

Food and Nutrition Security and Indigenous Peoples: Strategies to Reduce the Consumption of Ultra-Processed Foods

Segurança Alimentar e Nutricional e Povos Indígenas: Estratégias para Minimizar o Consumo de Ultraprocessados
Seguridad Alimentaria y Nutricional y Pueblos Indígenas: Estrategias para Minimizar el Consumo de Ultraprocesados

RESUMO

Objetivo: Compreender os hábitos alimentares de uma população indígena do município de Aracruz, Espírito Santo, considerando sua cultura alimentar atual e ancestral, bem como desenvolver uma proposta de Educação Alimentar e Nutricional respeitando sua história e estimulando sua memória alimentar. **Método:** Trata-se de um estudo descritivo, do tipo relato de experiência, desenvolvido por meio de atividades educativas, em uma aldeia indígena, sendo abordados temas relacionados à alimentação saudável, com base no Guia Alimentar para a População Brasileira. Foram elaboradas preparações culinárias utilizando alimentos in natura ou minimamente processados. **Resultados:** Observou-se mudança no padrão alimentar dos participantes, com redução no consumo de sal, açúcar e alimentos ultraprocessados, além da valorização de preparações tradicionais e do uso de alimentos locais. **Conclusão:** A educação alimentar e nutricional mostrou-se uma estratégia eficaz para a promoção de hábitos alimentares saudáveis, especialmente quando desenvolvida de forma participativa, culturalmente sensível e alinhada à valorização da identidade alimentar indígena.

DESCRITORES: Cultura dos Povos Indígenas; Alimentos Ultraprocessados; Alimentação Regional; Educação Alimentar e Nutricional.

ABSTRACT

Objective: To understand the dietary habits of an Indigenous population in the municipality of Aracruz, Espírito Santo, considering both their contemporary and ancestral food culture, as well as to develop a Food and Nutrition Education (FNE) proposal that respects their historicity and promotes the appreciation of food memory.

Methods: This is a descriptive study, designed as an experience report, developed through educational activities conducted in an Indigenous village. The activities addressed themes related to healthy eating, based on the recommendations of the Dietary Guidelines for the Brazilian Population. Culinary workshops were carried out using unprocessed or minimally processed foods, prioritizing local ingredients and traditional practices. **Results:** Changes in the participants' dietary patterns were observed, evidenced by a reduction in the consumption of salt, sugar, and ultra-processed foods. Additionally, there was an increased appreciation of traditional preparations, the revival of cultural food practices, and strengthened use of local foods, indicating a closer alignment with traditional dietary patterns. **Conclusion:** Food and Nutrition Education proved to be an effective strategy for promoting healthier eating practices in Indigenous contexts, especially when developed in a participatory, dialogical, and culturally sensitive manner. The incorporation of elements related to food identity and collective memory was central to participant engagement and to the sustainability of the observed changes, reinforcing the importance of approaches that integrate sociocultural dimensions into nutritional recommendations.

DESCRIPTORS: Indigenous Peoples' Culture; Ultra-Processed Foods; Regional Food; Food and Nutrition Education.

RESUMEN

Objetivo: Comprender los hábitos alimentarios de una población indígena del municipio de Aracruz, Espírito Santo, considerando su cultura alimentaria actual y ancestral, así como desarrollar una propuesta de Educación Alimentaria y Nutricional (EAN) que respete su historicidad y promueva la valorización de la memoria alimentaria. **Método:** Se trata de un estudio descriptivo, del tipo relato de experiencia, desarrollado mediante actividades educativas realizadas en una aldea indígena. Las actividades abordaron temas relacionados con la alimentación

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saludable, basadas en las recomendaciones de la Guía Alimentaria para la Población Brasileña. Se llevaron a cabo talleres culinarios utilizando alimentos in natura o mínimamente procesados, priorizando ingredientes locales y prácticas tradicionales. **Resultados:** Se observaron cambios en el patrón alimentario de los participantes, evidenciados por la reducción en el consumo de sal, azúcar y alimentos ultraprocesados. Además, se verificó una mayor valorización de preparaciones tradicionales, el rescate de prácticas alimentarias culturales y el fortalecimiento del uso de alimentos locales, indicando una mayor aproximación a patrones alimentarios tradicionales.

Conclusión: La Educación Alimentaria y Nutricional se mostró como una estrategia eficaz para la promoción de hábitos alimentarios más saludables en contextos indígenas, especialmente cuando se desarrolla de manera participativa, dialógica y culturalmente sensible. La incorporación de elementos relacionados con la identidad alimentaria y la memoria colectiva fue central para el compromiso de los participantes y la sostenibilidad de los cambios observados, reforzando la relevancia de enfoques que integren dimensiones socioculturales en las recomendaciones nutricionales.

DESCRIPTORES: Cultura de los Pueblos Indígenas; Alimentos Ultraprocesados; Alimentación Regional; Educación Alimentaria y Nutricional.

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INTRODUCTION

According to data from the 2022 Demographic Census, published by the Jones dos Santos Neves Institute, Brazil has 1,693,535 indigenous people, corresponding to 0.83% of the national population. In the state of Espírito Santo (ES), 14,411 indigenous people reside, representing 0.85% of Brazil's indigenous population and 0.38% of the state's population. In the municipality of Aracruz, there are

7,425 Indigenous people, of whom 4,663 live on Indigenous lands⁽¹⁾. In ES, there are officially three demarcated Indigenous Lands, all located in Aracruz: Comboios, Caieiras Velha II, and Tupiniquim. The Tupiniquim Pau Brasil village is located in the rural area of Barra do Sahy, on the state's northern coast.

According to Gaiger (1997), the Tupiniquim population of the Pau Brasil Indigenous Territory is predominantly Portuguese-speaking and

is concentrated in this village. Its territory was officially recognized by Decree No. 88,672, dated August 5, 1988⁽²⁾. The current configuration of these lands is the result of a historical process marked by territorial conflicts associated with the implementation of large-scale economic projects, particularly reforestation aimed at pulp production, which led to the reduction of traditional Tupiniquim territories. By the 1990s, limitations on land use were evident, related to low fertility,

soil acidity, and the presence of potentially toxic elements. By 2007, a large portion of the 11,009 hectares of indigenous lands was occupied by eucalyptus monoculture, with significant impacts on the Atlantic Forest, local fauna, and water resources, including contamination and reduced water availability⁽²⁾.

Additionally, the collapse of the Fundão dam in 2015, characterized as one of Brazil's worst socio-environmental disasters, released millions of cubic meters of tailings that traveled approximately 700 km along the Rio Doce basin until reaching the Espírito Santo coast. This event caused severe environmental, social, and economic impacts on riverside communities and traditional populations, including water contamination by heavy metals, damage to fishing activities, and profound changes in aquatic ecosystems⁽³⁾.

More recently, the COVID-19 pandemic has exacerbated the vulnerability of indigenous peoples, intensifying Food and Nutritional Insecurity (InSAN). Among the main observed effects are reduced access to traditional foods, increased dependence on external and processed foods, and the deepening of previously existing structural inequalities. Evidence indicates that health crises tend to disproportionately impact vulnerable populations, especially when associated with weaknesses in local food systems⁽⁴⁾.

Regarding the situation of InSAN among indigenous peoples, there are still significant gaps in the systematization of official data. The discussion on Food and Nutritional Security (SAN) in this context is intrinsically linked to the concept of Food Sovereignty, understood as the right of peoples to define their own food systems, respecting their cultural, social, and environmental dimensions⁽⁵⁾. The establishment of large-scale projects, such as hydroelectric dams, mining activities, logging, agricultural ex-

pansion, and monocultures, directly compromises this sovereignty by causing environmental degradation, loss of territory, and disruption of traditional ways of life. In this scenario, FNS emerges as a multifactorial phenomenon that requires integrated approaches of a socioeconomic, environmental, and cultural nature.

Despite the relevance of the topic, studies evaluating food insecurity among indigenous populations using validated instruments remain scarce. In this regard, the recent development of the Brazilian Food Insecurity Scale adapted for indigenous populations (EBIA-G) stands out, representing an important methodological advance by considering the cultural and contextual specificities of these peoples⁽⁶⁾.

Environmental, social, economic, and political determinants exert a direct influence on access to food and on the dietary patterns of indigenous populations. In this context, food culture constitutes a central element in the construction of collective identity, being fundamental to the preservation of memory and ancestry. According to Mielniczuk (2005), food culture is formed from socially constructed food practices and choices, encompassing both historical traditions and contemporary habits⁽⁷⁾. Thus, it is observed that indigenous food systems have been progressively modified by increasing exposure to processed foods, characterized by high energy density, high palatability, and wide availability, often associated with low cost.

The objective of this study was to engage in dialogue with the indigenous people of the Pau Brasil Village regarding important concepts and strategies for healthy eating; to develop, test, and share healthy recipes that replace processed foods but align with their current and ancestral dietary habits, prioritizing locally grown and readily available foods, while also fostering opportunities for preparing and

sharing traditional foods and meals of that community.

The replacement of traditional foods with ultra-processed products is associated with negative impacts on health and dietary quality, in addition to contributing to cultural erosion. In this sense, the promotion of sustainable food systems requires the implementation of public policies that expand access to fresh and minimally processed foods, while restricting the availability and consumption of ultra-processed foods, especially in contexts of greater social vulnerability.

Given this context, the objective of this study was to engage in dialogue with the indigenous people of the Pau Brasil village regarding concepts and strategies related to healthy eating; develop, test, and share culinary preparations that can replace industrialized foods, respecting and valuing local and ancestral dietary habits; prioritize the use of foods grown within the territory or easily accessible; and promote collective moments of meal preparation and sharing, strengthening traditional food practices and the food sovereignty of this people.

METHOD

This is a university extension project carried out in the Tupiniquim Pau Brasil Village, located in the rural area of Barra do Sahy, on the coast of the municipality of Aracruz, in the northern part of the state of Espírito Santo, Brazil. The project was implemented between 2024 and early 2026, with Food and Nutrition Education (FNE) activities taking place from May 2025 to March 2026.

The initiative was conducted in partnership with local leaders, including the Tupiniquim and Guarani Indigenous Association (AITG), the village chief, as well as representatives of women and youth. Indigenous people from different age groups (youth, adults, and the elderly) participated

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in the study; they voluntarily agreed to take part in the proposed activities and signed the Informed Consent Form (ICF).

Participants were recruited through coordination with the AITG, which was responsible for publicizing the project among village residents and providing logistical support during the home visits conducted by the team. The local Basic Health Unit (UBS) also participated in some of the activities, contributing to the integration of health initiatives in the territory and strengthening intersectoral coordination.

The initial stages involved the team's integration into community spaces through participation in cultural events and group activities, such as Pilates classes, with the aim of fostering closer ties with the community and building relationships with participants. After the group was formed, the interventions began to take place at the village's Women's House, a key community hub.

The EAN workshops were structured in three sequential phases: (1) a dialogue-based discussion on topics related to health and nutrition; (2) the preparation of culinary dishes; and (3) socializing and tasting the food produced. The recipes were organized into two categories: (i) healthy dishes, based predominantly on fresh or minimally processed foods; and (ii) traditional village dishes, with an emphasis on valuing ancestral food culture. The traditional dishes were selected, presented, and prepared by the participants themselves, promoting their active role and the appreciation of local knowledge.

In total, 25 healthy culinary preparations were developed, with the aim of offering alternatives to the ultra-processed foods frequently consumed by the population. Priority was given to the use of ingredients available in the region and, in some cases, underutilized by the community, such

as green jackfruit, which is abundant in the region but rarely incorporated into daily meals.

At the end of the first phase of the project, a qualitative assessment of possible changes in the participants' dietary habits was conducted, based on reports obtained from group discussions. This stage sought to identify perceptions related to food consumption, the adoption of the proposed guidelines, and the potential impacts on health and well-being.

The project was approved by the Research Ethics Committee, in accordance with the Certificate of Submission for Ethical Review (CAAE) No. 76498523.2.0000.5059 and Opinion No. 6.590.542, complying with current ethical standards for research involving human subjects.

RESULTS

Ten EAN workshops were held, with 10 to 15 participants per workshop, addressing key topics related to health promotion and adequate and healthy nutrition, including the Dietary Guidelines for the Brazilian Population ⁽¹⁰⁾; salt and sugar consumption—covering main dietary sources, health impacts, and reduction strategies; the importance of dietary fiber and its dietary sources; consumption and preparation of foods that are sources of healthy fats; adequate nutrition for the prevention and management of type 2 diabetes mellitus and obesity; meal planning; and proper food hygiene practices.

During the workshops, various culinary preparations were developed, based predominantly on fresh or minimally processed foods. Among these, the following stand out: homemade tomato sauce, natural seasonings, avocado butter and salad, sesame paste, pizza with carrot and oat crust, grilled jackfruit, stroganoff and green jackfruit antipasto, yam mayonnaise, bean burgers, guava ketchup, oat milk, ba-

nana-oat cake, sardine couscous, plantain gnocchi, plain yogurt, fruit jams, flaxseed bread, fruit ice cream, and tapioca-based dishes with vegetables. These dishes were proposed as alternatives to ultra-processed foods, with a focus on improving dietary quality and promoting locally available ingredients.

Regarding the village's traditional dishes, these were collectively discussed and selected by the participants themselves, who also took responsibility for their preparation. Recipes were developed such as cauim/coaba (a fermented cassava-based drink), cassava pamonha prepared in banana leaves — including all stages of cassava processing, from harvest onward —, indigenous moqueca, pirão, salted fish, and fish stir-fry with heart of palm, a dish that, according to accounts, gave rise to the torta capixaba.

The workshops served as spaces for the exchange of knowledge and cultural empowerment, in which participants shared experiences related to variations in the preparations, their seasonality, and emotional memories, often associated with mothers, grandmothers, and experiences from their youth. Changes in eating habits over time were also discussed, including the persistence or replacement of these dishes in daily family life, as well as the interest of younger generations in learning them. It was observed that the activities fostered the revival and appreciation of local food culture, stimulating participants' interest in reintroducing these practices into their home environments.

The findings of this study are consistent with evidence in the literature, as described by Santos et al. (2025), who highlight the relevance of educational interventions that go beyond the mere transmission of knowledge, incorporating strategies that promote engagement and motivation for sustainable behavioral changes. In this regard, the Reference Framework for

Food and Nutrition Education for Public Policies reinforces that FNE should be understood as a continuous and ongoing process, essential for promoting health and ensuring Food and Nutrition Security.

Finally, a qualitative assessment was conducted of the changes in dietary habits resulting from the workshops. Participants reported a reduction in salt use in food preparation, replacing processed seasonings with natural herbs and spices. Regarding sugar consumption, refined sugar was replaced with natural alternatives, such as the natural sugars found in fruits and milk, in addition to a reduction in the consumption of artificially sweetened beverages.

Regarding perceptions of health and well-being, participants reported improvements after incorporating the guidelines into their home environments. Also noteworthy was the sharing of acquired knowledge with family members, expanding the reach of educational initiatives and enhancing their effects within the community context.

DISCUSSION

This study demonstrates that EAN-based interventions, when developed in a participatory and culturally sensitive manner, are capable of promoting changes in the dietary habits of indigenous populations, while also valuing their roots and history. The reduction in the consumption of salt, sugar, and ultra-processed foods observed among participants reinforces the potential of these strategies as effective tools for health promotion and the prevention of chronic noncommunicable diseases, corroborating previous findings in the literature⁽⁹⁾.

In a study conducted by Paiva et al. (2026), the prevalence of conditions such as hypertension, type 2 diabetes mellitus, and obesity in indigenous communities in Acre was found to be

concerning, being closely associated with the process of urbanization, the loss of traditional dietary practices, and limited access to health services. The findings of this study revealed a high prevalence of obesity among indigenous women (46%), while hypertension had a combined national prevalence of 6.2%. Furthermore, the coexistence of chronic noncommunicable diseases with infectious diseases in indigenous communities highlighted the complexity of the epidemiological landscape of these populations⁽¹⁰⁾.

The growing presence of ultra-processed foods in Brazilian indigenous communities reflects the ongoing dietary and nutritional transition in the country. This phenomenon is characterized by the replacement of fresh or minimally processed foods with industrialized products of high energy density, rich in sugars, fats, and sodium, as classified by the NOVA system⁽¹¹⁾. This dietary pattern has been associated with an increase in the prevalence of obesity, type 2 diabetes mellitus, and other chronic diseases, even in populations historically protected by traditional food systems⁽¹²⁾.

In the indigenous context, the dietary transition is directly related to structural determinants, such as the loss of territories, environmental degradation, limited access to traditional foods, and growing dependence on market-purchased foods. Such factors undermine food sovereignty and contribute to the rise of unhealthy eating patterns, which should be understood as a multifactorial phenomenon involving social, economic, environmental, and cultural dimensions⁽¹³⁾.

The dietary habits and food choice criteria of the Brazilian population are deeply rooted in the cultural diversity that characterizes the country, reflecting the contributions of different groups and ethnicities. The act of eating transcends the biological dimension, and is also a social practice involving sharing, socializing at

the table, and expressions of affection and civility, as well as preserving traditions and legacies passed down over time⁽¹⁴⁾.

In this context, the Dietary Guidelines for the Brazilian Population serve as an important theoretical and practical reference by valuing fresh and minimally processed foods, as well as recognizing the importance of food culture in the development of healthy eating practices⁽⁸⁾. The actions developed in this study align directly with the principles of the Guidelines, promoting the revival of traditional preparations and encouraging the use of local foods.

The results obtained highlight the relevance of educational interventions that are not limited to the transmission of knowledge but also stimulate the motivation necessary for the adoption of sustainable behavioral changes. EAN is a continuous and permanent practice, fundamental for achieving more effective results in health promotion and ensuring food security⁽¹⁵⁻¹⁶⁾.

EAN actions constituted strategies developed with the aim of clarifying doubts, reinforcing the recommendations of the Dietary Guidelines, and promoting home-cooked meals, in line with the population's dietary habits and culture. In this context, educational materials served as strategic tools to raise awareness, facilitate the understanding of concepts, and encourage the adoption of healthy eating practices, contributing significantly to the reduction of ultra-processed food consumption⁽¹⁷⁾.

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Foods, initially in their natural form, are transformed through knowledge, practices, and techniques developed historically, reflecting power relations and the production of knowledge. These transformations highlight the interaction between the environmental, social, cultural, and economic contexts of societies, influencing dietary dynamics and approaches to food intervention⁽¹⁴⁾.

The appreciation of ancestral food culture, observed in the culinary workshops, played a central role in the adoption of the proposed changes. As discussed by Mielniczuk (2005), food culture is dynamic and constructed through social interactions and daily life, being fundamental to group identity⁽⁷⁾. In this sense, strategies that strengthen food memory and cultural belonging tend to be more effective and sustainable.

According to Tanaka, Carvalho, and Marchioni (2022), storytelling constitutes an important strategy for the construction and transmission of knowledge, through which communities interpret their past, experience the present, and project the future. In this context, its potential as a tool for promoting cultural revival stands out, especially regarding the appreciation of native foods and Brazilian food culture. By evoking emotional memories related to food, this practice contributes to the strengthening of cultural identities, the recognition of traditions, and the preservation of food practices that span generations, thereby fostering a more meaningful and conscious relationship with food⁽¹⁸⁾.

Furthermore, the results demonstrated a significant multiplier effect of the EAN initiatives, as participants reported sharing the knowledge they acquired with their family members. This aspect is widely recognized in the literature as one of the key indicators of success for community health interventions⁽⁹⁾.

The findings of this study are consistent with recent evidence indicating that nutritional interventions in indigenous populations should prioritize participatory approaches, respecting traditional knowledge and promoting community leadership⁽⁹⁾. Such strategies are fundamental for reducing health inequalities and promoting food autonomy.

Finally, the need for intersectoral

public policies that promote access to healthy foods, strengthen local food systems, and limit the availability of ultra-processed foods in indigenous territories is emphasized. Structural initiatives, combined with culturally sensitive educational actions, are essential to address the complexity of food and nutritional insecurity in these contexts^(12-13, 8).

CONCLUSION

This study demonstrates that NUT interventions, when conducted in a participatory and culturally sensitive manner, are effective in promoting positive changes in dietary habits in indigenous contexts. A reduction in the consumption of salt, sugar, and ultra-processed foods was observed, alongside an increase in the consumption of fresh and minimally processed foods, in line with the Dietary Guidelines for the Brazilian Population. The appreciation of local food culture emerged as a central element for adherence to the proposed practices, highlighting that strategies integrating traditional knowledge enhance the effectiveness and sustainability of interventions. Additionally, the multiplier effect of these actions, expressed through the sharing of knowledge within family and community settings, broadens the reach and impact of educational activities. The findings reinforce the need for coordination between educational interventions and intersectoral public policies aimed at ensuring access to healthy foods, strengthening traditional food systems, and addressing the structural determinants of food and nutritional insecurity. In this regard, integrated approaches are fundamental for promoting food autonomy, health equity, and cultural preservation among indigenous populations.

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