

# Nutritional education for the appreciation of regional food culture: A food and nutrition security strategy developed with preschoolers in the southwest of the Amazon

Educação nutricional para a valorização da cultura alimentar regional: Uma estratégia de segurança alimentar e nutricional desenvolvida com pré-escolares, no sudoeste da Amazônia

Educación nutricional para la valorización de la cultura alimentaria regional: Una estrategia de seguridad alimentaria y nutricional desarrollada con preescolares en el suroeste de la Amazonía

## RESUMO

A Educação Alimentar e Nutricional na infância tem um papel importante na formação de hábitos alimentares que tendem a se refletir na vida adulta. Diante do contexto das mudanças dos padrões alimentares, torna-se importante a inclusão de atividades educativas abordando a valorização da sociobiodiversidade, resgate da cultura alimentar, a identidade cultural e os valores e saberes locais, em prol da promoção da segurança alimentar e nutricional de indivíduos em vulnerabilidade. OBJETIVO: Relatar a experiência de uma atividade de educação em nutrição interventiva, de valorização dos alimentos regionais, com pré-escolares matriculados em instituições cadastradas em um programa assistencial. MÉTODOS: 112 pré-escolares, de 4 a 6 anos, em turmas de até 12 crianças, na sala de aula usual destas, matriculadas em instituições atendidas pelo Programa Mesa Brasil/SESC. Como parte integrante de um projeto maior, a temática proposta foi abordada ao longo de três encontros, ao longo dos quais foram abordados 9 alimentos, característicos da Região Norte, em duas etapas: 1ª etapa: roda de conversa com familiarização e partilha de vivências; 2ª etapa: atividade sensorial dos alimentos e teste de aceitabilidade por meio de escala hedônica facial. RESULTADO: A experiência gerou por parte do grupo de nutrição o treinamento da empatia e escuta ativa, exigindo da habilidade de condução de conversa em grupo. Aos escolares, a atividade promoveu o acolhimento e validação de suas falas, acolhida das vivências a respeito da alimentação, além do entusiasmo ao compartilhar em grupo atividades sensoriais, com descobertas e reflexões sobre os alimentos de sua região. Além disso, os alimentos propostos foram bem aceitos, em sua maioria. CONCLUSÃO: Essa experiência, demonstrou ser capaz de promover a valorização da cultura e fortalecimento da identidade cultural, bem como, a utilização dos sentidos, em especial, a degustação, conforme proposto, são capazes de promover os alimentos regionais.

**DESCRITORES:** Educação Nutricional, Alimentação Regional, Segurança Alimentar e Nutricional, Direito à Alimentação, Programas de Nutrição Aplicada, Promoção de saúde

## ABSTRACT

Food and Nutrition Education in childhood has an important role in the formation of eating habits that tend to be reflected in adult life. Considering the context of changes in dietary patterns, it is important to include educational activities that address the appreciation of sociobiodiversity, rescue of food culture, cultural identity and local values and knowledge, in favor of promoting food and nutritional security for individuals in vulnerability. OBJECTIVE: To report the experience of an interventional nutrition education activity, to value regional foods, with preschoolers enrolled in institutions registered in an assistance program. METHODS: 112 preschoolers, from 4 to 6 years old, in groups of up to 12 children, in their usual classroom, enrolled in institutions served by the Mesa Brasil/SESC Program. As an integral part of a larger project, the proposed theme was addressed over three meetings, during which 9 foods, characteristic of the North Region, were discussed in two stages: 1st stage: conversation circle with familiarization and sharing of experiences; 2nd stage: food sensory activity and acceptability test using a facial hedonic scale. RESULT: The experience generated, on the part of the nutrition group, training in empathy and active listening, requiring the ability to conduct group conversations. For the schoolchildren, the activity promoted the reception and validation of their speeches, welcoming the experiences regarding food, in addition to the enthusiasm when sharing sensory activities in groups, with discoveries and reflections on the foods of their region. In addition, the proposed foods were well accepted, for the most part. CONCLUSION: This experience proved to be able to promote the appreciation of culture and strengthening of cultural identity, as well as the use of the senses, in particular, tasting, as proposed, are capable of promoting regional foods.

**DESCRIPTORS:** Food and Nutrition Education, Regional Food, Food Security, Applied Nutrition Programs, health promotion

**RESUMEN**

La Educación Alimentaria y Nutricional en la infancia tiene un papel importante en la formación de hábitos alimentarios que tienden a reflejarse en la vida adulta. Considerando el contexto de cambios en los patrones alimentarios, es importante incluir actividades educativas que aborden la valorización de la sociobiodiversidad, el rescate de la cultura alimentaria, la identidad cultural y los valores y saberes locales, a favor de promover la seguridad alimentaria y nutricional de las personas en situación de vulnerabilidad. . OBJETIVO: Relatar la experiencia de una actividad de educación nutricional intervencionista, para valorizar los alimentos regionales, con preescolares matriculados en instituciones registradas en un programa asistencial. MÉTODOS: 112 preescolares, de 4 a 6 años, en grupos de hasta 12 niños, en su aula habitual, matriculados en instituciones atendidas por el Programa Mesa Brasil/SESC. Como parte integral de un proyecto mayor, el tema propuesto fue abordado en tres encuentros, durante los cuales se discutieron 9 alimentos, característicos de la Región Norte, en dos etapas: 1ª etapa: círculo de conversación con familiarización y puesta en común de experiencias; 2ª etapa: prueba de aceptabilidad y actividad sensorial de los alimentos mediante una escala hedónica facial. RESULTADO: La experiencia generó, por parte del grupo de nutrición, formación en empatía y escucha activa, requiriendo la habilidad para realizar conversaciones grupales. Para los escolares, la actividad promovió la recepción y validación de sus discursos, acogiendo las experiencias en torno a la comida, además del entusiasmo al compartir actividades sensoriales en grupo, con descubrimientos y reflexiones sobre los alimentos de su región. Además, los alimentos propuestos fueron bien aceptados, en su mayoría. CONCLUSIÓN: Esta experiencia demostró poder promover la valorización de la cultura y el fortalecimiento de la identidad cultural, así como el uso de los sentidos, en particular, la degustación, como se propone, son capaces de promover los alimentos regionales.

**DESCRIPTORES:** Educación Nutricional, Alimentación Regional, Seguridad Alimentaria y Nutricional, Derecho a la Alimentación, Programas de Nutrición Aplicada, Promoción de la Salud

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**Ana Beatriz Vasconcelos de Oliveira**

Nutritionist. Master's student at the Graduate Program in Nutrition and Food, University of Vale do Rio dos Sinos, São Leopoldo, RS, Brazil.

ORCID: 0000-0003-3067-0278

**INTRODUÇÃO**

**B**razil, a tropical country of rich biodiversity, offers its inhabitants a diversified offer of native foods. In the North Region, especially, fruits and regional foods are commonly found in backyards, street markets and native forests. Tasty and nutritious, these products were part of the local diet, however, due to changes in food patterns, they are increasingly abandoned and devalued.<sup>(1,2)</sup>

In the context of Food and Nutrition Security (FNS), an individual is nutritionally vulnerable when, among other circumstances, he has compromised access to food and when he cultivates inadequate eating habits.<sup>(3)(4)</sup>

With the aim of contributing to the fight against hunger, programs were developed based on international experiences. Among them is the MESA BRASIL Program, linked to the Social Service of Commerce (SESC - Serviço Social do Comércio), which provides assistance to institutions in situations of vulnerability, including day care centers and schools.<sup>(5)</sup>

This assistance program is recognized as an important social actor in combating the situation of food and nutritional insecurity, since the institutions assisted have their permanence conditioned to the participation of educational actions carried out with the objective of promoting adequate food.<sup>(5)</sup>

The preschool age, between 2 (two) and

6 (six) years, is the stage in which the child begins his relationship with food, with the formation of eating habits that tend to be reflected in adult life. The formation of eating habits is directly influenced by the social environment, including family and school. Therefore, these environments have an important role in the development of Food and Nutrition Education (FNE) activities.<sup>(6)(4)</sup>

It is considered that at this stage of childhood it is possible to arouse interest in the consumption of new foods, through sensory activities: touching them, smelling them and tasting them. In addition, the concepts of nutrition are abstract for children, recommending, for their fixation, the experience of sig-

nificant experiences in order to have positive results.<sup>(7)(8)</sup>

Thus, considering the principles and guidelines to promote healthy and adequate school meals<sup>(7)</sup>, the objective of this work is to report an experience of interventional actions of ludic-pedagogical activities, with familiarization and experimentation of regional foods, aiming at the rescue of the food culture, valuing cultural identity and local values and knowledge, with a focus on Food and Nutritional Security of preschoolers enrolled in institutions registered in an assistance program.

## METHOD

This is a cross-sectional study of a descriptive type of intervention, with a qualitative and quantitative approach, carried out with preschoolers, in situations of vulnerability, enrolled in institutions assisted by an assistance program, in the city of Porto Velho - RO.

The present study was approved by the Ethics and Research Committee of the Federal University of Rondônia, on September 4, 2012, under protocol number 04227312.8.0000.5300. Due to the schools' partnership with the Mesa Brasil/SESC-RO Program, the statement of consent was not necessary. The Free and Informed Consent Term - TCLE was delivered to the pedagogical supervision of the institutions, for signature by the legal guardian, the objective of the project, the name of those responsible, the activities developed and the possible risks were described, making it clear that at any time the child could stop participating if they wanted to.

The sample consisted of n=112 preschoolers, aged 4 to 6 years, assisted by the municipal network and community schools served by the Assistance Program, which already characterizes them as individuals with low purchasing power and in vulnerability.

The educational practice with the theme "Regional Foods" was an integral part of an FNE project, which encom-

passed other themes related to food and nutrition, totaling 6 (five) meetings, of which 3 (three) would correspond to the experience reported here.

The team consisted of a nutritionist and two nutrition interns, in addition to a driver and kitchen staff to prepare the preparations, when necessary.

The meetings were weekly, lasting approximately 1 hour, in groups of up to 12 children, in their usual classroom. The approach took place in 2 (two) stages: 1st stage: conversation circle with familiarization and sharing of experiences; 2nd stage: sensory activity of the proposed foods.

During these meetings, 9 (nine) regional foods were presented, classified as characteristic foods of the North Region, according to the Brazilian Regional Foods guide<sup>(1)</sup> in the order presented in Table 1.

In the first stage of the research, the methodological tool of direct dialogue was used. This educational practice presents characteristics of the participa-

tory methodology called "Conversation Wheel", which prioritize discussions around a topic related to the research objectives, promoting a dialogue with the participants.

Questions were asked in order to encourage the participation of preschoolers, as shown in Table 2. The children were instructed to raise their hands to express themselves. Their speeches were accepted, valued and contextualized to the proposed theme.

After contextualizing the theme, the foods were presented in their in natura form, for handling and familiarization, as shown in Figures 1 and 3. Then, the nutritional benefits of these foods for the functioning of the body were addressed, in a simple and playful way.

During the experience of getting to know the food, the preschoolers were encouraged to use their senses, discussing aspects such as color, smell, texture and size with the class.

In the second stage of the activity, the students, carrying individual printed

Table 1 – Order of presentation of regional foods by meeting.

Meetings on Regional Foods	1°	2°	3°
Foods Approached	Acerola Brazil Nut Cupuaçu	Tapioca flour Graviola Mango	Açaí Star fruit Pupunha

Source: Survey data, 2012

Table 2 - Questions addressed to preschoolers in the conversation circle

No.	Questions
01	"What is regional food?"
02	"Does anyone have or know someone who has the tree that grows this food?"
03	"How can this food be eaten?"
04	"Where can this food be found?"

Source: Survey data, 2012

material containing the figure of the food in sequential order, were invited to taste the food offered on the day, in its in natura or processed form (Table -1), followed by carrying out the acceptability test corresponding to the meeting. The preparations to be tasted were prepared on the day of the activity, by the kitchen team, according to a previously prepared schedule. Good practices were used in the stages of preparation, storage and transport, in order to guarantee the food safety of the participants. The food was served individually in 50ml disposable cups, accompanied by disposable spoons and napkins, when necessary, with water being available for ingestion at each tasting, as shown in Figures - 3, 5 and 6.

In this stage of the experience, the methodology recommended in the “Manual for the application of acceptability tests in the PNAE” was used. Acceptance is the degree to which the individual demonstrates liking or disliking a particular type of food. The evaluation was performed using a 5-point facial hedonic scale through images, indicated for children from 1st to 5th grade <sup>(9)</sup>, as shown in Figure 7.

The participants were instructed at this time not to express their opinions and to mark the number corresponding to their acceptability for the food.

### DATA TABULATION AND ANALYSIS

The acceptability test results were analyzed using SPSS V17, Minitab 16 and Excel Office 2010 software, and a significance level of 0.05 (5%) was determined, with the construction of 95% statistical confidence intervals.

To assess the food acceptance rate, the PNAE methodology was used, which considers an accepted food when it reaches a percentage equal to or greater than 85%, using variables 4 and 5 as references to quantify the acceptance percentage <sup>(9)</sup>. The test of equality between two proportions was applied to calculate the p-value and verify the level of sig-

Figure 1 - Preschoolers getting to know the açai fruit



Source: SESC-RO Collection

Figure 2 – Preschooler handling the açai fruit



Source: SESC-RO Collection

Table 1 - Regional foods and forms of presentation used in the research

Foods	In natura	Minimally processed	Presentation Form
Tapioca flour		X	In flakes
Mango ( <i>Mangifera indica</i> L.)	X		Chopped into cubes
Brazil nut ( <i>Bertholletia excelsa</i> )	X		Almond without shell
Star fruit ( <i>Averrhoa carambola</i> )	X		Cross-cut in the shape of a star
Açai ( <i>Euterpe</i> sp.)		X	Pulp beaten with water and sugar
Acerola ( <i>Malpighia glabra</i> )		X	Pulp beaten with water and sugar
Graviola ( <i>Annona muricata</i> )		X	Pulp beaten with water and sugar
Cupuçu ( <i>Theobroma grandiflorum</i> )		X	Cream with condensed milk and sour cream
Pupunha ( <i>Bactris gasipaes</i> )		X	Cooked in salted water

Source: Survey data, 2012.



nificance between the variables.

## DISCUSSION

A total of 112 preschoolers participated in the experiment, with a mean age of  $\pm 4.9$  years, 42% (n=47) were female and 58% (n=65) were male.

During the meetings, the interest and enthusiasm with the proposed theme was clearly observed, especially when the foods presented were somehow linked to the daily experiences of preschoolers.

When asking the question regarding knowledge about what regional foods were, none of the participants knew how to define what characterized these foods.

When questioned about their knowledge about trees or other fruit plants, many of the participants reported the presence of mango trees and acerola trees (*Averrhoa carambola* L) in their backyards, as well as the presence of cupuaçu trees (*Theobroma grandiflorum*), ingazeiras (*Inga edulis*), jambeiros (*Syzygium malaccense*) and caramboleira on relatives' properties, on farms and close to their homes.

When asked about the habit of consuming a certain food, the preschoolers referred to their family references to express their perceptions and experiences in relation to the fruits.

Acerola (*Malpighia glabra*) and cupuaçu fruits were immediately associated with consumption in the form of juices, although the latter was also indicated as consumed in the form of cream, candy, ice cream and bonbon. Açaí, however, was associated with consumption in its traditional form, beaten and added with cassava flour, tapioca flour and even accompanied by fruits and powdered milk. The consumption of Brazil nut (*Bertholletia excels*) was mentioned in the form of almond, candy, as well as in the form of "nut milk", as the plant extract is known.

Mango (*Mangifera indica*) was associated with its consumption in natura,

Figure 3 – Preschooler tasting the smoothie açaí



Source: SESC-RO Collection

Figure 4 – Preschooler in tasting the carambola fruit



Source: SESC-RO Collection

Figura 5 – Preschooler tasting cupuaçu-based cream (*Theobroma grandiflorum*)



Source: SESC-RO Collection

Figure 6 – Preschooler tasting tapioca flour



Source: SESC-RO Collection

green accompanied by salt, or in the form of juice. Tapioca flour was directly related to consumption in the form of porridge, accompanying açai, as well as associated with tapioca produced from the gum and consumed at fairs during breakfast or afternoon snacks.

There were few manifestations about pupunha, star fruit and soursop, however, among the comments, there was an association of the first with consumption cooked with salt, and the last two with consumption in the form of juice.

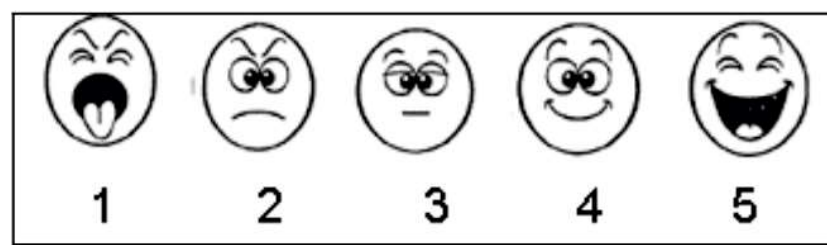
Others, however, were curious about being their first contact with food, saying they did not have space at home to plant them or because they lived in apartments or houses without backyards.

It was observed that when foods were mentioned, many of the preschoolers said they did not know, however, when viewing the food, they recognized it referring to experiences and experiences, as well as remembering having already consumed it.

The inverse was also verified, that is, even when viewing the food, the student could not say the name, although he had previously had contact with it.

During the sensory contact with the food presented in natura, the enthusiasm, curiosity and eagerness to see, touch and feel were evident. After the first meeting, there was enthusiasm for the following meetings and about the next foods that would be addressed, demonstrating the interest and expectation regarding the activities developed. Bernardes Rodrigues et al.<sup>(10)</sup>, point out that the child in their interactions, relationships and daily practices build their personal and collective identity, through the “cultures of childhood”, which involves playing, imagining, fantasizing, desiring, learning, observing, experiencing, through which it builds meanings about nature. Emphasizing that the role of the educator as a mediator of such practices is crucial in the teaching-learning process, recognizing the value of such cultures, for the process of build-

Figure 7 - 5-point facial hedonic scale



Source: Manual for the application of acceptability tests in the PNAE.

ding better eating attitudes at this stage of life.

Coura et al.<sup>(8)</sup>, in an intervention study developed with preschoolers, using the “Sapere” or sensory method, aimed to increase the acceptance of fruits, vegetables and beans in preschoolers. At the end of 5 workshops, changes in behaviors related to food consumption were observed, as well as a reduction in the rejection of beans and vegetables in the group submitted to the intervention, demonstrating that sensory experiences as a strategy for food education were well received and capable of causing positive changes in the eating habits of children. During the tasting, it was inevitable that the children did not communicate with each other, since they spontaneously expressed their opinion about acceptance, and there was a need to share the experience with their colleagues.

Therefore, the acceptability of the 9 (nine) foods offered had its result influenced and resulted in 90% (n=8) of approval. The only food that did not obtain an acceptance percentage  $\geq 85\%$ , therefore not meeting the PNAE criteria, was star fruit, with 64.3%, offered in natura.

Among the other products, those that reached the highest percentages of acceptance were the preparations based on acerola (*Malpighia glabra*) (94.6%), cupuaçu (93%) and soursop (92.9%).<sup>(1,2)</sup> The Brazil nut (*Bertholletia excels*), served in natura, was approved with 92% acceptance. One of the main products of Amazonian sociobiodiversity,

the nut, also known as Brazil nut and Amazon nut, has important nutritional value, rich in selenium, of social value for extractive communities.<sup>(1,2)</sup>

The mango, presented cut in natura form, also obtained 92% of acceptance. This fruit stands out for its vitamin A content, a very important micronutrient in childhood. It can be used in the preparation of juices, sweets, jams, jellies, ice cream, salads and mousse.<sup>(1,2)</sup>

Tapioca flour, served pure, appears in sixth place, with an acceptance percentage of 90.2%. Granules produced from cassava starch (*Manihot esculenta*) is the most energetic product derived from this tuber, presenting high starch content, low fiber, protein, fatty matter and sugar contents, when compared to dry and water flours. It is commonly consumed along with açai, as well as in the form of porridge, cakes, puddings and ice cream.<sup>(1,2)</sup>

Açai was offered in the form of juice and was accepted by 88.4% of preschoolers. This fruit of the açazeiro (*Euterpe oleacea*), açai palm, plays an important socioeconomic and cultural role in the Amazon region, occurring throughout the year, with abundance from July to December. In addition to being an excellent energy source, it is a good source of iron and antioxidants.<sup>(1,2)</sup>

The peach palm was served in a traditional way, cooked with salt, with an acceptance of 85.7%. Coming from the peach palm, the peach fruit bears fruit from December to March, being rich in vitamin A, being classified as the richest ve-

getable source in selenium, a substance recognized for its antioxidant power. <sup>(1,2)</sup>

## CONCLUSION

During the workshops, the familiarity of the preschoolers with the proposed foods was observed, as well as the enthusiasm in sharing their experiences and knowledge about them, as well as the places where they were found and the forms of consumption. It is noteworthy that there was a lack of knowledge regarding nutritional characteristics, however there was interest in the information, after familiarization with the food in question.

Considering that the objective of the experiment was the promotion of regional foods, the bias of the acceptability test did not compromise the objective of the activity, increasing the dialogue and the incentive for its acceptance. However, it is recommended in studies that intend to evaluate the acceptability of preparations, in order to include foods in school lunches, that the test is carried out in the manner guided by the PNAE. It is also recommended to plan future activities considering the seasonality of the food, with attention to the culinary preparations to be offered, since in this experience there were some preparations with high sugar and allergenic in-

gredients, such as condensed milk.

Considering the few publications of experience reports in FNE, it is expected that the dissemination of this experience will contribute to expanding the possibilities of activities with the theme of regional foods, in order to value sociobiodiversity, and rescue the food culture, in favor of the promotion of food and nutrition security.

It is concluded that the nutritional education practice, as performed, proved to be an adequate strategy to achieve the proposed objective of promoting regional foods.

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