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This manuscript comes from the Course Conclusion Work entitled "Evolution of Food and Nutrition Education Actions within the scope of School Feeding in the Municipality of São Paulo" (from Portuguese: "*Evolução das Ações de Educação Alimentar e Nutricional no âmbito da Alimentação Escolar no Município de São Paulo*"), authored by Vitória Maria do Nascimento Gonçalves Paes de Barros and supervised by Daniela Bicalho, presented in December 2021, as a partial requirement for graduation in the Nutrition course at the *Faculdade de Saúde Pública* (FSP - School of Public Health) of the *Universidade de São Paulo* (USP - University of São Paulo).

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Assistant Editor
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Practices of Food and Nutrition Education within the scope of the School Feeding Program in a Brazilian capital

Práticas de Educação Alimentar e Nutricional no âmbito do Programa de Alimentação Escolar em uma capital brasileira

Abstract

Introduction: Food and Nutrition Education, a guideline of the Brazilian National School Feeding Program, contributes to the appreciation of food culture, reduction of food waste, and promotion of healthy and sustainable eating. **Objective:** To describe the trajectory of Food and Nutrition Education actions within the scope of School Feeding in the city of São Paulo. **Methods:** This is an original study in the thematic area of Food and Nutrition in Public Health. It is a cross-sectional study with a quantitative-qualitative approach, including data collection related to FNE actions in public schools of the São Paulo Municipal Education Network. Quantitative data were collected in 2018 and 2019 through online questionnaires sent to schools. Qualitative data were collected in 2021 through semi-structured interviews with professionals in the fields of Education and Food. **Results:** In 2018 and 2019, 1.659 and 2.037 schools participated in the study, respectively. Using the Wilcoxon-Mann-Whitney association test, a significant increase was observed in the frequency of FNE actions in 2019 compared to the previous year ($p < 0,01$). In 2021, nine professionals (nutritionists, teachers, cooks, and school managers) were interviewed. The data highlight the need for interdisciplinarity to develop such actions in schools. **Conclusion:** To effectively develop FNE within School Feeding, it is essential to have a team of aligned nutritionists and educators to promote these practices in schools, as well as managers who recognize their importance.

Keywords: School Feeding. Food and Nutrition Education. Nutrition and Food Programs and Policies.

Resumo

Introdução: A Educação Alimentar e Nutricional, uma diretriz do Programa Nacional de Alimentação Escolar, contribui para a valorização da cultura alimentar, redução do desperdício de alimentos e promoção da alimentação saudável e sustentável. **Objetivo:** Descrever a trajetória das ações de Educação Alimentar e Nutricional no âmbito da Alimentação Escolar no município de São Paulo. **Métodos:** O presente trabalho caracteriza-se como um estudo original, na área temática de Alimentação e Nutrição em Saúde Coletiva. Trata-

se de um estudo transversal com abordagem quanti-qualitativa, incluindo coleta de dados relacionada às ações de Educação Alimentar e Nutricional nas escolas públicas da Rede Municipal de Ensino da Cidade de São Paulo. Os dados quantitativos foram coletados em 2018 e 2019 por meio de questionários *on-line* com as escolas. Os dados qualitativos foram coletados em 2021 através de entrevistas semiestruturadas com profissionais da área da Educação e Alimentação. **Resultados:** Em 2018 e 2019, participaram do estudo 1.659 e 2.037 escolas, respectivamente. A partir do teste de associação Wilcoxon-Mann-Whitney, verificou-se aumento significativo da frequência de ações de Educação Alimentar e Nutricional em 2019, entre as escolas participantes, em relação ao ano anterior ($p < 0,01$). Em 2021, foram entrevistadas nove profissionais (nutricionistas, professoras, cozinheiras e gestoras escolares). Os dados revelam a necessidade da interdisciplinaridade para o desenvolvimento de tais ações nas escolas. **Conclusão:** Para o desenvolvimento da Educação Alimentar e Nutricional no âmbito da Alimentação Escolar, evidencia-se a importância de uma equipe de nutricionistas e pedagogas, com perspectivas em consonância, visando promover essas práticas nas escolas, bem como gestores que reconheçam sua importância.

Palavras-chave: Alimentação Escolar. Educação Alimentar e Nutricional. Programas e Políticas de Nutrição e Alimentação.

INTRODUCTION

The National School Feeding Program

The *Programa Nacional de Alimentação Escolar* (PNAE - National School Feeding Program) was created in the 1940s to provide supplementary financial resources to states, the Federal District and municipalities to partially meet the nutritional needs of students. Today, the PNAE is one of the biggest school feeding programs in the world, and the only one with universal service.¹

Among the PNAE's guidelines is the offer of healthy and adequate food, with the use of varied, safe nutrition that respects culture, traditions and healthy eating habits, contributing to the growth and development of students and improving school performance, in accordance with age, gender, physical activity and health status, including those who need specific attention.²

Since 1994, the Program has operated in a decentralized manner—an important advancement that has contributed to the rationalization of logistics and cost management in the distribution of food products. This decentralization has also enabled the provision of meals aligned with the dietary habits of local populations across diverse regions of the country, while simultaneously promoting the local and regional economy and fostering community inclusion.³

The PNAE constitutes a vital mechanism for ensuring access to sufficient and adequate food within the framework of the *Política Nacional de Segurança Alimentar e Nutricional* (PNSAN - National Food and Nutrition Security Policy). It plays a key role in promoting food and nutrition security for the infants, children, adolescents, and adults it serves.^{4,5} In this context, the PNAE has become an important public policy, present today in 5.570 municipalities, 26 states and the Federal District, and is considered the longest-running and biggest food supplementation program in Brazil, both in terms of number of beneficiaries and municipalities served.⁶

However, the operationalization of this policy is a complex process, since the management of the program is not restricted to the provision of food to schoolchildren. For the PNAE to be successful, its management must be part of a network of relationships involving actors from different segments, both in the educational area, the economic sector, family farming and civil society, as well as the three spheres of government (municipal, state and federal), which must provide the conditions for establishing a local support network that sustains and allows the Program to be managed efficiently.⁷

Food and Nutrition Education as a PNAE guideline

Food and Nutrition Education is defined as the field of knowledge and continuous, permanent, transdisciplinary, intersectoral and multiprofessional practice that aims to promote the autonomous and voluntary practice of healthy eating habits, and is considered a fundamental strategy for guaranteeing Food and Nutrition Security (FNS) and the Human Right to Adequate Food (HRAF), contributing to the prevention and control of contemporary nutritional problems, such as chronic non communicable diseases and nutritional deficiencies, as well as valuing food culture and reducing food waste.⁸

FNE is a key directive of the PNAE, as established by Federal Law No. 11.947 of June 16, 2009, and further reinforced by Resolution No. 06 of May 8, 2020. This legislative framework reflects a significant shift from a purely assistance-based approach to one grounded in the recognition and promotion of the Human Right to Adequate Food.²

The school environment represents a strategic and privileged context for the implementation of FNE, given its fundamental social role in cultivating critically aware individuals. These individuals are expected to

possess a comprehensive understanding of diverse issues related to life and society, including those pertaining to food and nutrition, with the overarching objective of promoting active citizenship and enhancing quality of life.⁹ Schools have been one of the spaces most focused on by public food and nutrition policies in Brazil, with increasing emphasis on the development of FNE in this space.¹⁰

To effectively implement Food and Nutrition Education within the school environment, it is essential to recognize the roles of professionals such as nutritionists and educators. These individuals, through their active engagement in the school setting, exert significant influence on food and nutrition practices and are well-positioned to offer meaningful contributions to this field.⁸

The significance of Food and Nutrition Education in schools is well established, as is the need for ongoing critical reflection on its potential and limitations, in order to contribute to the advancement of the field. Although school feeding represents the oldest Brazilian public policy in the domain of food and nutrition—having been in effect for over six decades—it is still rarely conceptualized or utilized as a strategic component of FNE. There is a pressing need to promote a redefined understanding of school feeding, one that transcends the act of merely providing meals.¹¹

The School Feeding Program of the Municipality of São Paulo

The School Feeding Program in the city of São Paulo is one of the biggest in the world. Everyday, around two million three hundred thousand meals are served to more than one million students in the municipal school system. In order to offer a healthy and varied diet, prioritizing food from family farms, the *Coordenadoria de Alimentação Escolar* (CODAE - School Feeding Coordination Office) of the Municipal Department of Education has teams of nutritionists, logistics, quality and management.¹²

This study was developed in order to benefit the Public School Feeding Policy in the Municipality of São Paulo, in the field of FNE.

In this sense, the main objective of this work is to identify the perspectives and challenges for the practice of FNE in the context of School Feeding in the municipality of São Paulo, highlighting the importance of disseminating such practices in the school environment.

METHODS

This is a cross-sectional study with a quantitative and qualitative approach, involving data related to Food and Nutrition Education actions developed in municipal public schools in the city of São Paulo.

Ethical aspects

This study was previously approved by the Research Ethics Committee of the *Faculdade de Saúde Pública* (FSP - School of Public Health) of the *Universidade de São Paulo* (USP - University of São Paulo), under process number CAEE 39738320.8.0000.5421.

Quantitative data collection

The data was collected by nutritionists and a nutrition student from CODAE, using online forms, made on Google Forms platform, which were sent to all municipal public schools of the city of São Paulo, between the months of August and October in 2018 and 2019.

The questionnaires contained open and closed questions related to the FNE actions developed by the schools, in order to carry out a diagnosis of these practices in the municipal public schools of São Paulo. These forms were divided into six sections: Identification of the Educational Unit, FNE Actions, Vegetable Gardens, Waste Collection, Canteen and Meals. Questionnaires were sent to all the public schools in the São Paulo Municipal Education Network, via their respective institutional e-mails. On the form, there was no space to include the respondent's data, only that of the Educational Unit, so it is not possible to know which member of the school team was responsible for sending the responses from each school, thus maintaining confidentiality.

In addition to the data identifying the Educational Units (name, Regional Directorate of Education, type of Unit, type of food management), questions were asked about the types of FNE actions developed in the schools; the time taken to carry out these actions; the inclusion of these practices in documents (such as the Pedagogical Political Project) and school training spaces; the staff involved in these actions; their repercussions; the partnerships involved in the development of such actions; the presence of school vegetable gardens and how they are used; the separation of waste in the school kitchen and how it is disposed of; composting; the meal distribution system used; the organization of the canteen; meal times; the presence of students with special dietary needs and how they are treated at mealtimes; food waste and its causes; and the consumption of processed foods by children and adolescents in schools.

Qualitative data collection

Data was collected on the history, evolution, perspectives and challenges related to FNE actions in the context of School Feeding in the municipality of São Paulo, through in-depth interviews with professionals who work or have worked in the Municipal Education Network, carried out between February and March 2021.

Professionals with experience in FNE practices were invited to take part in this study. All the interviews were conducted online, via video call, and recorded, with the participants' permission, so that they could be transcribed and analyzed later. The professionals recruited received an invitation to take part in the research via e-mail, containing all the information about the interviews and the nature of the research and the Informed Consent Form to be signed by all those who agreed to take part in the study, guaranteeing the ethical aspects of the research, as established by CNS Resolution 466/2012.

A script was drawn up with five open questions to obtain information on the path, perceptions, perspectives and challenges related to the FNE work of the professionals interviewed in their respective work realities within school feeding in São Paulo.

Nine professionals from the São Paulo Municipal Department of Education, from different professional areas, with experience in FNE, were invited to be interviewed so that the implications for these practices in different realities within the Municipal Education Network could be assessed.

Regarding the professional roles of the study participants, the author selected a purposive sample comprising two school cooks, two teachers, two members of the school management team (including pedagogical coordinators and/or assistant principals), two nutritionists affiliated with the *Coordenadoria de Alimentação Escolar* (CODAE - School Feeding Coordination), and one pedagogue from the *Divisão de Educação Alimentar e Nutricional* (DIEDAN - Food and Nutrition Education Division) of CODAE. The invited professionals were previously known to the researcher, and all consented to participate in the study.

Data Analysis

Quantitative data was tabulated, organized, and analyzed using Microsoft Excel®.

Descriptive statistics included absolute and relative frequencies and central tendency measures (mean or median, minimum and maximum values, and standard deviation). For associations, the chi-square test was used, and for median comparisons, the Wilcoxon-Mann-Whitney test. Statistical significance was set at 5% ($p < 0,05$). Analyses were conducted using STATA® version 14.

Qualitative interview data were analyzed through a two-stage process. In the first stage, an inter-subject analysis was conducted,¹³ whereby all responses to each question were compiled and systematically examined to identify central trends. In the second stage, a holistic analysis of each participant's responses was undertaken to detect internal contradictions, conflicting opinions, and emotional nuances. Insights gained from this stage were subsequently used to revisit and refine the initial analysis.

The data were then categorized into four principal themes: professional background, perceptions of Food and Nutrition Education, perspectives and challenges. Interview transcripts were read thoroughly and organized according to these thematic categories, with particular attention to areas of convergence and divergence among participants.

RESULTS AND DISCUSSION

This study is the first to monitor Food and Nutrition Education initiatives within the school feeding program in São Paulo, taking into account the historical context, professional perspectives, and developmental challenges.

The findings indicated an expansion of FNE activities within São Paulo's Municipal Education Network between 2018 and 2019, marked by a growing interest among professionals and an increasing recognition of training activities as essential for integrating knowledge and embedding FNE into school curricula.

As the largest implementing entity of the *Programa Nacional de Alimentação Escolar* (PNAE - National School Feeding Program) in Brazil, the city of São Paulo holds a pivotal position; accordingly, this study contributes significantly to the advancement of public school feeding policies within the municipality.

Characterization

In 2018, 1.659 municipal schools took part in the study; in 2019, this number increased to 2.037.

Most of the responding educational units were *Centros de Educação Infantil* (CEIs - Early Childhood Education Centers) (69% in 2018 and 72.3% in 2019), followed by *Escolas Municipais de Educação Infantil* (EMEIs - Municipal Early Childhood Education Schools) (17.2% in 2018 and 15% in 2019). As for the types of school feeding management, there is a greater representation of schools with partner management (57.6% and 57% in 2018 and 2019, respectively) and outsourced management (29.4% in 2018 and 30.6% in 2019). These results reflect the profile of educational units in the São Paulo Municipal Education Network, in which there is a greater representation of CEIs and partner management schools, followed by EMEIs and outsourced management schools (Table 1).

Table 1. Distribution of participating schools by type of educational unit, type of school food management and implementation of Food and Nutrition Education actions, according to the year. São Paulo-SP, 2021.

Variable	2018		2019		<i>p</i> *
	N (n=1659)	%	N (n = 2037)	%	
Type of educational unit					
CEI	1145	69,0	1474	72,3	0,13
EMEI	285	17,2	305	15,0	
EMEF	219	13,2	243	12,0	
Others	10	0,6	15	0,7	
Type of food management					
Partnership	955	57,6	1162	57,0	0,85
Outsourced	488	29,4	623	30,6	
Mixed	212	12,8	247	12,1	
Direct	4	0,2	5	0,3	
Implementation of FNE actions					
Yes	1227	74,0	1590	78,0	<0,01
No	432	26,0	447	22,0	

*Wilcoxon-Mann-Whitney test of association. Statistical significance level: $p < 0,05$.

Abbreviations: FNE - Food and Nutrition Education. CEI - *Centro de Educação Infantil* (Early Childhood Education Centers). EMEI - *Escola Municipal de Educação Infantil* (Municipal Early Childhood Education Schools). EMEF - *Escola Municipal de Ensino Fundamental* (Municipal Elementary School).

The majority of educational units surveyed in 2018 and 2019 reported conducting Food and Nutrition Education activities, with 74% and 78% affirming such actions, respectively. A positive association was observed between the responses from 2018 and 2019 ($p < 0,01$), indicating an increased frequency of FNE initiatives among municipal schools over time.

In addition, nine female professionals who are currently or were previously employed by São Paulo City Hall and involved in FNE activities within the School Feeding Program were interviewed. Each interview lasted approximately 30 minutes; however, duration varied according to subjective factors, including the time of day and week, emotional states, interpersonal dynamics, individual characteristics, comprehension of the topics discussed, and professional experience, among other variables.

The roles of the professionals interviewed include: two school cooks, two teachers and two representatives of the management team (a pedagogical coordinator and an assistant principal) from CEIs and EMEIs in São Paulo's Municipal Education Network, two nutritionists from the CODAE, one a former member of DIEDAN and the other working in its External Supervision Unit; and a pedagogue, who was also a member of the DIEDAN team.

FNE practices within the scope of the School Feeding Program of the Municipality of São Paulo

The importance of FNE in the school environment is evident. It is built on dialog, participation, awareness and transformation, through the articulation between nutritionists and educators, developing strategies that consider food from a broader perspective.¹¹

In 2018, responses were obtained from 1.659 educational units and, in 2019, this number increased to 2.037 responding units, corresponding to 48.5% and 57.5% of the total number of schools in the São Paulo Municipal Education Network in the respective years.

In both 2018 and 2019, a positive association was identified between the implementation of FNE activities and the type of educational unit and school feeding management ($p < 0,01$). CEIs constituted the majority of schools reporting the execution of such activities (71.5% in 2018 and 74.6% in 2019), as well as schools operating under partner management (61.3% in 2018 and 60% in 2019). A positive association was also observed between the duration of FNE implementation and the type of educational unit and management model ($p < 0,01$).

The findings indicated that CEIs and partner management schools had a longer history of conducting FNE activities, with more consolidated practices in these units. Among schools that reported implementing FNE actions for more than five years, 66.3% were CEIs and 53% were partner management schools in 2018, while in 2019, 64.4% were CEIs and 34% were partner management schools (Table 1).

In 2018 and 2019, the most common types of FNE actions among municipal schools were conversation circles about food (79.1% and 81.6% of responding schools in 2018 and 2019, respectively), socializing the menu daily (59.2% in 2018 and 59.9% in 2019) and school gardens (51.9% in 2018 and 58.6% in 2019). Among the main repercussions of such actions in educational units, there was an increase in the consumption of vegetables (68.5% in 2018 and 69.2% in 2019) and a reduction in food waste (60.1% in 2018 and 65.2% in 2019) (Table 2).

The majority of educational units reported that FNE actions were included in their respective Political-Pedagogical Projects, with a frequency of 78.2% and 74.2% in 2018 and 2019 respectively (Table 2).

Table 2. Annual trajectory of Food and Nutrition Education actions in municipal schools, according to type, time, people involved, insertion locations, repercussions and partnerships. São Paulo-SP, 2021.

Variable	2018		2019	
	N (n = 1227)	%	N (n = 1590)	%
Types of actions				
Discussion Circles	970	79,1	1298	81,6
Socialization of the Menu	726	59,2	953	59,9
Vegetable Garden	637	51,9	932	58,6
Culinary Workshops	563	45,9	844	53,1
Organization of the Canteen Space	553	45,1	759	47,7
Lectures on Healthy Eating	520	42,4	438	27,5
Exploration of Food Spaces	133	10,8	229	14,4

Table 2. Annual trajectory of Food and Nutrition Education actions in municipal schools, according to type, time, people involved, insertion locations, repercussions and partnerships. São Paulo-SP, 2021.

Variable	2018		2019	
	N (n = 1227)	%	N (n = 1590)	%
Time of implementation				
Less than 1 year	350	28,5	436	27,4
1 to 2 years	387	31,5	535	33,6
3 to 4 years	243	19,8	308	19,4
More than 5 years	247	20,1	311	19,6
Places of insertion				
Political Pedagogical Project	959	78,2	1180	74,2
Thematic axes of the curriculum	446	36,3	623	39,2
Collective training schedules	354	28,9	354	22,3
People involved				
Teachers	1204	98,1	1556	97,9
Pedagogical Coordinator	1141	93,0	1490	93,7
School Director	980	79,9	1290	81,1
School Cooks	944	76,9	1238	77,9
Family	714	58,2	922	58,0
Cleaning Staff	595	48,5	730	45,9
Assistant Director	408	33,3	480	30,2
Technical Education Assistant	386	31,5	466	29,3
Repercussions				
Increased Consumption of Vegetables	840	68,5	1100	69,2
Reduction of Food Waste	737	60,1	1036	65,2
Expanding the Food Repertoire	648	52,8	931	58,6
Increased Adherence to School Meals	553	45,1	756	47,5
Valuing Food as Part of the Curriculum	549	44,7	696	43,8
Increased Socialization During Meals	508	41,4	624	39,2
Reflections on Meal Times and Spaces	222	18,1	289	18,2
Reduction in Processed Foods Brought by Students*	108	8,8	127	8,0
Existence of Partnerships				
Yes	432	35,2	547	34,4
No	795	64,8	1043	65,6

*Note: The possibility of bringing foods that are not part of the school meals (ultra-processed foods) to consume at school is an option only for EMEFs.

The role of nutritionists as educators and promoters of FNE in the context of School Feeding Program

In this study, among the schools that said they had partnerships to carry out FNE actions (35.2% and 34.4% in 2018 and 2019, respectively) (Table 2), the majority pointed out the nutritionists from the CODAE as their main partners in both years (52.3% in 2018 and 51.9% in 2019).

One of the nutritionists interviewed reported that she has always been involved in training activities within school feeding in São Paulo; however, her direct involvement with FNE only began in 2000, when she started supervising nutrition interns at the then *Departamento de Merenda Escolar* (DME - School Meals Department). At that time, the team initiated the selection of texts on the subject, then referred to as "Nutritional Education", and began conducting specific activities, including theater performances, puppet shows, and tasks such as coloring, painting, and connecting dots. The interviewee noted that, at the time, nutritionists had "no knowledge" of pedagogical practices. In response, she and a colleague sought collaboration with pedagogues from the *Secretaria Municipal de Educação* (SME - Municipal Education Department), who subsequently proposed a joint project. According to the interviewee, the transfer of the DME from the *Secretaria Municipal de Abastecimento* (SEMAB - Municipal Supply Department) to the SME facilitated and strengthened the development of Food and Nutrition Education initiatives. Furthermore, based on the perceptions of three interviewees, training activities were identified as the "main strategy" for expanding FNE within the São Paulo Municipal Education Network.

According to Barbosa et al.¹⁴, in schools, nutritionists' guidance on FNE practices, centered only on the relationship between foods and their nutritional composition, through authoritarian and technical methodologies, strengthens a relationship based on a single protagonist who holds the knowledge, making the practice boring for students and teachers. It is necessary to overcome this concept of training, in order to promote the integration of the knowledge of the different players involved in FNE at school.

In this sense, two of the interviewees pointed out the need for a group of nutritionists within the school meals department with a "broader vision", "not resistant to pedagogical issues", who prioritize FNE, which can be a challenge, considering that not all professionals have this vision.

In the perception of one of the professionals, when it comes to FNE in the context of school meals, the work of nutritionists "is not directly with the children", but with educators, based on training activities, which, in turn, have been "very effective" in the context of the School Feeding Program. One of the main results of this work has been the progressive increase in the number of school vegetable gardens in the Municipal Education Network in recent years. In this sense, one nutritionist said that FNE training should be based on "meeting the needs of others", getting closer to educators, speaking in a way that they understand, and valuing their knowledge.

One nutritionist reported that the greatest challenge lies in "sensitizing teachers", raising their awareness of the quality and importance of school meals, given that teachers are the professionals most consistently present in the daily lives of children and adolescents. According to the interviewee, many teachers do not recognize the value of school meals and, as a result, often discourage students from consuming them.

Barbosa et al.¹⁴ point out that it is common for educators not to see school meals as a pedagogical strategy. This highlights the importance of linking educators' knowledge of education with nutritionists' knowledge of nutrition. Marinho et al.¹⁵ highlighted the importance of continuing training for managers and pedagogical coordinators, as well as changing the "biological" perspective on food.

Interdisciplinarity as a tool for developing FNE actions in the school environment

As presented in Table 2, participants in this study reported that teachers were the primary individuals involved in FNE activities within schools in both 2018 and 2019 (98.1% and 97.9%, respectively). Additionally, in both years, approximately 58% of schools indicated that families also played a role in FNE initiatives.

Two interviewees pointed to the "lack of interdisciplinarity" in FNE practices as a challenge for schools. According to one of the professionals, the theme of FNE should not only be present at mealtimes, but also in the classroom.

The literature makes the importance of FNE in schools increasingly clear. Since 2009, there has been an increase in the number of studies on the subject of FNE, reinforcing its growing relevance over the last few years. More recent studies advocate the construction of FNE with dialogue, participation, awareness and transformation, proposing a rapprochement between nutritionists and educators, which could lead the way for overcoming the limits of FNE in the school environment, considering that one of the biggest challenges in this area is the development of approaches that consider food issues from a broader perspective, through problematizing strategies.¹¹

The articulation of the entire school team, nutritionists, students and their families is an important factor in implementing FNE actions in schools. In this sense, Perez-Rodrigo et al.¹⁶ suggest the creation of multidisciplinary groups and the involvement of all their members as a facilitator for the development of food and health education projects. According to one of the professionals interviewed, FNE is "a space that cannot be built alone [...] it must involve nutritionists, educators, families, the school and the community".

A study conducted in 2019 with early childhood education teachers in the municipality of Água Boa (Minas Gerais, Brazil) found that teachers' knowledge was predominantly based on the biological dimension of food. The study highlighted the need to recognize and incorporate other dimensions of food, including its social, cultural, environmental, and psychological aspects.¹⁷ Similar tendencies were observed in interviews with educators from São Paulo's Municipal Education Network, where a focus on the biological perspective of food was evident. Nevertheless, when asked about changes in their perceptions, the interviewees expressed an interest in broadening their understanding and deepening their study of the topic.

Five professionals emphasized the importance of involving the entire educational unit team (teachers, cooks, management team) for FNE actions to be successful in the school environment. One of the interviewees noted that, depending on the group of teachers working in the unit, FNE actions can progress more, less or even not at all. In addition, direct communication between the school and the students and their families on food-related issues was indicated by three professionals as a fundamental element for the implementation and progress of FNE actions.

Among the repercussions of FNE practices in schools, the interviewees pointed to an increase in the food repertoire of children and adolescents, the building of students' autonomy, the formation of healthy eating habits, greater adherence to school meals and a reduction in food waste. To this end, there is a need to improve the quality of the meals provided in schools and to encourage their consumption by schoolchildren through FNE actions.¹⁸

According to the perceptions of four educators, school meals within the Municipal Education Network are described as "very rich, diverse, balanced, monitored by nutritionists, and of great importance to the students". The professionals reported that they consistently strive to demonstrate the significance and quality of school meals to both students and school staff in order to foster greater appreciation.

Based on the accounts of two interviewees, it was found that upon beginning their work in the area of school meals, they developed a deeper appreciation for the role of these meals, recognizing that such food “makes a significant difference to the students”, particularly as many “lack access to this diversity of food at home”.

In the opinion of three professionals, it is necessary to communicate with students in order to get to know their eating habits and involve them in issues related to school meals, with the aim of increasing their adherence and acceptance. Two interviewees highlighted the importance of schools establishing a partnership with the students' families, making them aware of the importance of a diverse diet, with more fresh foods, so that they prioritize this type of food in their homes.

Bezerra¹⁹ states that students and their families expect to find food at school that they don't usually eat at home, which can contribute to the low acceptance of school meals, since there is a difference between what is expected and what is offered. In this sense, nutritionists, cooks and teachers are seen as potential educators to adjust the consumption of the food offered at school.

Based on the semi-structured interviews conducted in this study, there is a need for a new understanding of school feeding, encompassing all of its educational potential, not just providing meals.

Political intent as a challenge for the dissemination of FNE in the context of School Feeding

One of the challenges related to the management of the CODAE, for the advancement of FNE within the scope of the School Feeding Program, is the lack of recognition of food as an area of knowledge as important as the others offered in the legislation, according to one of the interviewees, who believes that food is still “very much tied to a more traditional conception”.

One interviewee emphasized the need for greater investment in public policies related to school meals and the expansion of FNE within this context. Silva et al.²⁰ highlight that governmental investments are essential to ensure adequate funding for ongoing training of those responsible for coordinating and implementing FNE initiatives.

Three interviewees identified the size of the Municipal Education Network as the primary challenge to the widespread dissemination of FNE, given that the network serves over 1 million students across more than 3.400 educational units. Two interviewees indicated that the number of nutritionists in the External Supervision Unit of the CODAE is insufficient in relation to the number of schools in the network, since each nutritionist is responsible for around 70 schools. According to one professional, CODAE nutritionists are required to conduct technical visits to all the units under their responsibility, which has resulted in FNE actions being deprioritized. One educator noted that, due to the vast size of the municipal network, it is not feasible to reach all educators with training activities. The interviewee further emphasized that, although technology can serve as a tool for training, “it does not have the same impact as face-to-face training”.

A study conducted within the framework of the School Feeding Program in a municipality in the southwest of Bahia identified the insufficient number of nutritionists as a significant challenge in fully utilizing the potential of the PNAE. This shortage also represents a failure to comply with the legislation governing the program. Consequently, despite recent advances in strengthening the issue, a gap persists between the legislative framework and the practices implemented by professionals.²¹

In contrast, one of the professionals interviewed said that the biggest challenge for FNE in the context of school meals is the perception and political intent, regardless of the number of schools and students enrolled in the network.

Since 2018, when CODAE's DIEDAN was created, made up of nutritionists and educators, there has been an increase in FNE actions in the Municipal Education Network, since this Division was responsible for monitoring these actions in schools and promoting training on topics related to FNE (sustainability, food waste, school vegetable gardens, breastfeeding, etc.) for professionals. One of the nutritionists interviewed highlighted the extinction of DIEDAN in 2020 as a possible limitation on FNE work in the network.

Overall, the data presented in this study indicates the importance of having a team of nutritionists and educators, with aligned perspectives, whose main objective is to promote FNE in schools. To this end, the managers of the city's School Feeding Program must also recognize FNE as a fundamental pedagogical tool for raising awareness, transforming and building individuals' autonomy.

CONCLUSIONS

The findings of this study highlight the need to strengthen the articulation of knowledge between nutritionists and educators, aligned with the principles of Food and Nutrition Education, in order to promote training initiatives and to engage the entire school community in these practices. Such collaboration is essential for the expansion, success, and continuity of FNE actions within schools. Furthermore, the importance of political will is emphasized, urging School Feeding Program managers to adopt a broader perspective that extends beyond the provision of meals and the fulfillment of nutritional requirements to encompass the full educational potential of the Program. Recognizing FNE as an integral component of the school curriculum and investing in ongoing professional development are critical steps toward achieving this goal.

Given the importance of the School Feeding public policy and the contribution of nutritionists to the development of FNE, this study demonstrates the impact of the work of these professionals in raising awareness, forming healthy habits and building the autonomy of individuals. In addition, this work highlights the importance of multidisciplinary teams, involving nutritionists and educators, to promote training actions in the field of FNE knowledge, aimed at school feeding professionals, from an integrative, expanded and problematizing perspective.

Future research could look at the issues guiding this work in other entities running the Program, suggesting a nationwide evaluation, since FNE can contribute to increasing the food repertoire of children and adolescents, the formation of healthy eating habits, greater adherence to the food offered at school and a reduction in food waste, constituting an essential pedagogical tool for transformation, raising awareness and building students' autonomy, promoting Food and Nutrition Security and guaranteeing the Human Right to Adequate Food.

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Contributors

Barros VMNGP and Bicalho D participated in the idealization of the study design, collection, analysis and interpretation of data, writing of the study, final review and approval of the manuscript for submission; Rahal LSD and Scandola MCL participated in the collection, analysis and interpretation of data, final review and approval of the manuscript for submission.

Conflict of Interest: The authors declare no conflict of interest.

Received: June 4, 2023

Accepted: February 24, 2025