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Perceptions and factors associated with arterial hypertension in indigenous populations: an integrative review

Márcia Cristine Pires Travassos[1], Mitsi Silva Moisés[1], Noeli Neves Toledo[1]

[1]*Federal University of Amazonas*

ABSTRACT

Aim: To identify in the scientific productions of the national and international literature the perceptions and factors associated with hypertension in indigenous populations. **Methods:** Integrative literature review, carried out in the LILACS, PUBMED and Web of Science databases, in November and December 2017, with a 10-year time cut. **Results:** Ten articles were identified in accordance with the established criteria. Of these, six were published in Portuguese; and seven are cross-sectional studies. The prevalence of hypertension among the different ethnic groups ranged from 2.8% to 46.2% and the main risk factors associated with hypertension among natives were behavioral and socioeconomic. It was observed that the perception and belief about the onset of hypertension is related to the change in diet, access to industrialized foods and the difficulty of coping with the disease. **Conclusion:** Current trends related to blood pressure levels point to the need for comprehensive indigenous care in the health-disease process.

Descriptors: Indigenous Population; Health of Indigenous Peoples; Hypertension; Risk factors; Perception.

INTRODUTION

The changes in the health-disease process of indigenous populations are a reflection of profound changes in the demographic, political, social and economic contexts in Brazil[1,2]. Similar to the global epidemiological situation, the country shows a decrease in the prevalence of infectious diseases and an increase in morbidity and mortality rates due to chronic non-communicable diseases in the general population[3].

At this juncture, diseases that were previously considered to be absent in indigenous populations, such as systemic arterial hypertension (SAH), show a tendency to increase in prevalence[4,5], but without showing a reduction in the rates of infectious and parasitic diseases[6]. Although subtly, the increase in the indices of hypertension in indigenous people is a serious public health problem[7].

Studies conducted in the 1950s and 1960s showed that the blood pressure among the natives in Brazil was between the medium and low levels, and there was no record of hypertension in this period, even with the advancing age[7,8]. However, from the 1990s the first cases of the disease began to be identified and more recent studies have revealed that some ethnic groups show higher and higher prevalence, even surpassing those of non-indigenous populations[7].

Factors such as the expansion of national borders, the decline of indigenous territories and environmental degradation appear to be contributing in some way to these changes[4]. By affecting livelihoods, the indigenous population has been in a condition of vulnerability because traditional practices such as hunting, fishing and agriculture have been abandoned because there is not enough land, while the monetary economy and wage labor have been gaining new spaces[7,9]. Likewise, the influences of interethnic contact have promoted considerable changes in the economic, social, cultural and environmental axes, contributing to the incorporation of new habits of life by indigenous communities and, consequently, to the emergence of new health problems, such as chronic non-communicable diseases[1,7,9].

According to the Brazilian Society of Cardiology, hypertension is a multifactorial disease, responsible for high morbidity and mortality rates and hospitalization, and it is the main risk factor for the development of cardiovascular, cerebrovascular and renal diseases[10,11]. Among the factors associated with the disease are those of a genetic, socioeconomic, environmental and behavioral nature, with emphasis on overweight, physical inactivity, inadequate dietary pattern, alcohol consumption and smoking[10,11].

In view of this, it is observed that current trends point to the need for integral attention to the indigenous population. Therefore, nurses are inserted in the most varied spheres of society in the process of caring for others and for the community. It should be emphasized that a differentiated look of these professionals need to be directed to meet the demands and specificities of this population, be it in education, prevention, promotion and rehabilitation of health[9,10].

Considering that the prevalence of SAH has increased among indigenous people, leading to demands for health services, it is justified to know the perception and factors associated with the disease in these ethnic groups, which may contribute to the development of prevention strategies for diseases present in this population. In this context, the objective of this study was to identify in the scientific productions published in the national and international literature the indigenous perceptions about hypertension and the factors associated with hypertension in the indigenous population of Brazil.

METHOD

This is an integrative review of the literature of studies that anchor the thematic about the perceptions and factors associated with hypertension in indigenous populations. This method was chosen because it considers that the integrative review allows the synthesis of studies on a particular theme, allows the integration of results of several methodologies, favoring the understanding of the analyzed phenomenon, providing the possibility of the applicability of the results found, which are significant to the health care practice[12].

The following steps were taken to carry out the study: formulation of the question and objectives of the review; establishment of criteria for the selection of articles; categorization of studies; evaluation of studies included in the integrative review; interpretation of results; and presentation of knowledge review/synthesis[12]. In this sense, to guide the integrative review was the construction of the guiding question of research from the PICO strategy for non-experimental studies, where only PIO was addressed, since the research does not intend to compare. Thus, it was defined as P (patient/context) = indigenous population, Indian, Brazil; I (intervention or exposure) = hypertension; and O (result and/or outcome) = perceptions and associated factors[13]. These definitions have resulted in the following research question: What are the perceptions of indigenous people and the factors associated with arterial hypertension in indigenous peoples of Brazil?

For the selection of the studies, a search was carried out in the months of November and December of 2017 in the journals published and stored in the databases: Latin American and Caribbean Literature in Health Sciences (LILACS), National Library of Medicine National Institutes of Health (PubMed) and Web of Science. The data were collected from the cross-over of controlled and uncontrolled descriptors that are presented in Table 1.

In order to include the studies in the sample, the following criteria were considered: articles dealing with hypertension in Brazilian indigenous peoples, made available in full, published in the period 2007-2017, with abstracts available in Portuguese, Spanish or English, and in accordance with the research question. Duplicate publications, editorials, articles of reflection and those that were inaccessible for free.

In order to favor the validation of the selection of the publications for analysis, a peer review of the titles and abstracts was done, resulting in 15 eligible articles. Subsequently, the selected studies were read in their entirety and were evaluated regarding the response to the research question and whether they were in accordance with the inclusion and exclusion criteria established. Articles that were repeated in more than one database were incorporated to the basis on which they first appeared in the survey. Thus, after applying the criteria for inclusion, reading comprehension, identification, analysis and categorization, considering the central ideas of each study, ten articles were selected and composed the sample.

For the extraction and critical analysis of the data, a script was made up of the following variables: title, authors, year of publication, periodical, method, level of evidence, databases, study site, and results related to perceptions and factors associated with hypertension in indigenous people.

The level of evidence attributed to the articles was based on the categorization proposed by Fineout-Overholt et al.[14]: level I - evidence resulting from meta-analyzes or systematic reviews of clinical trials; level II - evidence of at least one well-delineated randomized controlled clinical trial; level III - well-delineated clinical

Chart 1. Crossing the descriptors from the PICO strategy. Manaus (AM), 2017

PICO STRATEGY	LILACS	PUBMED	WEB OF SCIENCE
P: Problem or patient or context	Indigenous Population (DeSC) OR Health of Indigenous Populations (DeSC) AND Brazil (DeSC)	Indigenous Population (All Fields) OR Health of Indigenous Peoples (All Fields) OR Indigenous (All Fields) OR Indian People (All Fields) AND Brazil (MeSH terms) OR Amazon Region (All Fields) OR Amazon (All Fields)	Indigenous Population (DeSC) OR Health of Indigenous Peoples (DeSC) OR Indigenous (All Fields) OR Indian People (All Fields) AND Brazil OR Amazon Region (All Fields) OR Amazon (All Fields)
I: Intervention or exposure	AND Hypertension (DeSC) OR Blood Pressure (DeSC)	AND Hypertension (MeSH terms) OR Arterial Pressure (MeSH terms) e OR High Blood Pressure (All Fields)	AND Hypertension (DeSC) OR Arterial Pressure (DeSC) OR High Blood Pressure (All Fields)
C: Comparation	The study did not focus on comparison		
O: Outcome	AND Perception (DeSC) OR Risk Factors (DeSC)	AND Perception (MeSH terms) OR Risk Factors (MeSH terms)	AND Perception (DeSC) OR Risk Factors (DeSC)

Source: Authors (2017).

trials without randomization; level IV - well--delineated cohort and case-control studies; level V - systematic review of descriptive and qualitative studies; level VI - evidence based on a single descriptive or qualitative study; level VII - opinion of authorities or report of expert committees.

Finally, the information was analyzed and compared by the approximation of the themes covered in the studies, constituting two thematic categories: "Hypertension in the indigenous population: associated factors" and "Perceptions and beliefs of the Indians about arterial hypertension".

RESULTS

The flowchart of Figure 1 illustrates in a detailed and schematic way the selection of the final sample, composed of ten articles, based on PRISMA recommendations. Regarding the language, no studies were found in Spanish that spoke about the Brazilian indigenous populations, with a balance between the selected articles: 4 (40%) were published in English and 6 (60%) in Portuguese. As for the geographic distribution of the studied ethnic groups, it is noteworthy that the publications were carried out predominantly in the states of Mato Grosso and Mato Grosso do Sul, but a nationwide population-based study conducted with indigenous women (n=6,605) living in the regions North, Northeast, Midwest and South/Southeast should be highlighted.

Regarding the temporal cut, it was observed that eight studies (80%) were published between the periods of 2013 and 2016, with a predominance of cross-sectional surveys (level of evidence VI), although the best level of evidence found was that of a cohort study (level of evidence IV).

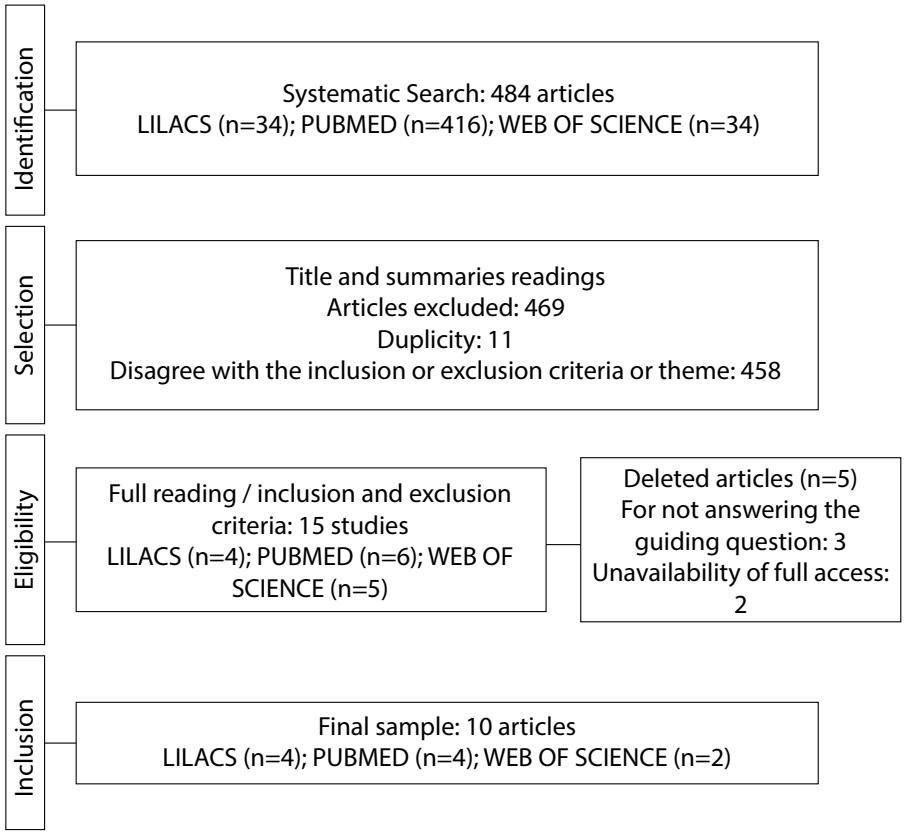

Figure 1. Flowchart of search strategy and selection of articles. Manaus (AM), 2017
Source: Authors (2017).

Regarding the age group, most of the publications considered the indigenous adults of both sexes, with age above 18 years. Regarding blood pressure classification, seven studies (70%) considered systolic blood pressure (SBP) ≥140 mmHg and/or diastolic blood pressure (DBP) ≥90 mmHg as a diagnostic criterion for arterial hypertension; one study considered hypertension, taking into account the cut-off point ≥ 130/85 mmHg; and two studies did not specify classification criteria for SAH. Regarding blood pressure measurement, four studies (40%) used the oscillometric technique and another four (40%) adopted the auscultatory technique. The overall prevalence of hypertension among the different ethnic groups ranged from 2.8% to 46.2%. Such information can be seen in Chart 2.

Table 1 shows that behavioral and socioeconomic factors were associated with hypertension in most of the studies analyzed, with obesity/overweight being the most mentioned modifiable risk factor, followed by low school level. Regarding non-modifiable factors, the high age and the masculine sex stood out in 60% and 40% of the publications identified, respectively.

Chart 2. Description of selected publications according to author, journal, year, ethnicity, site, sample of participants, prevalence of hypertension, type of study, and level of evidence. Manaus (AM), 2017

Publication, Language	Ethnicity, Location	Number of participants, age, sex	Prevalence of hypertension	Type of study, Level of Evidence
Ribas et al. Saúde Soc. (2016), Português(9).	Teréna, Mato grosso do Sul	24, (both sexes)	(Not specified)	Descriptive, Level 6
Rodrigues et al. J. res. fundam. Care. online. (2016), Português(2).	Xerente, Tocantins	29, (≥ 20), 13 men and 16 women	(Not specified)	Descritivo, Nível 6
Almeida et al. PLOS ONE. (2016), Inglês(15).	Guarani and Teréna, Mato Grosso do Sul	362, (20-59), only women	42%**	Transversal, Level 6
Bresan et al. Cad. Saúde Pública. (2015), Português(7).	Kaingang, Xapecó, Santa Catarina	355, (≥ 20), 156 men and 199 women	46,2% global, 53% men and 40,7% women**	Transversal, Level 6
Mazzucchetti et al. Cad. Saúde Pública. (2014), Português(16).	Khisêdjê, Xingu, Mato Grosso	78, (≥ 20), 42 men and 36 women	38,9% global, 41,7% men and 36,2 women*	Cohort, Level 4
Oliveira et al. Plos One. (2014), Inglês(17).	Kaiowá, Guarani and Teréna, Mato Grosso do Sul	1608, (≥ 18), 729 men and 879 women	29.5% overall there were no statistical differences between the sexes**	Transversal, Level 6
Tavares et al. Ciência & Saúde Coletiva. (2013), Português(4).	Suruí, Rondônia and Mato Grosso	251, (≥ 20), 124 men and 127 women	2.8% overall, there were no statistical differences between the sexes**	Transversal, Level 6
Coimbra Jr et al. BMC Public Health. (2013), Inglês(1).	Nationwide	6692, (15-49), only women	13,2%**	Transversal, Level 6
Gimeno et al. J Epidemiol Community Health. (2009), Inglês(18).	Kalapalo, Kuikuro, Matipu and Nahukwá, Mato Grosso	251, (≥ 20), Men and women	15,4%**	Transversal, Level 6
Gimeno et al. Cad. Saúde Pública. (2007), Português(8).	Aruák: Menhináku, Waurá and Yawalapití, Mato Grosso	201, (≥ 20), 102 men and 99 women	37,7%, 10,8% men and 7,9% women**	Transversal, Level 6

Source: Authors (2017).
* Cut-off point for the diagnosis of hypertension: SBP ≥ 130 mmHg and/or DBP ≥85 mmHg
** Cut-off point for the diagnosis of hypertension: SBP ≥ 140 mmHg and/or DBP ≥ 90 mmHg

Table 1. Factors associated with systemic arterial hypertension (SAH) in indigenous people, according to studies analyzed. Manaus (AM), 2017

Category – 1	Factors associated with SAH	Number of publications
Behavioral factor	Obesity, central obesity, overweight(1,2,4,7,8,15,17,18)	8
	Intake of alcoholic beverage(2,17)	2
	Smoking(17)	1
	Consumption of processed foods, salt and fat(1,2,9)	3
	Sedentary lifestyle(2,8)	2
Socioeconomic Factor	Socioeconomic status(4,7,15)	3
	House with ceramic tile floor and brick wall(1,7)	2
	Educational(1,2,7,15,17)	5
Non-modifiable factor	High age(4,7,8,15,17,18)	6
	Family history of hypertension(2,15,17)	3
	Males(4,7,16,18)	4
Morbidity	Diabetes(16,17)	2
	Metabolic syndrome(16)	1
	Dyslipidemia(8,16,18)	3

Source: Authors

In terms of perceptions and beliefs, it was found that indigenous people relate SAH, above all, to the difficulty of coping with the disease, to change in eating habits and to easy access to foods rich in fat and salt, as described in Table 2.

Table 2. Perceptions and beliefs of indigenous people about systemic arterial hypertension (SAH), according to studies analyzed. Manaus (AM), 2017

Category – 2: Perceptions and beliefs about getting sick with HAS	Number of publications
Breach of rules, non-observance of the guidelines of the elders(9)	1
Non-traditional food(2,9)	2
Access to industrialized products(2,9)	2
Difficulty in coping with the disease, since food is a sign of prestige, strength for work, family sharing and insertion in the social context(2,9,16)	3
Interethnic Contact(2)	1
Heat(9)	1
Spells(9)	1
Contamination of the environment(9)	1
Lack of land for agriculture(9)	1
Signs and symptoms: weakness(2)	1

Source: Authors

DISCUSSION

After analyzing and interpreting data from primary studies, this study synthesized the knowledge produced, based on two categories discussed below:

Category 1 - Arterial hypertension in the indigenous population: associated factors

This category mainly reflects the factors that are associated to the increase in the prevalence of SAH in indigenous peoples in Brazil. As shown in Table 1, nine studies associate hypertension with behavioral factors, among which are overweight/obesity, alcohol intake, smoking, inadequate diet and sedentary lifestyle.

For Massimo et al., Changes in socioeconomic, cultural and environmental conditioning

factors lead to transformations in the forms of organization of society, potentiating behavioral changes[3]. In this sense, factors such as territorial restrictions, depletion of material resources, increase in paid activity, ease of access to industrialized foods and contact with non-indigenous people are contributing factors to a lifestyle that has led to an increase in non-communicable chronic diseases, such as SAH, in Brazilian indigenous populations[16,17,19]. These data are consistent with the results of a systematic review study that related the vulnerability of tribal populations in India to factors that contribute to lifestyle change and consequently to the increase in prevalence rates of hypertension over three decades, motivated by interethnic relationships[20].

In Brazil, a study whose objective was to evaluate the prevalence of hypertension in the Brazilian indigenous population emphasizes in its results that the process of westernization is a preponderant factor for the increase of cases of the disease, taking into account the changes in cultural, lifestyle and economic habits, with emphasis on the nutritional transition, the insertion of sodium, fats and processed products in the diet, which potentiate the onset of cardiovascular diseases, thus indicating the real need for vigilance and control of these risk factors[5].

Influenced by Westernization, studies show that obesity, overweight, and sedentary lifestyle have been growing significantly among the study population, rendering them susceptible to cardiovascular disease and other diseases[1,4,5,16,17]. Tavares et al. say that weight gain is a factor strongly associated with changes that occur in blood pressure[4]. It is worth noting that overweight and obesity were the main risk factors found in the studies, with higher results in males[7,16,17]. This fact can be attributed to the reduction of daily physical activities, as well as adherence to a diet rich in carbohydrates, fats and salt[1,5,8,18].

Although the majority of studies did not demonstrate statistical significance regarding the prevalence of SAH between the sexes, the results showed that the major changes in blood pressure levels occurred mainly in overweight or obese men[1,2,4,7,8,17,18]. Among women, the highest blood pressure averages were positively correlated with advancing age and central obesity, similar to the results found in non-indigenous women[4,7,8,15,16]. A systematic review study with the non-indigenous population also showed a higher prevalence of arterial hypertension in males, a finding that may be justified, at least in part, by the performance of estrogen in women's cardiovascular system[21].

Regarding the prevalence of global arterial hypertension[7,16,17,19], the studies show a variation among ethnic groups, reflecting the different stages of assimilation of Western culture and changes in the epidemiological picture. In this context, emphasis should be given to a survey carried out with Kaingang natives in Santa Catarina, which showed a global prevalence of 46.2% of blood pressure levels suggestive of hypertension, which surpassed the prevalence found in non-indigenous populations (25.7%) in the year 2016[7,22].

Similar data were found in a cross-sectional study conducted with the indigenous Mura population of Amazonia, showing a high prevalence of hypertension (26.6%), as well as the presence of associated factors: overweight, physical inactivity, consumption of alcoholic beverages, high cholesterol and smoking were present in more than 20% of the sample studied. It also mentions that this prevalence may also be related to agricultural expansion, territorial loss and migration to urban areas[23].

In the same scenario, surveys conducted with the Surui and khisêdjê ethnicities, at dif-

ferent times, evidenced a small increase in the means of SBP and DBP, with statistical significance only for SBP in females and in advancing age. Despite being low, the results show an increase in mean blood pressure[4,16].

Although only two studies deal with sedentary lifestyle[2,8] as a factor associated with hypertension among natives, it is noted that all publications were unanimous in mentioning it as a risk factor contributing to the predisposition of SAH.

Alcohol consumption and smoking were cited by two and one article, respectively, but without correlation with arterial hypertension[2,17]. On this, Oliveira et al. recommend a more accurate evaluation, since these habits constitute risk factors for the development of cardiovascular diseases[17].

Considering the problem involving the consumption of alcoholic beverages, a study of 455 Indians from the North region, in agreement with the findings of this review, showed no apparent association with the prevalence of hypertension. However, this factor deserves attention not only because it is a risk factor associated with hypertension, but also because it is considered a chronic problem that affects Brazilian indigenous populations[24].

Regarding socioeconomic variables, studies showed that the Indians with study time up to the fourth grade and with better economic conditions were those with high blood pressure values[7,17]. On the other hand, data from other studies indicated a higher prevalence of hypertension among Suruí natives who had low level of schooling and income[4,15]. Such divergence indicates the need for further investigations on these variables.

Among the non-modifiable factors, the publications showed that the family history of hypertension and the presence of comorbidities such as diabetes, dyslipidemia and the metabolic syndrome correlate positively with the elevation of blood pressure. These findings indicate that there is a greater chance of developing hypertension and other cardiovascular diseases among indigenous people who present these factors[8,16-18].

The increasing trend of the prevalence of hypertension in the Brazilian indigenous population shows the need to initiate immediate preventive actions that allow controlling this serious health problem and promote the acceptance and adoption of healthy habits and lifestyle by the different ethnic groups[20,23].

The data presented are consistent with the results obtained with non-indigenous populations, reflecting, therefore, that hypertension is the result of the rapid process of epidemiological transition among the Indians, conditioned to factors that are closely related to the difficulties of survival and the influences that are imposed[10].

The limitations presented by the studies include the number of participants, and it is easier to recruit women, the cross-sectional nature of most studies, the different stages of the westernization process, and the cutoff point for blood pressure classification.

Category 2: Indigenous perceptions and beliefs about high blood pressure

According to the study carried out in Mato Grosso do Sul (9), the perceptions and beliefs of the Térena Indians about the affliction of hypertension are related to the condition of life, the contamination of the environment, the introduction of a non-traditional diet, spells and non-compliance with the orientation of older individuals. Other factors, according to the beliefs of the populations under study, are heat, the influences of interethnic contact, the approximation of urban centers to villages, the

lack of availability of land for agriculture, the breaking of rules related to food, and access to industrialized products[9].

For the indigenous Xerentes, the emergence of SAH, a disease considered new, is mainly related to changes in eating habits and the way food is prepared. Among these individuals the food has great representation: it gives them vital force. Thus, in the face of the signs and symptoms of SAH that impose difficulties to carry out daily activities, the indigenous Xerentes attribute their weakness to the consumption of food in the city[2].

In general terms, perceptions in terms of the indigenous health-disease process are constructed and interpreted from their experiences, considering the environment in which they are inserted[2,9]. Thus, the Indian seeks to deal with and understand the SAH through his understanding of the world, referring different representations about the origin of the disease, some of which are associated with issues understood as alien to their wills[9].

According to the studies analyzed, although there is an understanding among the Indians that the changes that occurred in eating habits may be contributing to the onset of hypertension, food has great significance for both Terenas and Xerentes, since, in addition to health and vital force to perform daily activities, it also means being inserted in the social context[2,9].

In the case of the Terenas, having some food prepared with fat and salt at home is a sign of prestige and strength for work; thus, cultural factors influence the process of caring for and dealing with the disease, since it is often difficult to meet certain restrictions recommended by the health professional, since food is common to all and symbolizes family sharing[9].

In their study, Gimeno et al. mention that the health of human beings is linked to the environment and the living conditions of the society in which individuals are inserted[16]. In this way, it is necessary to respect the symbolic elements attributed to certain cultures, making it necessary to consider and know the meanings built on the health-disease process and its forms of coping, since the biomedical model is often seen only as something complementary[8]. Regarding the processes of cure or prevention of certain diseases, indigenous people first consider local knowledge[9].

CONCLUSION

Based on the studies found in this review, the factors that are associated with hypertension among Brazilian natives include overweight/obesity, low educational level, male sex and old age. Obesity/overweight, coupled with inadequate diet and sedentary lifestyle, was the most relevant factor because it was associated with hypertension and the health burden of indigenous populations. Although no statistical significance was found between the sexes, men had higher blood pressure when compared to women's blood pressure values.

As far as perceptions are concerned, they are intimately linked to the context in which the Indian is inserted, often perceived as a disease alien to their will and associated mainly with changes in eating habits and living conditions.

The evidence found shows the relevance of comprehensive and differentiated care for indigenous peoples, considering their culture and knowledge, as well as traditional medicine, which can greatly contribute to the re-signification of habits and lifestyle, positively impacting prevention and control of cardiovascular risk factors, especially the modifiable ones, such as obesity, hypertension and diabetes.

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