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Eating habits, anthropometry, lifestyle, and hypertension of a group of non-village indigenous women in Amazon, Brazil

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SUMMARY

OBJECTIVE: The aim of this study was to describe the anthropometric characteristics, eating habits, and lifestyle of non-village indigenous women living in Manaus, AM, and their association with hypertension.

METHODS: This cross-sectional (descriptive-analytical) study was carried out from January 2020 to December 2021 using a questionnaire for clinical, sociodemographic, and behavioral data. Non-pregnant women who belonged to Parque das Tribos for more than a year, declared themselves indigenous, and were over 18 years of age were included in the study.

RESULTS: In total, 21 ethnicities were identified, and 95 indigenous women were evaluated. The average age group was 36±12.1 years, the average height was 157 cm, and the body mass index was 28.8 kg/m^2. The prevalence of systemic arterial hypertension was ±40%, and 68.5% had excess weight, with 29.1% having class I obesity. In all, 35.8% consumed a lot of salt, sugar, and industrialized foods, and 88.4% were sedentary.

CONCLUSION: Much of the sample presented excess weight, and almost all were sedentary. More than one-third had unappropriated eating habits. Hypertension was present in more than one-third of these indigenous women. There was an association between higher body mass index and hypertension. Knowing the characteristics of this group of non-village indigenous women may help determine the best health approach. The data demonstrate the necessity of preventive measures.

KEYWORDS: Anthropometry. Obesity. Comorbidity. Indigenous peoples.

INTRODUCTION

Relocating to urban centers can be seductive for indigenous people. This relocation is due to expectations regarding improving living conditions, access to health and education, the labor market, and the goods and services offered[1]. On the contrary, indigenous people have a different lifestyle from Western people, with the former having more physical activity and considerable energy expenditure[2]. In addition, this change has created a local scenario of socio-environmental vulnerability. It has exposed these indigenous people to consuming industrialized products and ultra-processed foods of low nutritional value, which are high energy, dense, low in fiber and micronutrients and rich in preservatives and industrial additives[3]. Greater exposure to salt, sugar, and industrialized foods associated with a sedentary lifestyle may cause excess weight[3]. Sedentarism, obesity, and overweight were also detected in several indigenous ethnic groups in the midwest region of Brazil[4-6]. It is crucial to highlight the association between the growing relevance of obesity and comorbidities in indigenous populations[4-6].

Another significant issue is the knowledge about the living and beliefs of the indigenous people. Identifying and understanding indigenous cultures has been linked with enhanced social and health care[7].

In Manaus, there are three areas of occupation, not legally regulated, where many indigenous people live[8]. These occupations are in public and private areas; currently, they are not exclusively indigenous occupations[9,10].

The first indigenous neighborhood of Manaus, Tribes Park, is in the West zone of Manaus, with approximately 20 ethnic groups. It is a place representative of non-village indigenous people[11]. Given the nutritional situation of the indigenous population, particularly considering the rapid nutritional transition in progress[4,6], it is essential to emphasize the need to carry out studies to collect data on this issue. The present study aimed to describe the anthropometric characteristics, eating habits, and lifestyle of non-villages indigenous women living in Manaus, AM, and their association with hypertension.

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METHODS

Study design

This is a cross-sectional study with a group of indigenous women living in the urban area of Manaus (Tribes Park), in which a questionnaire was applied to collect clinical, sociodemographic, and behavioral data. In addition, weight, height, body mass index (BMI), and blood pressure were recorded.

Sample size calculation

The sample size was calculated based on the partial census organized by the indigenous leaders of Tribes Park. A total of 124 women who had the profile and presented the indigenous self-declaration or Administrative Indigenous Birth Registry (RANI), aged over 18 years, resided in Tribes Park for over a year were included. The sampling error was 5.0% with a 95% confidence level, totaling a minimum sample of 94 indigenous people.

Data collection location

The initial meeting location was the main tent built next to the Chief's house, where public service is offered. Meetings were held to present the study proposal, in which they got to know and discussed the importance of the research in the study population. After the initial meeting, the same researcher and collaborator set the day to collect data for each family. The place for the data collection was the house of each indigenous woman. All those women who met the inclusion criteria and accepted to participate were included in our analysis.

Inclusion criteria

The study included nonpregnant women belonging to the Tribes Park for more than a year who had self-declaration as indigenous people or the RANI; who were over 18 years of age; who communicated in Portuguese or understood its translation, without recent surgery in the torso area; and who did not have internal organ diseases that increased waist circumference.

Exclusion criteria

Women who were incapable to communicate in Portuguese, who had no self-declaration as indigenous people or the RANI, and who were below 18 years old were excluded.

Subjects and methods

Method of anthropometric and blood pressure data collection

A portable stadiometer measured the height, with the women standing barefoot, and requested to have their back to the marker in an anatomical position. An electronic platform scale (Altis®, portable, 20 g precision, maximum load 150 kg) was used to determine body weight, wearing light clothing. BMI was then calculated.

Blood pressure was measured using an automatic digital blood pressure device (OMRON HEM-742INTC®), in only 1 day, taken three times, considering the average of the three readings on different occasions, according to the protocol of the Brazilian Guidelines on Arterial Hypertension[12].

Data were collected using a questionnaire to assess sociodemographic, behavioral (eating, exercising, way of sleeping, and beliefs), and clinical variables. The questions asked about eating habits were if women often maintain the traditional foods used in the indigenous village, often use traditional white man food, and use large amounts of salt, sugar, and processed foods.

Data processing and analysis

The results were statistically analyzed using the R software version 4.0.5. Quantitative variables were described by measures of centrality and dispersion, while qualitative variables were summarized in absolute and relative frequencies.

Ethical aspects

The ethics committee approved this research – CONEP, research CAEE 12193319.1.0000.5020 – and strictly followed the Resolutions of the National Council of Health n°466 of 2012 and n° 304 of 2000 and Resolution N.304/2000 (items 2.2 and 2.3) that deal with research of indigenous peoples. All women included in the present study signed a consent form.

RESULTS

There were 21 identified ethnic groups among the women: Apurinã, Kuripako, Marubo, Miranda, Munduruku, Mura, Piratapuia, Sateré Mawé, Tariano, Tikuna, Baniwa, Tukano, Tupinnamba, Wanano, Kokama, Baré, Dessano, Kanamary, Karapanã, Kulina, and Witoto. The Tukano ethnic group was the most frequently observed in the sample, with 18 indigenous women representing 18.9% of the interviewees, followed by 13 (13.7%) women from Baré and 10 (10.5%) from the Kokama and Munduruku ethnic groups. The average age was 36±12.1 years (mean/SD), and almost half (44.2%) of the women were homemakers. The average age at which they had their first child was 18.5 (±3.3). According to the sociodemographic form, 93.6% were married. The average number of people living in the same household was 4.9 (5.16%). The houses were occupied by couples, children, and their relatives. Notably, 66.3% of the women reported that they knew about sexually transmitted diseases. Concerning the clinical profile of the participants,

27 (39%) indigenous women were classified as hypertensive. Seven reported having type II diabetes, three high glycemia (>100 and <126 mg/dL), three hypercholesterolemia, and three were diagnosed with cholelithiasis. Table 1 shows the characteristics of the population and morbidities.

Table 1. Characteristics of the population and morbidities (n=95).

Age	Years
Mean±SD	36±12.1
Median	34
Minimum	18
Maximum	74
Occupation (work with or without payment)	**(%)**
Artisan	27.4
Housewife	44.2
Others	28.4
Education (years of schooling)	(%)
<4	4.2
4–11	40.0
≤11	55.8
Ethnicity	**Morbidities (%)**
Apurinã, Dessano	3.2
Kuripako, Marubo, Miranha, Mura, Witoto	1.1
Munduruku, Kokama	10.5
Piratapuia, Sateré Mawé	4.2
Tariano	8.4
Tikuna, Tupinnamba, Wanano, Kanamary, Karapana, Kulina	2.1
Baniwa	5.3
Tukano	18.9
Baré	13.7

SD: standard deviation. Occupation represents work with or without remuneration. Alcohol consumption represents intake once or more times a week. Physical activity referring to weekly practice – once or more times.

According to BMI classification, we identified women who were overweight and obese. The median height was 157 cm; the maximum was 170 cm and the minimum was 138 cm. Overweight and obesity were reported in 68.5% (overweight 23.2%, obesity class I 29.5%, class II 14.7%, and class III 1.1%). Table 2 shows the classification of groups according to anthropometry (BMI) and the presence of hypertension (p<0.001).

Concerning the data on their weekly eating habits, 22.1% maintained consuming traditional food in the indigenous settlement. A total of 42.1% often consumed a standard Westernized diet. Regularly, 35.8% used a significant amount of salt, especially with fish. They also said having excess sugar and consuming industrialized foods (soft drinks and processed meat). Table 3 illustrates the dietary and behavioral profile of non-village indigenous women.

DISCUSSION

The present study evaluated the anthropometric characteristics, eating habits, and lifestyle of non-village indigenous women living in Tribes Park in Manaus, Brazil, and their association with hypertension. A total of 21 ethnicities were identified, and 95 indigenous women were evaluated.

Over one-third of the women consumed a lot of salt, sugar, and industrialized foods, and almost 90% were sedentary. Overweight and obesity were reported in 68.5% of the interviewers, which was higher than non-indigenous women from Manaus, Amazonas[13]. Other studies with non-village indigenous women presented the same problem[4,14-16]. Besides preserving some beliefs, losing original indigenous territory is related to weight gain. Physical activity is not practiced enough since they no longer need to walk long distances searching for food[2,11].

Aspects related to excess weight in Brazilian capitals, including those who self-declared as indigenous, revealed a prevalence of overweight in 55.9%, which was linked to arterial hypertension and diabetes mellitus[17,18].

Table 2. Classification of groups according to anthropometry (body mass index) and the presence of hypertension.

Variable	Total n=95	Hypertension 39%		PR (95%CI)	p-value
		Negative n=58	Positive n=37		
BMI					
Mean (SD)	29.2 (7.04)	24.5 (4.14)	32.2 (4.8)	6.20 (4.1–8.3)	<0.001
Minimum–maximum	19.00–40.1	19.0–38.8	20.9–40.1		
Mean (SD)	89 (16.3)	79.5 (7.41)	100 (16.3)		
Minimum–maximum	67.00–141.00	67.00–105.00	68.00–141.00		

BMI: body mass index; PR: prevalence ratio; CI: confidence interval; SD: standard deviation.

Table 3. Dietary and behavioral profile of non-village indigenous women (n=95).

Variable	(%)
What is your weekly food routine?	
Maintains the traditional food used in the indigenous village	22.1
Often use traditional white man food	42.1
Frequently uses large amounts of salt, sugars, and processed foods. Like soft drinks, fish preserved in salt, and preserves	35.8
Smoking	
No	94.7
Past/never smoked	5.3
Alcohol consumption	
Yes	15.8
No	84.2
Practice of regular physical activity	
Yes	11.6
No	88.4
Sleep in hammock	
Yes	54.7
No	45.3

Alcohol subjective intake criteria once or more times a week; Physical activity referring to weekly practice once or more times a week.

The prevalence of arterial hypertension is close to 40% in women from Tribes Park, and there was a significant association between a group with a higher BMI and hypertension. Another study among indigenous women observed that overweight or obese respondents had approximately 50% higher hypertension prevalence than those with low or average weight[4].

More than half of the interviewees had 11 or more years of schooling. This aspect is unusual among indigenous women, and other studies point out a low level of education among them. In Mato Grosso do Sul, Brazil, 82% of the women, with an average age of 35.5 years, had 4 or fewer years of education[4]. The unmet needs of the village population's low education level may be due to requirements not being fulfilled, such as teacher shortages in language and intercultural matters[19]. Souza Filho et al., in a study of indigenous people from the Thura ethnic group in Amazonas, with a sample of 121 women, found that 19.8% had education for 11 years[20]. The reason that Tribes Park has a higher level of education could be due to the assistance provided by the Municipal Department of Education through the Management of Indigenous School Education [Gerência de Educação Escolar Indígena (Geei)], with 17 teachers[21].

The average fertility rate was three children per indigenous woman from Parque das Tribos. The fertility of indigenous people is decreasing, even among those residing in indigenous lands. However, pregnancy of indigenous adolescents, without much differentiation according to the urban or rural residence, remains at very high levels[22]. Nevertheless, the present study did not evaluate pregnancy below 18 years.

The alcohol intake among indigenous women was 15.8%. In line with this finding, other research evaluated 283 indigenous women of the ethnic groups Guarani and Terena in Dourados. Almost 90.0% of the women did not smoke or drink alcohol[4]. Nevertheless, another study found excessive alcohol consumption perceived as an essential issue among indigenous people[23]. However, indigenous women's alcohol use is at an early stage[17,23,24].

The present study indicated an average height of 157 cm, which may be related to the 21 different ethnic groups found in the Tribes Park. Studies with 72 Yanomamis indigenous women from the Amazon indicated that 68.1% had less than 145 cm[25].

As a limitation, the findings presented in this study do not directly represent any specific indigenous ethnic group in Brazil. The data were collected in Tribes Park, where 21 ethnicities were identified. In addition, some information was based on interviews with possible bias. The diagnosis of hypertension was based on three measures of blood pressure on different occasions in only 1 day. Finally, the study's cross-sectional nature precludes inferring causality from associated risk factors. However, for the strengths of this study, we can include the fact that the data concerning the population of Tribes Park are unprecedented. We highlight that there are few studies on anthropometric characteristics, eating habits, lifestyle, and hypertension of non-village indigenous women.

CONCLUSION

Many non-village indigenous women living in Tribes Park, Manaus, had unhealthy eating habits. Much of the sample presented excess weight, and almost all were sedentary. Hypertension was present in more than one-third of these indigenous women, and there was an association between higher BMI and hypertension.

The findings from this study may contribute to indigenous women's health policies, especially with the early use of educational campaigns on the importance of physical activity and healthy eating.

ETHICAL ASPECTS

We declare that we have no conflict of interest in disseminating data from this research and do not present direct or indirect conflicts concerning the research with the studied population. This research was approved by the ethics and research

committee on July 10, 2019. We inform that the Ethics Committee approved this research – CONEP, research CAEE 12193319.1.0000.5020 – and strictly followed the Resolutions of the National Health Council nº 466 of 2012 and nº 304 of 2000 and Resolution nº 304/2000 (items 2.2 and 2.3) that deal with research patterns in the area of indigenous peoples.

AUTHORS' CONTRIBUTIONS

ALSF: Conceptualization, Formal Analysis, Methodology, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **AV:** Conceptualization, Formal Analysis, Methodology, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **KPLR:** Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **HAP:** Conceptualization, Visualization, Writing – original draft, Writing – review & editing. **QS:** Conceptualization, Visualization, Writing – original draft, Writing – review & editing.

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