health Strategy (FHS), being located on the banks of MA 006, in the Baixada Maranhense microregion, Northeastern Brazil, 333 km from the capital, São Luís. Among the 816 quilombola communities in the state of Maranhão, Santana dos Pretos stands out as an important community that keeps preserved its culture. The sample design was carried out through random selection of participants. The research's target population was 302 people >= 18 years old, according to data obtained from the individual registration forms of E-SUS completed by the Community Health Agent of that community, with 100% coverage of that community. For the sample calculation, the statistical program PAS 15 (2015) was used, with the following parameters: 302 quilombola population >= 18 years old, 44.1% prevalence of hypertension estimated for the quilombola population¹⁰, significance level (α) of 5%, tolerable error of 7%, the minimum size was 172 people plus 5% of possible losses. The probabilistic sampling was carried out by the procedure of random sampling without replacement using the PAS 15 software, from a series of random numbers from which 180 participants out of a total of 302 were chosen. As inclusion criteria: quilombolas aged 18 years or older of both sexes, being residents of the community and accompanied by the Family Health Strategy. Exclusion criteria were: pregnant, those who reported residing temporarily in the locality. The collection instrument was a semi-structured questionnaire, adapted and based on the collection instrument of the National Health Survey¹¹ and the electronic form of Surveillance of Risk and Protection Factors for Chronic Diseases by Telephone Survey (VIGITEL)¹⁰.

RESULTS

For this study, 180 quilombolas took part, where two were not present at the residence and one was pregnant at the time. From those, 177 were eligible, of which 55.9% were women. The average age of the population was 43.89 years (SD = 17.82), varying between 18 and 89 years. A higher proportion of respondents was observed in the age group between 30 and 39 years. Most quilombolas declared themselves black (63.8%), they had 1 to 4 years of schooling (36.2%) and were married (40.1%). Regarding income, 97.2% depend on up to one minimum wage per month (R\$ 994.00 - in force in 2018), resulting from the sale of surpluses in crop production (70.6%) and / or social programs such as Bolsa Família. The studied population had a prevalence of arterial hypertension of 22.2% (CI 95%: 16.1-28.3%), which increased with age, decreased with schooling, it was higher among married people, farmers and in non-white colour. No statistically significant differences for gender, income and religion were found. From the 17 risk factors evaluated, it was observed a significant difference ($p < 0.05$) between genders in 12 of them. And, in the variables smoking, obesity, greatly increased waist circumference and physical inactivity, the frequency is significantly higher in women than in men. On the other hand, in the variable eating habits (eating beans, eating vegetables, eating meat with fat, not eating fish, nor natural juice, drinking soda and eating sweets), risk habits are more frequent in men than in women.

Table 1. Univariate (unadjusted) and multivariate (adjusted) logistic regression in relation to having or not having Hypertension, Santana dos Pretos, Pinheiro - MA, Brazil, 2019

Independent variable	Univariate - not adjusted			Multivariate - adjusted		
	p	OR	95% CI of OR	p	OR	95% CI of OR
Male	0,498	0,57	0,11 - 2,92			
Age (≥ 60)	0,092	2,57	0,86 - 7,73	0,030	2,96	1,11 - 7,90
Colour (Black, Brown)	0,551	1,37	0,49 - 3,88			
Marital status (Not married)	0,067	0,37	0,13 - 1,07	0,060	0,38	0,14 - 1,04
Schooling (Illiterate / Elementary)	0,989	0,99	0,42 - 2,33			
Income (up to 1 MW)	0,457	0,66	0,22 - 1,96			
BMI (obese)	0,049	5,44	1,01 - 29,40	0,001	9,23	2,47 - 34,54
Waist Circumference (greatly increased)	0,036	3,10	1,08 - 8,91	0,010	3,23	1,33 - 7,85
Drink alcohol (yes)	0,913	1,06	0,36 - 3,18			
Physical activity (no)	0,045	4,52	1,04 - 19,7	0,043	3,38	1,04 - 10,87
Smokes (yes)	0,090	2,71	0,85 - 8,33	0,111	2,35	0,82 - 6,67
Uses salt (yes)	0,493	1,41	0,53 - 3,79			
Vegetables (no)	0,097	2,33	0,86 - 6,34	0,041	2,67	1,04 - 6,87
Meat (with fat)	0,107	0,44	0,16 - 1,19	0,119	0,47	0,18 - 1,21
Chicken (with skin)	0,709	1,30	0,32 - 5,25			
Fish (no)	0,024	5,68	1,25 - 25,0	0,023	5,15	1,27 - 20,0
Natural juice (no)	0,886	1,10	0,30 - 3,99			
Fruits (no)	0,533	1,45	0,45 - 4,68			
Soft drink (yes)	0,225	0,54	0,20 - 1,46			
Milk (Whole)	0,194	2,03	0,70 - 5,88	0,138	2,05	0,79 - 5,26
Sweets (yes)	0,891	1,07	0,41 - 2,78			

The data were evaluated using the IBM SPSS Statistics 20 (2011) program. Initially, the descriptive statistics of the analysed variables and frequency table were made. Subsequently, to assess the association of classificatory variables (socioeconomic, environmental, life habits and eating habits) in relation to hypertension groups (Case and Control), the non-parametric Chi-square test of independence was performed (χ^2) or Fisher's Exact. The evaluation of numerical variables (age, number of children, number of people at home, consumption of fish, alcohol consumption, number of days of sport, smoking habit, frequency of passive smokers, waist circumference, BMI) in relation to the two hypertension groups (Case and Control) was performed by the parametric T test of independent student. In all statistical tests, the level of significance was set at 0.05 ($p \leq 0.05$). This research is part of a larger project called Impact of Chronic non-transmissible Diseases in Quilombos which was submitted to the Research Ethics Committee of the University Hospital - Federal University of Maranhão getting approval by the Number 2,626,680, as required by Resolution Number 466 / 12 of the National Research Council, which regulates scientific research in humans.

Regarding the age group, a significant difference ($p < 0.05$) was found in smoking, not doing physical activity, using salt shakers on the table, not consuming vegetables, not consuming juice and soft drinks. It was found that individuals over 59 years of age smoke more than younger ones. And they are also those who do not do physical activities (92.3%), while the youngest (53.5%) do more physical activity. Older people eat more salt in their diet (66.7%) than younger people (20.9%). The older ones consume less vegetables than the younger ones, on the other hand they drink more natural juice and less soft drinks than the younger ones (Table 1). In the initial analysis of univariate logistic regression, the following variables were selected: age, marital status, BMI, waist circumference, physical inactivity, smoking, irregular consumption of vegetables, consumption of fatty meat, non-consumption of fish and drinking whole milk, because they had $p < 0.20$. These variables were evaluated later in the multivariate logistic regression analysis. It appears that the main risk factors were: being obese (OR = 9.23 $p = 0.001$), not consuming fish (OR = 5.15 $p = 0.023$), physical inactivity (OR = 3.38 $p = 0.043$), increased waist circumference (OR = 3.23 $p = 0.010$), followed by being older than

60 years (OR = 2.96 $p = 0.03$) and irregular consumption of vegetables (OR = 2.67 $p = 0.041$). As for the frequency of food consumption, most of the investigated declared that they never or almost never consume vegetables, salad and beans. From one to four times a week was the frequency reported by quilombolas for the consumption of meat (58%), chicken (78%), fish (56.5%) natural juice (48.6%) and fruit (44.1) %. Regarding the frequency of five times or more times a week, only milk intake (57.6%). The practice of moderate to vigorous physical activity per week during free time, was denied by 65.5% of the individuals and among the types of those who perform, soccer stands out as the most frequent modality. Those who performed sufficient physical activity ($> = 150\text{min} / \text{week}$) corresponded to only 16.9%. It was observed that the proportion of people with altered BMI (overweight and obesity) corresponded to most of the participants studied (51.4%) as well as the altered waist circumference (increased and greatly increased), which was 55.3%. It was observed that the percentages of smoking, use of salt on the table, consumption of salad, beans, vegetables, fruits and meat with fat reached higher levels among individuals who declared their skin colour black. On the other hand, alcohol consumption, obesity, increased waist circumference and physical inactivity were more prevalent in the interviewees who self-reported brown skin colour.

DISCUSSION

Corroborating with the literature, data from the National Health Survey¹² demonstrated a prevalence of blood pressure $\geq 140 / 90$ mmHg of 22.3% in the adult population, while Vigitel¹⁰ found a prevalence of 24.3% of hypertension in the federal capitals, similar findings to that found in the present research. However, it is important to highlight that in both studies, the studied population was predominantly urban, and in the first research the diagnosis of hypertension was by measurement (using calibrated digital semiautomatic devices, three blood pressure measurements were taken, with two minutes intervals) and in the second study, the diagnosis was self-reported (medical diagnosis of hypertension). It is noteworthy that in our research, the population studied was genuinely rural, which may have interfered with the findings. On the other hand, the prevalence of hypertension in this study is lower than that recorded by Bezerra et al.⁵, when he observed the prevalence of hypertension in 45.4% (95% CI: 41.9-48.8%) in quilombolas respondents, considering hypertensive those with systolic blood pressure $\geq 140\text{mmHg}$ and / or diastolic blood pressure $\geq 90\text{mmHg}$ and / or reported use of antihypertensive drugs. In the present study, those who reported using antihypertensive drugs were not considered hypertensive, which could increase the prevalence found. However, in general, it is worth reflecting on this high prevalence of arterial hypertension in quilombola communities. Studies by Oliveira et al.,¹³ identified a high prevalence (30.9%) of hypertension among chronic non-communicable diseases self-reported by quilombolas surveyed. As for the age variable, it showed a significant association with SAH, even after adjusting the multivariate model, as in other studies conducted¹⁴⁻⁵⁻¹³. Aging is often related to chronic non-communicable diseases, due to the increase in life expectancy of the Brazilian population and the increase in the elderly population¹⁵. In this sense, the studies by Picon et al.¹⁶ identified a prevalence of 68% of Hypertension in the elderly, when performing a meta-analysis with a systematic review of the literature, involving about 14 thousand elderly people.

Corroborating, Das et al.¹⁷ in a survey of Americans aged 57 to 85 years to analyse the influence of ethnicity on metabolic disorders, found that the prevalence of cardiovascular diseases is higher for black people and older people. However, it was observed that a large part of the young interviewees in the present study had blood pressure values for prehypertension (systolic BP (SBP) between 121 and 139 and / or diastolic BP (DBP) between 81 and 89 mmHg).⁹ Arima et al.¹⁸, when investigating through a cohort study the effects of the prehypertension and hypertension subtype on cardiovascular disease in the Asia-Pacific region, identified that prehypertension is associated with a higher risk of developing hypertension and cardiac

abnormalities. In the population-based studies by Egan and Stevens¹⁹, the worldwide prevalence of prehypertension ranged from 21% to 37.7%. Thus, it is understood that there is a need to investigate this issue more closely in quilombola communities. As for gender, the prevalence of hypertension self-reported by respondents in the National Health Survey¹² proved to be higher among Women (24.2%), as well as in Vigitel (26.4%), on the other hand, in our research, there was no positive association between hypertension and gender, although the frequency was higher in females. This finding may be related to the fact that women normally use health services more and therefore have more access to the diagnosis of pathologies or health conditions. In addition, in research involving black women in South Africa, the levels of inflammatory markers, peripheral vascular resistance and blood pressure were higher than in women of European descent, although the BMI did not reveal a significant difference in the statistical analysis. Sensitivity to sodium (more frequent in blacks), may be one of the different factors associated with this outcome²⁰. Regarding the skin colour variable, national surveys such as the multicentred cohort study ELSA-Brazil (Longitudinal Study on Adult Health) investigated 15,103 civil servants between 35 and 74 years of age in six Brazilian capitals and demonstrated the prevalence of hypertension, regarding skin colour: 30.3% in whites, 38.2% in browns and 49.3% in blacks²¹. The National Health Survey¹² also found that there is a higher prevalence of self-reported hypertension in black people (24.2%) compared to brown adults (20.0%). Studies involving genetics and multilocus effects on blood pressure characteristics are still poorly explored, however, kimura et al.²² tested the presence of multilocus effects among seven polymorphisms (six genes) on characteristics related to blood pressure in 12 quilombola communities from São Paulo city, and did not notice a genetic pattern for the elevation of blood pressure levels, probably due to miscegenation and reinforced that larger studies are necessary to validate the findings²³. However, Rodriguez and Ferdinand²⁴, warn that in the United States the proportion of hypertension and cardiovascular diseases presents a different pattern in ethnic / racial groups and that there is an association between social determinants of health and hypertension in African-Americans²⁴. Nevertheless, Thorpe et al.²⁵ point out in their studies that between African American and white groups there is no significant difference regarding ethnicity and hypertension, when they live in similar social conditions.

That is, access to similar health care, has ruled out ethnic differences in the treatment and control of hypertension. In this research, schooling demonstrated to interfere in the percentages of hypertension in the case group, because the lower the level of education, the greater the frequency of hypertension in the studied population, a data similar to the results of Vigitel¹⁰. Malta et al.²⁶, warns of the fact that people with higher education seek more resources to promote health, such as good eating habits and physical activity, thus preventing chronic non-transmissible diseases. While Bezerra et al.⁵ observed in the quilombola communities studied, conditions of vulnerability such as low levels of education and low income. Corroborating, Sato et al.¹⁴ affirm that education was a factor that interfered in the prevalence of chronic non-communicable diseases in their studies, showing itself higher in the interviewees who reported less years of study. Chor et al.²¹ alert to the discussion that the worst therapeutic control and higher prevalence of hypertension is concentrated in the segment of the population with disadvantaged socioeconomic conditions. Analysing the differences in the prevalence of hypertension in terms of income, education, skin colour and gender, can reveal the impact of the huge social disadvantage on the health of population segments, shaping "the causes of the causes" of diseases, as they end up causing an unequal distribution of risk factors for diseases / conditions²⁷. Thus, research that raises discussion about the interference of these variables in determining quilombola health becomes relevant. As for the limitations identified in the present study, its cross-sectional design is mentioned, in which it allows data collection to occur as a single cut in time, which makes it difficult to analyse the variables and proportions found, as well as to affirm causalities of events. Another limitation is the difficult access to the communities of Santana dos Pretos within the

municipality of Pinheiro do Maranhão. This study allowed the identification of risk factors for Systemic Arterial Hypertension aged over 60 years, Body Mass Index obesity, Waist Circumference greatly increased, physical inactivity and low consumption of vegetables. However, it is worth remembering that education, skin colour, occupation and income, did not prove to be risk factors after the multivariate analysis, since there was a high frequency in these variables among the interviewees, thus being a homogeneous population as to these categories. The findings may be used as the basis for the insertion of intersectoral policies, promote justice, develop social projects for income generation, create public services meeting the needs presented by traditionally vulnerable populations, in addition to providing knowledge and expanding understanding of the subject. Finally, the data from this study can provide important information for thinking, acting and monitoring health actions and programs for the population of the remaining quilombola communities in the State of Maranhão.

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