Health behaviors and social determinants among indigenous peoples in an urban context: a cross-sectional study in Campo Grande (MS), Brazil

Comportamentos relacionados à saúde e determinantes sociais entre povos indígenas em contexto urbano: estudo transversal em Campo Grande (MS), Brasil

Comportamientos de salud y determinantes sociales entre pueblos indígenas en un contexto urbano: un estudio transversal en Campo Grande (MS), Brasil

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Abstract: Introduction: Urbanization among Brazilian Indigenous peoples has transformed cultural, dietary, and health patterns, increasing exposure to risk behaviors and chronic diseases. Objective: To describe and analyze health-related behaviors and social determinants among Indigenous people living in an urban community in Campo Grande (MS), Brazil. Methods: Cross-sectional descriptive study with 61 Indigenous participants from the Jardim Aeroporto community. A culturally adapted version of the VIGITEL questionnaire, assessing sociodemographic, dietary, physical activity, sleep, self-medication, and chronic disease data. Data were analyzed using Stata 17 with frequencies and 95% confidence intervals. Results: Most participants were female (62.3%) and half had completed high school. Hypertension (22.9%), diabetes (13.1%), and abusive alcohol consumption (27.9%) were prevalent. Low regular physical activity (29.5%), meal replacement with snacks (85.2%), and self-medication (23%) were also observed. Conclusion: Findings reveal risk patterns associated with dietary transition and urbanization processes among Indigenous peoples. Intercultural public policies and intersectoral health promotion strategies are needed to address urban Indigenous health disparities.

Resumo: Introdução: O processo de urbanização entre povos indígenas brasileiros vem transformando padrões culturais, alimentares e de saúde, intensificando a exposição a comportamentos de risco e doenças crônicas. Objetivo: Descrever os comportamentos relacionados à saúde e seus determinantes sociais entre indígenas residentes em uma comunidade urbana de Campo Grande (MS), Brasil. Métodos: Estudo transversal realizado com 61 indígenas da Comunidade Jardim Aeroporto, entre abril e junho de 2023. Aplicou-se questionário adaptado da Vigitel, abordando dados sociodemográficos, alimentação, atividade física, sono, automedicação e doenças crônicas. Os dados foram analisados no Stata 17, apresentando frequências absoluta e relativa e seus respectivos intervalos de confiança (IC 95%). Resultados: A maioria era do sexo feminino (62,3%) e metade tinha ensino médio completo. As prevalências de hipertensão e de diabetes foram de 22,9% e 13,1%, respectivamente. Mais de um quarto dos indígenas apresentava consumo abusivo de álcool (27,9%) e baixa prática regular de atividade física (29,5%). Além disso, grande parte substituía refeições por lanches (85,2%) e 23% referiu automedicação. Conclusão: O estudo evidencia padrões de risco associados à transição alimentar e à urbanização indígena. Políticas públicas interculturais e ações intersetoriais são urgentes para a promoção da saúde indígena urbana.

Palavras-chave: saúde indígena; comportamentos de risco; urbanização; determinantes sociais da saúde.

Resumen: Introducción: La urbanización entre los pueblos indígenas brasileños ha transformado los patrones culturales, alimentarios y de salud, aumentando la exposición a comportamientos de riesgo y a enfermedades crónicas. Objetivo: Describir y analizar los comportamientos relacionados con la salud y sus determinantes sociales entre indígenas residentes en una comunidad urbana de Campo Grande (MS), Brasil.

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Métodos: Estudio transversal descriptivo realizado con 61 indígenas de la comunidad Jardim Aeroporto. Se aplicó un cuestionario adaptado del VIGITEL, que abordó datos sociodemográficos, alimentación, actividad física, sueño, automedicación y enfermedades crónicas. Los datos fueron analizados con el programa Stata 17, mediante frecuencias e intervalos de confianza del 95%. Resultados: La mayoría eran mujeres (62,3%) y la mitad había completado la educación secundaria. Se identificó una prevalencia de hipertensión (22,9%), diabetes (13,1%) y consumo abusivo de alcohol (27,9%). Se observó baja práctica regular de actividad física (29,5%), sustitución de comidas por refrigerios (85,2%) y automedicación (23%). Conclusión: El estudio evidencia patrones de riesgo asociados a la transición alimentaria y a la urbanización indígena. Se requieren políticas públicas interculturales y acciones intersectoriales para promover la salud indígena urbana.
Palabras clave: salud indígena; comportamientos de riesgo; urbanización; determinantes sociales de la salud.

1 INTRODUCTION

Urbanization has changed the living conditions and health of Brazil's indigenous peoples. According to the 2022 Census, around 92% of the 1.6 million indigenous people live outside demarcated lands, in urban areas marked by socioeconomic inequalities and barriers to accessing health services (Brazilian Institute of Geography and Statistics (IBGE) 2023).

This transition implies not only territorial displacement, but also structural changes in ways of life, dietary practices, and health behaviors (Garnelo, 2019; Langdon, 2020). These urban transformations also reflect deep sociocultural tensions associated with the loss of traditional territories and the reconfiguration of collective identities (Almeida Filho, 2015; Chaves, 2019).

Urbanization has had intergenerational impacts on the identity and living conditions of indigenous peoples, including aging processes in urban contexts, where community ties are weakened and women are overburdened with caregiving tasks (Borchi; Carreira, 2015).

Dietary and nutritional changes also accompany this process. Research reveals the replacement of traditional diets—based on cassava, corn, fish, and regional fruits—with ultra-processed foods with low nutritional value, characterizing a nutritional and epidemiological transition (Fávaro et al., 2015; Lopes, 2014). This phenomenon contributes to an increase in obesity, hypertension, and diabetes among urban indigenous populations (Coimbra Jr.; Santos, 2019).

The literature shows that, although migration to urban centers is often associated with the search for better educational and economic conditions, it exposes communities to new contexts of vulnerability, loss of cultural ties, and chronic diseases such as hypertension, diabetes, and dyslipidemia (Coimbra Jr.; Santos, 2019; Oliveira Casado; Lando, 2011). In addition to biological and social changes, there are also symbolic transformations, such as the redefinition of spaces for coexistence and cultural practices, including artistic and musical expressions as forms of identity resistance (Pucci; Almeida, 2018).

Despite actions such as the National Policy for Indigenous Peoples' Health Care (Pnaspi), urban populations remain outside the coverage of the Special Indigenous Health Districts (Dsei), which exacerbates inequalities and exclusion from intercultural primary care (Sandes et al., 2018; Pan American Health Organization [PAHO], 2018).

Given this scenario, this study seeks to fill a gap in the understanding of the health behaviors of indigenous people in urban contexts, based on the model of social determinants of health (Dahlgren; Whitehead, 1991) and the Sustainable Development Goals (SDGs) 3 (Good Health and Well-Being) and 10 (Reduced Inequalities) (United Nations, 2018). The objective is to describe health-related behaviors and their social determinants among indigenous people living in an urban community in Campo Grande (MS), Brazil.

2 METHODS

2.1 Study design

This is a descriptive cross-sectional study developed with the objective of identifying and analyzing health-related behaviors among indigenous people living in urban areas. The design was chosen because it allows for estimating the prevalence of behaviors and health conditions at a specific point in time, in accordance with methodological recommendations from the World Health Organization (WHO, 2010) and the Pan American Health Organization (PAHO, 2017).

This approach has been widely used in investigations of epidemiological and nutritional transition among indigenous peoples in Brazil (Fávaro; Santos; Coimbra, 2015; Sandes et al., 2018).

2.2 Location and period of the research

The study was conducted in the Jardim Aeroporto Indigenous Community, located in the macro-region of Córrego Imbirussu, municipality of Campo Grande, Mato Grosso do Sul (Brazil). This locality is recognized by the Municipal Secretariat of Social Assistance as an urban center of indigenous concentration, with approximately 300 inhabitants of the Terena, Guarani-Kaiowá, and Atikum ethnic groups.

Data collection took place between April and June 2023, in community settings and during visits to the local basic health unit, in accordance with ethical and cultural protocols.

2.3 Ethical aspects

The study was approved by the Research Ethics Committee of the State University of Mato Grosso do Sul, under CAAE No. 64684922.9.0000.8030. All participants were informed about the objectives and procedures of this research and signed the Free and Informed Consent Form (FICF).

The guidelines of CNS Resolution No. 466/2012 and Resolution No. 304/2000 (which regulates research with indigenous peoples) were strictly followed. The guidelines of the Health Agenda for the Americas (PAHO, 2017) and the principles of the United Nations 2030 Agenda (United Nations, 2018) also guided the ethical and methodological framework of this study.

2.4 Population and sampling

The target population included all indigenous adults (≥18 years) who were permanent residents of the community. The minimum sample size was calculated considering a finite population of 300 individuals, a confidence level of 95% (Z=1.96), a margin of error of 5%, and an expected proportion of 50% (p=0.5), resulting in a minimum of 60 participants.

Sampling was intentional non-probabilistic, respecting representativeness by gender and age group. Inclusion criteria: self-declaration of indigenous identity, permanent residence in the community, age ≥18 years, and signing of the informed consent form. Exclusion criteria: individuals in transit, with cognitive limitations that prevented understanding of the questionnaire, or explicit refusal to participate.

2.5 Data collection

The interviews were conducted in person, in a private setting, by trained interviewers during home visits and/or appointments at the basic health unit, ensuring standardization and confidentiality.

A structured questionnaire was used, containing sociodemographic, behavioral, and health questions, with an average interview time of 35 minutes. The instrument was based on questions from the Surveillance of Risk and Protective Factors for Chronic Diseases by Telephone Survey (Vigitel) (Ministry of Health, 2022) and underwent a process of cultural adaptation for the urban indigenous population, which involved: (1) free translation and linguistic simplification; (2) content validation by three researchers with experience in indigenous health; (3) pre-testing with 10 residents to assess clarity and comprehension; and (4) terminological adjustments with the support of a local indigenous representative. These procedures are in line with cultural adaptation experiences described in previous qualitative and methodological studies (Portes; Lopes; Souza, 2018; Pereira et al., 2020; Sandes et al., 2018).

2.6 Variables studied

The variables analyzed were grouped into five main domains, with operational definitions based on the literature and Vigitel guidelines:

- Sociodemographic characteristics: gender (male, female), age (collected in full years and categorized into age groups: <30; 30–59; ≥60 years), marital status (single, married/stable union, separated/divorced, widowed), education (incomplete elementary school, complete elementary school, incomplete high school, complete high school, incomplete higher education, complete higher education).
- Chronic noncommunicable diseases (CNCDs): self-reported previous medical diagnosis of systemic arterial hypertension, hypercholesterolemia, diabetes mellitus, asthma/bronchitis, repetitive strain injury, osteoporosis. The response options were: “yes,” “no,” and “I don’t know.”
- Behavioral and health: smoking (no/yes), alcohol consumption (no/yes), alcohol abuse (no, yes), self-perception of poor sleep quality (no/yes), more negative perception of health (no/yes), more negative perception of diet (no/yes). Self-medication (report of use of non-prescription drugs in the last 30 days) (no/yes).
- Diet: number of daily meals (<4 or ≥4), replacement of meals with snacks, breakfast consumption, visible fat in meat, type of milk (whole/skim), addition of salt after preparation, habit of eating while watching TV.
- Physical activity: regular exercise (≥150 minutes per week of moderate activity) (no/yes), duration of exercise (≥6 months or <6 months) (no/yes), intention to start (in the next 30 days or 6 months) (no/yes).

2.7 Bias control procedures

To reduce information bias, interviewers were trained to ask questions in a standardized and neutral manner. The presence of family members during interviews was avoided to ensure privacy. Data were double-checked to reduce transcription errors. Sensitive questions, such as alcohol

consumption and self-medication, were addressed in non-judgmental language, in accordance with ethical recommendations for vulnerable populations (Sandes et al., 2018; PAHO, 2017).

2.8 Statistical analysis

The data were tabulated in Microsoft Excel 2019 and analyzed in Stata 17.0 (StataCorp, College Station, USA). The variables were described by absolute and relative frequencies, with 95% confidence intervals (95% CI). The internal consistency of the data was verified by double-checking. No inferential tests were applied due to the limited sample size and the exploratory nature of the study. The results are presented in tables, following the descriptive epidemiology standard.

3 RESULTS AND DISCUSSION

The sample consisted of 61 adult indigenous people residing in the Jardim Aeroporto Community, representing approximately 20% of the estimated local population (n=300). The response rate was 100%, with a predominance of women (62.3%) and an average age between 30 and 59 years (49.2%). This composition reflects the demographic profile of urban indigenous communities in Mato Grosso do Sul, where women play a central role in domestic management and health care (Garnelo, 2019; Borchi; Carreira, 2015).

3.1 Sociodemographic and educational profile

It was observed that 45.9% of participants had completed high school, but only 13.1% had higher education (complete or incomplete). This difference demonstrates the cumulative effect of social determinants of health (Dahlgren; Whitehead, 1991; Climaco, 2020), especially unequal access to formal education, which is directly associated with job opportunities and the adoption of healthy behaviors.

Studies conducted with urban indigenous people in Dourados (MS) and Manaus (AM) show a similar trend: urbanization increases average schooling but does not eliminate barriers to social and economic integration (Langdon, 2020; Coimbra Jr.; Santos, 2019). This educational gap contributes to the perpetuation of structural inequalities, reinforcing the need for intersectoral policies that link education and health. The detailed sociodemographic characteristics of the participants are presented in Table 1.

Table 1 – Sociodemographic characteristics of the indigenous people studied (n=61, Campo Grande, MS, 2023)

Variables	n	% (95% CI)
Gender		
Male	23	37.7 (26.3; 50.7)
Female	38	62.3 (49.3; 73.7)
Age (years)		
<30	18	29.5 (19.3; 42.3)
30-59	30	49.2 (36.7; 61.8)
≥60	13	21.3 (12.7; 33.6)
Marital status		
Single	28	45.9 (33.7; 58.7)

Variables	n	% (95% CI)
Married	28	45.9 (33.7; 56.7)
Separated/divorced	3	4.9 (1.6; 14.5)
Widow	2	3.3 (0.8; 12.5)
Years of study (in full years)		
Incomplete elementary education	10	16.4 (8.9; 28.1
Complete elementary education	6	9.8 (4.4; 20.5)
Incomplete secondary education	9	14.8 (7.8; 26.3)
Complete secondary education	28	45.9 (33.7; 58.7)
Incomplete higher education	1	1.6 (0.2; 11.1)
Complete higher education	7	11.5 (5.4; 22.5)

Legend: CI – confidence interval; n – number of participants.

3.2 Chronic noncommunicable diseases (CNCDs)

The prevalence of hypertension (22.9%) and diabetes (13.1%) observed in this study reflects a typical epidemiological transition among indigenous populations in urban settings. Similar patterns have been reported among the Guarani and Terena peoples (Barros et al., 2019; Oliveira; Casado; Lando, 2011; Fávaro; Santos; Coimbra, 2015).

These findings can be explained by changes in nutritional profiles and a reduction in traditional physical activities, such as agriculture and fishing, which have been replaced by sedentary urban occupations (Sichieri; Pereira, 2023; Sandes et al., 2018). The analysis also reveals that females had a higher prevalence of NCDs, which reinforces the impact of the accumulation of domestic responsibilities and limitations in self-care reported in qualitative studies (Patriota et al., 2020; Risardo; Garrido; Carreira, 2014). Table 2 shows the distribution of the main chronic diseases self-reported by participants.

Table 2 - Prevalence of diseases among the indigenous people studied (n=61, Campo Grande, MS, 2023)

Variables	n	% (95% CI)
Hipertension	14	22.9 (13.9; 35.4)
Hypercholesterolemia	9	14.7 (7.8; 26.3)
Diabetes mellitus	8	13.1 (6.6; 24.4)
Asthma/bronchitis	4	6.6 (2.4; 16.5)
Repetitive strain injury (RSI)	3	4.9 (1.6; 14.5)
Osteoporosis	1	1.6 (0.2; 11.1)

Legend: CI – confidence interval.

3.3 Health risk behaviors

The prevalence of alcohol consumption (36.1%), with 27.9% in abusive patterns, and self-medication (23%) indicates psychosocial vulnerabilities associated with exclusion and the absence of culturally adapted primary care services. These rates exceed the national data from Vigitel (2022) and other urban populations (Schäfer et al., 2019; Castro, 2021).

In urban contexts, the greater availability of alcoholic beverages and the breakdown of traditional community ties contribute to increased alcohol consumption, a phenomenon reported among the Guarani-Kaiowá and Kadiwéu peoples (Santiago; Amorim, 2022).

Self-medication reflects both poor access to health services and the persistence of traditional self-care practices mediated by the use of industrialized drugs, which increases the risk of adverse effects (Queiroz; Silva, 2021; Sandes et al., 2018). Table 3 summarizes the prevalence of the main health risk behaviors identified in the community.

Table 3 – Prevalence of risk behaviors among the indigenous people studied (n=61, Campo Grande, MS, 2023)

Variables	n	% (95%CI)
Smoking		
No	55	90.2 (79.5; 95.6)
Yes	6	9.8 (4.4; 20.5)
Alcohol consumption		
No	39	63.9 (51.0; 75.1)
Yes	22	36.1 (24.9; 49.0)
Alcohol abuse		
No	44	72.1 (59.4; 82.1)
Yes	17	27.9 (17.9; 40.6)
Poor sleep quality		
No	53	86.9 (75.6; 93.4)
Yes	8	13.1 (6.6; 24.4)
More negative perception of health		
No	59	96.7 (87.5; 99.2)
Yes	2	3.3 (0.8; 12.5)
Self-medication		
No	47	77.0 (64.6; 86.1)
Yes	14	23.0 (13.9; 35.4)
More negative perception of food		
No	57	93.4 (83.5; 97.6)
Yes	4	6.6 (2.4; 16.5)

Legenda: IC – intervalo de confiança.

3.4 Food

More than half of the participants reported consuming fewer than four meals per day (60.7%). and 85.2% replaced main meals with snacks. reflecting food insecurity and nutritional transition. These patterns coincide with findings by Azambuja et al. (2022) and Schäfer et al. (2019). who identified the replacement of traditional diets with ultra-processed foods.

The consumption of whole milk (63%), visible fat in meat (≈50%), and the habit of eating while watching television (68.9%) confirm the westernization of eating habits. This picture reinforces the concept of structural determinants of health, according to which income and urban environment influence eating behavior (Dahlgren; Whitehead, 1991; WHO, 2010).

Data on eating habits are detailed in Table 4.

Table 4 – Eating habits of the indigenous peoples studied (n=61. Campo Grande. MS, 2023)

Variables	n	% (95%CI)
Number of meals		
<4	37	60.7 (47.7; 72.3)
≥4	24	39.3 (27.7; 52.3)
Preparation of breakfast		
No	19	31.1 (20.6; 44.0)
Yes	42	68.9 (56.0; 79.4)
Where do you usually have your meals?		
At home	40	65.6 (52.6; 76.6)
At work	18	29.5 (19.3; 42.3)
Restaurant	3	4.9 (1.6; 14.5)
Habit of eating while watching television		
No	19	31.1 (20.6; 44.0)
Yes	42	68.9 (56.0; 79.4)
Apparent fat intake from red meat		
No	30	49.2 (36.7; 61.8)
Yes	31	50.8 (38.2; 63.3)
Apparent fat intake from chicken		
No	34	55.7 (42.9; 67.8)
Yes	27	44.3 (32.2; 57.1)
Type of milk consumed		
Whole milk	29	63.0 (48.0; 75.9)
Skim milk	5	10.9 (4.5; 24.0)
Both	12	26.1 (15.2; 41.0)
Habit of replacing a meal with a snack		
No	9	14.8 (7.8; 26.3)
Yes	52	85.2 (73.7; 92.2)
Habit of adding more salt to your food after it is ready		
No	49	80.3 (68.2; 88.6)
Yes	12	19.7 (11.4; 31.8)

Legenda: IC – intervalo de confiança.

3.5 Physical activity, sleep, and subjective well-being

Only 29.5% of participants reported engaging in regular physical activity, although 60.7% expressed an intention to start. This discrepancy suggests environmental and behavioral barriers, such as inadequate public spaces and long working hours. Low adherence to physical activity is similar to the national average (IBGE, 2015; Pereira et al., 2020), but among urban indigenous people, this is associated with cultural implications: physical exercise is dissociated from traditional subsistence practices, requiring more culturally sensitive promotion strategies. Positive experiences with physical workshops and traditional games show that cultural revaluation can serve as a motivator for physical activity (Botero et al., 2021; Portes; Lopes; Souza, 2018).

The poor sleep quality (13.1%) observed is related to environmental factors, such as noise and lighting, and psychosocial factors, such as anxiety and food insecurity (Souza; Reimão, 2004; Reimão; Souza; Gaudioso, 1999; Reimão et al., 2000). Such sleep disturbances have a cascading effect on mental and metabolic health, contributing to chronic diseases.

Table 5 presents the indicators related to physical activity and perceived sleep quality.

Table 5 – Physical activity among the indigenous people surveyed (n=61, Campo Grande, MS, 2023)

Variable	No (n)	% (95%CI)	Yes (n)	% (95%CI)
Engages in physical activity	43	70.4(58.1-80.5)	18	29.5 (19.5-41.9)
Intends to start engaging in physical activity within the next 180 days	13	21.3 (12.8-33.3)	48	78.6 (66.7-87.2)
Intends to start engaging in physical activity within the next 30 days	24	39.3 (28.1-51.9)	37	60.6 (48.1-71.9)

CI: confidence interval.

3.7 Theoretical integration and practical implications

The results indicate that the health behaviors of urban indigenous people are shaped by interconnected social determinants—education, income, urbanization, exclusion from the DSEI system, and fragile support networks. In the Dahlgren and Whitehead (1991) model, these factors are located in the intermediate and structural layers, reinforcing the idea that individual health decisions cannot be dissociated from socioeconomic and cultural conditions.

In addition, the urbanization process has broken community ties and traditional mechanisms of collective care, replacing them with decontextualized biomedical practices.

In this scenario, public policies should prioritize:

1. Intercultural primary care in urban areas, with indigenous health agents;
2. Participatory food and nutrition education, incorporating traditional knowledge;
3. Promotion of culturally adapted physical activity through community programs;
4. Integrated mental health and alcohol abuse prevention actions;
5. Production of data disaggregated by ethnicity and urban territory, increasing the visibility of these populations.

In summary, the analysis demonstrates that indigenous urbanization is not only a territorial displacement but also a process of social and epidemiological reconfiguration that requires intersectoral health policies based on equity and cultural appreciation.

Methodological limitations

It is recognized that the use of purposive sampling may limit the generalizability of the findings and that self-reporting may introduce memory bias. However, the use of a validated instrument and data collection conducted by trained interviewers minimize these limitations.

4 FINAL THOUGHTS

The health-related behaviors observed reflect the impact of urbanization on indigenous life and highlight the vulnerability resulting from social exclusion and the loss of traditional practices. The prevalence of hypertension, self-medication, and alcohol abuse, combined with low physical activity and poor nutrition, reinforces the urgency of intersectoral policies that incorporate the social and cultural determinants of health. Health promotion actions should consider culturally

sensitive strategies, with indigenous leadership and coordination between the Unified Health System and the Special Indigenous Health District, in line with SDG 3 (Good Health and Well-being) and SDG 10 (Reduced Inequalities). It is recommended that future studies adopt comparative designs and mixed approaches, integrating qualitative and quantitative analyses.

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Data availability

The entire dataset supporting the results of this study has been published in the article itself.

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