FOOD AND NUTRITION IN COLLECTIVE HEALTH

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DEMETRA Alimentação, Nutrição & Saúde

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Food and nutritional recommendations for the National School Feeding Program: an analysis of recent history

Recomendações alimentares e nutricionais para o Programa Nacional de Alimentação Escolar: uma análise da história recente

Abstract

Introduction: The National School Feeding Program (PNAE) is the oldest initiative of the Brazilian government in the area of school feeding and Food and Nutritional Security, being the most comprehensive in the world with respect to the care of schoolchildren and the guarantee of the Human Right to Adequate and Healthy Feeding. ***Objective***: To analyze the food and nutritional recommendations established for the PNAE in the period 2009-2020. ***Method:*** An online search for documents and legislation dealing with the topic was conducted on the website of the National Fund for Educational Development (FNDE). In addition, materials resulting from research conducted on the Virtual Health Library (VHL-BIREME) and Google Academic were used. ***Result:*** The PNAE has been marked by advances in management and operationalization, where decentralization is a process that has made it possible to reduce the supply of processed and ultra-processed food in school feeding. The year 2009 is a milestone for food and nutritional recommendations, in view of the obligation, imposed by Federal Law n. 11.947/2009, to purchase food from family agriculture for school feeding. This determination was reinforced by Resolution CD/FNDE n. 38/2009, together with the expansion and detailing on nutritional and food recommendations for the PNAE, and was succeeded by Resolutions CD/FNDE n. 26/2013 and CD/FNDE n. 06/2020. ***Conclusion:*** Based on the evaluation and comparative process of the evolution of nutritional recommendations of the PNAE, it is possible to affirm that the evolution took place as the profile of food consumption and the nutritional status of the Brazilian population were changing.

Keywords: Public Policy. Nutrition. Health. School Feeding.

Resumo

Introdução: O Programa Nacional de Alimentação Escolar (PNAE) é a iniciativa mais antiga do governo brasileiro na área de alimentação escolar e Segurança Alimentar e Nutricional, sendo o mais abrangente do mundo em relação ao atendimento de escolares e à garantia do Direito Humano à Alimentação Adequada e Saudável. ***Objetivo:*** Analisar as recomendações alimentares e nutricionais estabelecidas para o PNAE no período de 2009-2020. ***Método:*** Foi realizada uma busca *on-line* por documentos e legislações que tratavam da temática no *site* do Fundo Nacional de Desenvolvimento da Educação (FNDE). Além disso, foram utilizados materiais resultantes de pesquisas realizadas na Biblioteca Virtual de Saúde (BVS-BIREME) e

Google Acadêmico. ***Resultado:*** O PNAE tem sido marcado por avanços em relação à gestão e operacionalização, sendo a descentralização um processo que possibilitou a redução da oferta de alimentos processados e ultraprocessados na alimentação escolar. O ano de 2009 é um marco histórico para as recomendações alimentares e nutricionais, tendo em vista a obrigatoriedade, imposta pela Lei Federal n. 11.947/2009, de aquisição de alimentos oriundos da agricultura familiar para a alimentação escolar. Essa determinação foi reforçada pela Resolução CD/FNDE n. 38/2009, juntamente com a ampliação e o detalhamento sobre recomendações nutricionais e alimentares para o PNAE, sendo sucedida pelas Resoluções CD/FNDE n. 26/2013 e CD/FNDE n. 06/2020. ***Conclusão:*** Com base no processo avaliativo e comparativo da evolução das recomendações nutricionais do PNAE, é possível afirmar que a evolução ocorreu na medida em que o perfil de consumo alimentar e o estado nutricional da população brasileira foram se modificando.

Palavras-chave: Políticas Públicas. Nutrição. Saúde. Alimentação Escolar.

INTRODUCTION

The National School Feeding Program (PNAE) is the oldest initiative of the Brazilian government in the area of school feeding and Food and Nutritional Security (SAN). The program is considered one of the largest and most comprehensive in the world with respect to the care of schoolchildren and the guarantee of the Human Right to Adequate and Healthy Feeding (DHAA). The PNAE is managed by the National Fund for Educational Development (FNDE), which transfers financial resources to states, municipalities and the Federal District.[1]

The objective of the PNAE is to contribute to biopsychosocial growth and development, learning, school performance and the development of healthy eating practices, through food and nutrition education actions and the provision of meals that meet the nutritional needs during the time students enrolled in the basic education of the federal, state, district and municipal public networks.[2]

In 1955, the School Meals Campaign (CME) was instituted, subordinated to the Ministry of Education, and in 1956 it became known as the National School Meals Campaign (CNME), with the intention of promoting food supply at the national level. In 1965, the name of the CNME was changed to National School Feeding Campaign (CNAE), and only in 1979 it was renamed National School Feeding Program.[3-5]

Until 1993, the program was executed in a centralized way and characterized by the predominant supply of industrialized food, considering the distribution logistics throughout the national territory.[6] In 1994, decentralization enabled the planning of menus according to the food culture of the communities and started to require the participation of civil society, improving the quality of meals, mainly by significantly reducing the supply of processed and ultra-processed food.[7,8]

Throughout its history, the PNAE has been marked by advances in management and operationalization. Regarding the offer of meals of higher nutritional quality, some parameters have been instituted over time, through specific resolutions, added to the mandatory existence of a nutritionist as technical responsible (TR) for the program, which has progressively contributed to strengthening the PNAE as a SAN policy and as a possibility to encourage adequate and healthy eating in the school environment.[1]

Accordingly, some resolutions and laws have incorporated into the program several nutritional quality criteria for school feeding, such as CD/FNDE n. 38/2004, CD/FNDE n. 32/2006, CD/FNDE n. 38/2008, CD/FNDE n. 38/2009, CD/FNDE n. 26/2013 and, more recently, CD/FNDE n. 06/2020.[2,9-13] In addition, It is worth underlining the Federal Law n. 12.982/2014, which determines the supply of the adequate school feeding for school children who have health condition that demands specific food care, and the Federal Law n. 11.947/2009, which obliges the use of a minimum of 30% of the value destined by the FNDE to the PNAE implementing entities for the acquisition of food from family agriculture. This proposal is another movement in favor of improving the nutritional quality of school feeding, considering the vocation of family agriculture, which is focused on the production of food in natura and minimally processed.[14,15]

Considering the Federal Law n. 11.947/2009 as an important milestone in the recent history of school feeding in Brazil, the main objective of this work was to analyze the food and nutritional recommendations established for the PNAE in the period 2009-2020.

METHODS

A documentary study has been performed, which is the type that is characterized by taking as sources of data "materials that have not yet received an analytical treatment, or that can still be reworked according to the objects of

research",[16] (p. 45) producing "new ways of understanding the phenomena and making known [...] how they have been developed."[17] (p.14).

In view of the objective of this study, the legal documents (resolutions and laws) that establish the food and nutrition recommendations for the PNAE in the period from 2009 to 2020 were selected for analysis: CD/FNDE n. 38/2009, CD/FNDE n. 26/2013 and, more recently, CD/FNDE n. 06/2020.[2,12,13] In order to locate this documental base, an online search was conducted on the FNDE website. In a complementary way, materials resulting from research conducted on the Virtual Health Library (VHL-BIREME) and Google Academic, in June 2020, on the history of food and nutrition recommendations for the PNAE were used. For the search, it was used the crossing of the descriptor "school feeding" with the descriptor "nutritional recommendations", mediated by the logical operator and. Finally, in order to expand the set of documentary sources of the study, references cited in these works were selected, according to the following inclusion criteria: scientific articles, books, dissertations and annals of events, which can be obtained in full format and free online.

The documental *corpus* for this study was made up of the documentary sources (legal and bibliographic) located from the above-mentioned procedures. As part of the document analysis process, a floating reading stage – which provided the first contact with the documents – was initially held, followed by an in-depth reading stage, with data and information related and pertinent to the objective of the study, being extracted from the selected documents. Thus, an analysis framework was designed, which guided the understanding of the material and the interpretation of the results.[18] In this process, the food and nutritional recommendations of the PNAE, in the period delimited for study, were comparatively analyzed and compared with the literature on the topic.

RESULTS AND DISCUSSION

History on the food and nutritional quality of school feeding

From 1955 to 1970, school feeding was characterized by the predominance of foodstuffs from agreements signed with international agencies, and the presence of formulated foods characterized this phase of the program, without concern for the cultural aspect and consequent acceptability. The 1970's were characterized by the acquisition of foods from the international market, including those of low nutritional value, such as industrialized soups and porridges.[19-22]

In 1976, the CNAE was integrated into the National Food and Nutrition Program (II PRONAN), focusing on offering a supplementary meal that would meet 15% of the daily recommendations of public school students. In 1988, the Brazilian constitution started to ensure the right to school meals for public school students. In 1994, with the enactment of the Federal Law n. 8,913, the program was decentralized, which, among other things, made it possible to provide adequate food for each region of the country. In 2000, the federal government started to demand the existence of School Feeding Councils (CAE) to make possible the transfer of funds to the implementing entities, which can also be seen as a measure to qualify school feeding, considering the attributions of these councils, mainly of supervision and advice in the execution of the program.[19]

The decentralization of the program, understood as an important advance for the improvement of the nutritional quality of school feeding, took place due to a large number of entities that manifested themselves contrary to the previous, centralized model, considering its inefficiency, high consumption of financial resources, deficiencies in food quality control, inadequacy to the students' eating habits, in addition to the great losses and deterioration of products.[8] It should be noted that decentralized institutional purchases, despite numerous limitations, have opened up the possibility of inserting small businesses, local commerce, small agricultural producers and local livestock in this institutional market.[19] In 2003, the Resolution CD/FNDE n. 015/2003 determined, based on the Provisional

Measure n. 2178-36/2001, operational guidelines for the PNAE, highlighting, in relation to the school menu, the minimum offer of 15% of daily nutritional needs of benefited students, the imperative of a nutritionist for the preparation of menus and purchase of foodstuffs, and the obligation that 70% of the acquired foodstuffs were basic, according to the list of foods annexed to the resolution. In addition, menus should respect the eating habits of each location, their agricultural vocation and preference for basic products.[23]

In 2004, the Resolution CD/FNDE n. 38/2004, revoking contrary dispositions, reinforced the preparation of the menu by a qualified nutritionist and added the assumption of technical responsibility by this professional. The resolution provided that the menus should meet at least 15% of the daily nutritional needs of students enrolled in kindergarten, pre-school and elementary school, and 30% of the daily nutritional needs of students from indigenous schools, during their stay in the classroom. The resolution also emphasized that school feeding menus for students in indigenous schools should be accompanied by the CAE and representatives of these communities, respecting the eating habits of each ethnic group.[9]

The Resolution CD/FNDE n. 32/2006,[10] considering the need to establish the principles and guidelines that would guarantee a healthy school feeding in sufficient quantity, as foreseen in the Interministerial Ordinance n. 1.010/2006,[24] and also considering the importance of offering food and nutritional reinforcement to the students of indigenous and quilombos' remnants, indicated that the school feeding should meet 30% of the daily needs of the students of indigenous kindergartens and schools and of quilombolas areas. In addition, this resolution established that the development of school feeding menus for the students of these kindergartens and schools should be accompanied by the CAE and representatives of indigenous and quilombolas communities, respecting the eating habits of each ethnic group. The minimum needs for energy and nutrients were presented in the annexes of the resolution, with a requirement for adequacy (to 15 or 30%) for energy, macronutrients (carbohydrate, lipids and protein) and micronutrients (vitamins A, D, E, K, C, B1, B2, B3, B6 and B9 and minerals calcium, phosphorus, magnesium, iron, zinc, iodine and selenium).[10]

In 2006, the National Survey on Food Consumption and Nutritional Profile of Schoolchildren, Management and Social Control Models of the PNAE, conducted with 690 municipalities in five Brazilian regions, identified that 41% and 16% of the menus did not show, respectively, any type of fruit or vegetables in the week, fact that constituted a subsidy for the Resolution CD/FNDE n. 38/2009 started to demand a minimum supply of three weekly portions (200g) of these foods in school feeding.[19]

It should also be underlined that, in 2009, through the Federal Law nº 11.947, new guidelines were established for school feeding, associating it with family agriculture. In its article 14, the law started to establish as mandatory the acquisition of food from family agriculture, with the use of at least 30% of the amount allocated by the FNDE to the PNAE implementing entities. With the objective of making the acquisition process more viable, this legislation instituted a new model of direct public purchases from family agriculture, with dispensation from the bidding process that, since then, can be replaced by a simplified procedure, called public call.[14]

The approach between school feeding and family agriculture still faces many challenges in its operationalization, but in 11 years of implementation of this acquisition model, several studies have shown that this partnership has enabled a greater supply of fresh, varied and better quality food *in natura* and minimally processed through the PNAE.[25-27] Certainly, although the availability of these foods at school does not represent a guarantee of consumption, their presence at school meals, to the detriment of those with a high degree of processing, is – *per se* – an opportunity to demonstrate and encourage healthier eating habits and practices, which can progressively be incorporated by schoolchildren, spreading out to their families and communities.[28,29]

Corroborating the importance of improving the nutritional quality of school feeding, the research "Nutritional composition of school feeding in Brazil: an analysis from a sample of menus", conducted by the CECANE UFRGS,

evaluated 1,064 menus in Brazil, emphasizing the need to encourage improvements in the quality of menus planned for the PNAE, especially to increase the supply of fruits, vegetables, whole grains and fish. According to the research, this could contribute to the improvement of the supply of nutrients and encourage the purchase of food from family farming. The survey indicated an important presence of cookies in 57.2% of the menus and absence of fruits in 29.5% of them, in addition to having pointed out that 12% of the menus did not offer leafy vegetables at all during the week and 52.2% of them did not offer leafy vegetables at all. In addition, the same study found that the items most offered on the menus were refined sugar, chocolate and industrialized refreshment, besides the high offer of canned vegetables (corn, peas, select vegetables) and salty formulated preparations (soup mixes, canned beans, sausage with sauce, powder for bolognese sauce mix, powder for mashed potatoes, etc.).[30]

Food and nutrition recommendations for the PNAE in the period 2009-2020

The year 2009 can be cited as a historical landmark for the food and nutritional recommendations in the program, in view of the obligation, imposed by the Federal Law n. 11.947/2009, to purchase food from family agriculture for school meals, which has been recognized as contributing to improving the nutritional quality of school meals. This determination was reinforced by the Resolution CD/FNDE n. 38/2009, together with the expansion and detailing on nutritional and food recommendations for the PNAE, considering the importance that school feeding assumes in supplying the nutritional needs of schoolchildren and its role in promoting adequate and healthy eating. It should be highlighted that this resolution also provided the actions of food and nutritional education as the responsibility of the program implementing entity.[12,14]

In 2013, the Resolution CD/FNDE n. 26/2013 revoked the Resolution CD/FNDE n. 38/2009, establishing new recommendations and reaffirming the importance of food and nutrition education actions in the teaching and learning process, as well as intersectorality in the management of the PNAE and the strengthening of family agriculture and its contribution to local social and economic development.[13]

After seven years, based on the Resolution CD/FNDE n. 06/2020, the food and nutritional recommendations were reformulated in line with other Brazilian official documents, such as the *Food Guide for the Brazilian Population*.[31]

Given that the period 2009-2020 is characterized by many advances and achievements in the food and nutritional quality of the program, the transition between the recommendations and their respective comparisons are displayed in Table 1.

It should be highlighted that the Resolution CD/FNDE n. 06/20202[2] came into force on the date of its publication, revoking the Resolutions CD/FNDE n. 26/2013,[13] CD/FNDE n. 04/2015,[32] CD/FNDE n. 01/2017[33] and CD/FNDE n. 18/2018.[34] Nevertheless, the deadline for the PNAE implementing entities to adapt to the changes established in this standard was defined as January 1st, 2021.[2]

Table 1. Comparison between food and nutritional recommendations for the National School Feeding Program (PNAE) expressed in the Resolutions CD/FNDE n. 38/2009, n. 26/2013 and n. 06/2020.

Resolution CD/FNDE n. 38/2009	Resolution CD/FNDE n. 26/2013	Resolution CD/FNDE n. 06/2020
Regarding the development of school menus		
The menus of school feeding should be prepared by the responsible nutritionist, using basic foodstuffs, respecting nutritional references, eating habits, the local food culture, guided by the sustainability and agricultural diversification of the region and healthy and adequate nutrition.	The menus of school feeding should be elaborated by the technical responsible (TR), with the use of basic foodstuffs, in order to respect the nutritional references, the dietary habits, the food culture of the locality and be guided by the sustainability, **seasonality** and agricultural diversification of the region and the healthy and adequate feeding.	School feeding menus should be developed by the TR of the PNAE, **based on the use of natural or minimally processed food, in order to respect the nutritional needs**, eating habits, food culture of the locality and be guided by the sustainability, seasonality and agricultural diversification of the region and the promotion of adequate and healthy food.

Table 1. Comparison between food and nutritional recommendations for the National School Feeding Program (PNAE) expressed in the Resolutions CD/FNDE n. 38/2009, n. 26/2013 and n. 06/2020. (Continues)

Regarding the development of school menus		
Non-existing recommendation.	At least 30% of the nutritional needs, distributed in at least two meals, for the kindergartens in partial period.	At least 30% of the nutritional needs for **energy, priority macronutrients and micronutrients,** distributed in at least two meals, for the kindergartens in partial period.
When full-time, at least 70% of the daily nutritional needs of students in basic education, including those of indigenous schools and remaining areas of quilombos.	At least 70% of the nutritional needs, distributed in **at least three meals, for the full-time kindergartens**, including those located in indigenous communities or remaining areas of quilombos.	At least 70% of the nutritional needs for **energy, priority macronutrients and micronutrients**, distributed in at least three meals, for full time day care, including those located in indigenous communities or remaining areas of quilombos.
At least 30% of the daily nutritional needs of students enrolled in schools located in indigenous communities and located in remaining areas of quilombos are offered per meal.	At least 30% of the daily nutritional needs, when two or more meals are offered, to students enrolled in basic education, except for part-time kindergartens.	At least 30% of the nutritional needs for **energy, priority macronutrients and micronutrients,** distributed in at least two meals, for the kindergartens in partial period.
When offering a meal, at least 20% of the daily nutritional needs of students enrolled in basic education, in part time.	At least 20% of the daily nutritional needs, when a meal is offered, to the other students enrolled in basic education, in part time.	At least 20% of the **daily nutritional needs for energy and macronutrients**, when offered a meal, for other students enrolled in basic education, in part time.
When two or more meals are offered, at least 30% of the daily nutritional needs of students enrolled in basic education, in part time.	At least 30% of the daily nutritional needs, when two or more meals are offered, to students enrolled in basic education, **except for part-time kindergartens.**	At least 20% of the daily nutritional needs for **energy and macronutrients**, when offered a meal, for other students enrolled in basic education, in part time..
Non-existing recommendation.	At least 70% of the nutritional needs, distributed in at least three meals, to students participating in the More Education Program and to those enrolled in full-time schools.	A minimum of 70% of **energy, priority macronutrients and micronutrients**, distributed over a minimum of three meals, to students **participating in full-time education programs and to those enrolled in full-time schools**
Non-existing recommendation.	The TR nutritionist is responsible for defining the time and the appropriate food for each type of meal, respecting the food culture.	The TR nutritionist is responsible for defining the time and the appropriate food for each type of meal, respecting the habit and food culture
Non-existing recommendation.	The portion offered should be differentiated by age group of students, according to the established nutritional needs.	The portion offered should be differentiated by age group of students, according to their daily nutritional needs.
Non-existing recommendation.	The menus must meet the cultural specificities of the indigenous and/or quilombolas communities.	The menus must meet the cultural specificities of the indigenous and/or quilombolas communities.
Non-existing recommendation.	The menus, prepared from Preparation Technical Sheets, should contain information on the type of meal, the name of the preparation, the ingredients that compose it and their consistency, as well as nutritional information on energy, macronutrients, priority micronutrients (vitamins A and C, magnesium, iron, zinc and calcium) and fiber. The menus must also present the identification (name and CRN) and the signature of the nutritionist responsible for its preparation.	The menus of each stage and mode of teaching must contain information on the time and type of meal, the name of the preparation, the ingredients that compose it, **as well as nutritional information of energy and macronutrients,** and the identification and signature of the nutritionist. For the menus planned for the kindergartens, the consistency of the preparations and the priority micronutrients should be presented.
Non-existing recommendation.	The menus, with the appropriate nutritional information mentioned in the previous paragraph, should be available in visible locations in the Education Departments and schools.	The menus, with the nutritional information dealt with in the previous paragraphs, must be available in visible locations at the **Education Departments, school units and the oficial websites of the Executing Entity.**

Table 1. Comparison between food and nutritional recommendations for the National School Feeding Program (PNAE) expressed in the Resolutions CD/FNDE n. 38/2009, n. 26/2013 and n. 06/2020. (Continues)

Resolution CD/FNDE n. 38/2009	Resolution CD/FNDE n. 26/2013	Resolution CD/FNDE n. 06/2020
Regarding the development of school menus		
The menus should be planned before the beginning of the financial year and presented to the School Feeding Council – CAE for suggestions on necessary adjustments.	The menus must be presented to the CAE **for knowledge**.	The menus must be **periodically submitted to the CAE to support the monitoring of the execution of the Program.**
Regarding the supply of fruits and vegetables		
The menus must offer at least three portions of fruits and vegetables per week (200g/student/week) in the distributed meals.	The menus must offer at least three portions of fruits and vegetables per week (200g/student/week) in the distributed meals.	In school units that serve part-time school meals, menus must offer a minimum of **280g/student/week of fresh fruit, vegetables, and vegetables, distributed as follows: fresh fruit, at least two days a week; vegetables, at least three days a week.** In school units that serve full-time school meals, menus must offer a minimum of **520g/student/week of fresh fruit, vegetables, and vegetables, distributed as follows: fresh fruit, at least four days a week; vegetables, at least five days a week.**
Non-existing recommendation.	Fruit-based drinks are no substitute for the mandatory supply of fresh fruit. The composition of fruit-based beverages must follow the norms of the Ministry of Agriculture, Livestock and Supply – MAPA.	Fruit-based drinks are no substitute for the mandatory supply of fresh fruit.
Regarding the Specialized Educational Assistance – AEE and special food needs in the PNAE		
Non-existing recommendation.	The menus should attend the students with specific nutritional needs, such as celiac disease, diabetes, hypertension, anemia, allergies and food intolerances, among others.	The menus must be adapted to meet students **diagnosed** with special dietary needs, such as celiac disease, diabetes, hypertension, anemia, allergies and food intolerances, among others.
Non-existing recommendation.	The institutions of AEE (Specialized Educational Assistance) should meet the nutritional needs of students, offering at least one meal, according to their specifics	**Students enrolled in public regular education and enrolled in a Specialized Educational Assistance Institution – AEE are assisted twice under the PNAE, as long as they are enrolled in a different shift.** **Students with disabilities, global developmental disorders and with high skills/superdotation must receive school meals during their schooling period and at least one meal in the contract, when in the AEE, in order to meet nutritional needs, according to their specificities.**
Regarding the maximum limit of some nutrients		
It is recommended that, on average, school meals have at most:	For the daily preparations of school feeding, it is recommended at most:	For meals for students **over three years of age**, it is recommended at most:
10% of total energy from added single sugar.	10% of total energy from added single sugar.	**7%** of total energy from added single sugar.
15 to 30% of the total energy from total fats.	15 to 30% of the total energy from total fats.	15 to 30% of the total energy from total fats.
10% of the total energy from saturated fat.	10% of the total energy from saturated fat.	**7%** of total energy from saturated fat.
1% of total energy from trans fat.	1% of total energy from trans fat.	**It is forbidden to offer industrialized trans fats** on all menus.
1g of salt (400mg of sodium).	400 mg of sodium per capita, in partial period, when offered a meal.	**600 mg** of sodium or 1.5 g of salt per capita, in partial period, when offered a meal.

Table 1. Comparison between food and nutritional recommendations for the National School Feeding Program (PNAE) expressed in the Resolutions CD/FNDE n. 38/2009, n. 26/2013 and n. 06/2020. (Continues)

Resolution CD/FNDE n. 38/2009	Resolution CD/FNDE n. 26/2013	Resolution CD/FNDE n. 06/2020
Regarding the maximum limit of some nutrients		
Non-existing recommendation.	600 mg of sodium per capita, in partial period, when two meals are offered.	800 mg of sodium or 2.0 g of salt per capita, in partial period, when two meals are offered.
Non-existing recommendation.	1,400 mg of sodium per capita, full time, when three or more meals are offered.	1,400 mg of sodium or 3.5 g of salt per capita, full time, when three or more meals are offered.
Regarding food choice		
Non-existing recommendation.	Non-existing recommendation.	It is mandatory to include heme iron source food at least four days a week on school menus. In the case of non-heme iron source foods, these must be accompanied by facilitators of their absorption, such as vitamin C source foods.
Non-existing recommendation.	Non-existing recommendation.	It is mandatory to include vitamin A source food at least three days a week on school menus.
Non-existing recommendation.	Non-existing recommendation.	The menus must, mandatorily, limit the supply of:
Non-existing recommendation.	Non-existing recommendation.	Meat products at most twice a month.
Non-existing recommendation.	Non-existing recommendation.	Vegetables and canned vegetables at most once a month.
Non-existing recommendation.	Non-existing recommendation.	Dairy beverages with additives or sweetened at most once a month in school units that offer part-time school meals and at most twice a month in school units that offer full-time school meals.
Non-existing recommendation.	Non-existing recommendation.	Cookie, cracker, bread or cake at most twice a week when offered one meal, part-time; at most three times a week when offered two meals or more, part-time; and at most seven times a week when offered three meals or more, fulltime.
Non-existing recommendation.	Non-existing recommendation.	Margarine or vegetable cream at most twice a month in school units that offer part time school meals; and at most once a week in school units that offer full time school meals.
Non-existing recommendation.	The offer of sweets and/or sweet preparations is limited to two portions per week, equivalent to 110 kcal/portion.	Sweet, at most, once a month. Sweet regional preparations, at most, twice a month in school units offering part-time school meals; and at most once a week in school units offering full-time school meals.
Non-existing recommendation.	Non-existing recommendation.	It is forbidden to offer ultra processed food and the addition of sugar, honey and sweetener in culinary preparations and beverages for children up to three years of age, according to the FNDE guidelines.

Table 1. Comparison between food and nutritional recommendations for the National School Feeding Program (PNAE) expressed in the Resolutions CD/FNDE n. 38/2009, n. 26/2013 and n. 06/2020. (Continues)

Resolution CD/FNDE n. 38/2009	Resolution CD/FNDE n. 26/2013	Resolution CD/FNDE n. 06/2020
Regarding the prohibitions on the use of financial resources in the purchase of food		
It is prohibited for beverages with low nutritional content, such as soft drinks, artificial refreshments and other similar beverages.	It is forbidden to purchase beverages with low nutritional value such as soft drinks and artificial refreshments, beverages or concentrates based on guarana or currant syrup, ready-to-drink teas and other similar beverages.	The use of resources under the PNAE for the purchase of the following **ultra-processed** foods and beverages **is prohibited**: artificial soft drinks and refreshments, drinks or concentrates based on guarana or currant syrup, ready-to-eat teas and other similar beverages, cereals with additive or sweetened, candy and similar, candy, chocolate bar and granulated, cookie or cracker stuffed, cake with frosting or filling, cereal bar with additive or sweetened, edible ice cream, gelatin, seasonings with monosodium glutamate or sodium salts, mayonnaise and food powder or for reconstitution.
Regarding the restrictions on the use of financial resources in food procurement		
It is restricted to canned foods, sausages, sweets, compound foods (two or more foods packed separately for joint consumption), semi-ready (or ready) preparations for consumption, or concentrated foods (powdered or dehydrated for reconstitution) **with a high amount of sodium (those with a composition equal to or greater than 500 mg of sodium per 100 g or ml) or saturated fat (amount equal to or greater than 5.5 g of saturated fat per 100 g, or 2.75 g of saturated fat per 100 ml).**	It is restricted to the purchase of canned foods, sausages, sweets, compound foods (two or more foods packaged separately for joint consumption), semi ready or ready-to-eat preparations, or concentrated foods (powdered or dehydrated for reconstitution).	The concept of restricted foods was overcome in this resolution, with restrictions on the application of financial resources for the acquisition of processed and ultra-processed products at a maximum of 20% and processed culinary ingredients at 5%.
The value of the financial resources for the acquisition of food related to the item (restricted food) of this article will be restricted to a maximum of thirty percent (30%) of the resources transferred by the FNDE.	The limit of the financial resources for the acquisition of food referred to in the caption of this article will be restricted to thirty percent (30%) of the resources transferred by the FNDE.	A maximum of **20%** may be allocated to the purchase of processed food and ultraprocessed;
Non-existing recommendation.	Non-existing recommendation.	**At least 75% must be destined for the purchase of food in natura or minimally processed**
Non-existing recommendation.	Non-existing recommendation.	**At most 5% can be used to purchase processed culinary ingredients.**
Regarding the degree of food processing		
Non-existing recommendation.	Non-existing recommendation.	It is recommended that the menus of the PNAE offer different foods per week, according to the number of meals offered:
Non-existing recommendation.	Non-existing recommendation.	Minimum of 10 foods in natura or minimally processed per week for menus that provide a meal/day or meet 20% of daily nutritional needs.

Table 1. Comparison between food and nutritional recommendations for the National School Feeding Program (PNAE) expressed in the Resolutions CD/FNDE n. 38/2009, n. 26/2013 and n. 06/2020. (Continues)

Resolution CD/FNDE n. 38/2009	Resolution CD/FNDE n. 26/2013	Resolution CD/FNDE n. 06/2020
Regarding the degree of food processing		
Non-existing recommendation.	Non-existing recommendation.	Minimum of 14 foods in natura or minimally processed per week for menus that provide two meals/day or meet 30% of daily nutritional needs.
Non-existing recommendation.	Non-existing recommendation.	Minimum of 23 foods in natura or minimally processed per week for menus that provide three or more meals/day or meet 70% of nutritional needs daily.
Non-existing recommendation.	Non-existing recommendation.	As a complement, it is recommended that it should be at least 50 the number of different types of food in natura or minimally processed acquired, annually, by the municipalities.
Regarding the nutrients required in the nutritional calculation of menus		
Energy, carbohydrate, protein, lipid, fiber, vitamins A and C, calcium, iron, magnesium and zinc minerals	Energy, carbohydrate, protein, lipid, fiber, vitamins A and C, calcium, iron, magnesium and zinc minerals	Energy, carbohydrate, protein, lipid, fiber, vitamins A and C, calcium and iron minerals.

Source: designed by the authors, from the comparative analysis of the indicated legislation (2020).

Based on the comparative process between the last three resolutions (table 1), which are more similar in terms of the established recommendations, important advances can be observed in the nutritional quality requirements of school menus. This finding is consistent with the broadening of the understanding that the school environment is conducive to the promotion of health and, by extension, adequate and healthy nutrition, and the PNAE is recognized as an opportunity to promote healthier eating habits that can progressively change the current scenario of overweight and obesity and chronic non-communicable diseases in the population served by the program in question.[28,35]

The presence of the nutritionist professional in a more concrete way from 2003, and later with the obligation of this professional as technical responsible (TR) for the program, has also guaranteed, over time, greater nutritional quality to school meals, considering that the Resolution CFN n. 465/2010 indicates that the menu should be prepared by the TR, using basic foodstuffs, in order to respect the nutritional references, eating habits and food culture of the locality, based on sustainability, seasonality and agricultural diversification of the region and healthy and adequate food.[36]

Consistent with the requirements of the Federal Council of Nutritionists (CFN) for the preparation of menus, one of the guidelines for school feeding is the provision of adequate and healthy food, based on the use of varied and safe foods that respect culture, traditions and healthy eating habits, so that they can contribute to the growth and development of students and their school performance. In addition, the food supply must be compatible with the age group and health conditions of schoolchildren, considering situations in which it is necessary to offer differentiated food.[2] A well planned menu will conduct an adequate procurement process, in addition to representing an instrument of food and nutritional education and meet the nutritional needs of students.[37]

Although today there are nutritional recommendations for the PNAE that aim to meet the needs of school children and promote healthy eating habits, there is a long way to go in improving the nutritional quality of school feeding in Brazil. For example, after decentralization (1994), it was possible to include fresh food in school feeding, since, due to the change in management, these foods could be purchased locally, reaching the freshest schools, a situation made impossible by the centralized management model, in which products needed to have a longer shelf

life, due to the distance traveled throughout the country, leading to a predominantly industrialized purchase. Over the years, the importance of healthy eating also began to be incorporated into the PNAE documents, in line with the strengthening of the SAN, as of 2008.[38]

The linking of food procurement to family agriculture was determinant in the process of improving the nutritional quality of school feeding. However, it is necessary to remember that the PRONAN II guidelines, in 1976,[39] already indicated the need for financial, fiscal and market incentives for small cooperative producers. Furthermore, the Provisional Measure n. 2.178/2001 indicated that the preparation of school menus would respect the dietary habits and agricultural vocation of each region, giving preference to basic products such as semi-finished and in natura of each locality, aiming at the reduction of costs, with the states, the Federal District and the municipalities using, at least, 70% of the PNAE resources in the acquisition of these basic products.[40]

Accordingly, it is necessary to reflect that, before the obligation to acquire and prove the use of financial resources for the purchase of food from family agriculture, as established by the Federal Law 11.947/2009,[14] this practice was already recommended, although it probably found few objective conditions to be operationalized and, consequently, to promote changes. In addition, it is necessary to consider that the advancement of nutritional transition puts intersectoral pressure on the planning and review of public policies, requiring actions potentially capable of producing changes in this setting and, consequently, leading to changes in the food and nutrition recommendations of the PNAE, which is a protagonist in this context.

Thus, the role of school feeding as a possibility to promote healthier eating habits is reaffirmed each year, taking into account the nutritional profile of the population served, which indicates worrying numbers regarding overweight and associated comorbidities resulting from a food consumption based on ultra processed foods. In this regard, the National School Health Survey (PeNSE), which included schoolchildren aged 13 to 17 in the 2015 edition, revealed that the prevalence of overweight was 23.70%. In all major regions of the country, the indicator of overweight exceeded 20.0%.[41]

According to the records of the Food and Nutrition Surveillance System (SISVAN), in 2019, 14.78% and 28.08% of Brazilian children aged 0-5 and 5-10 years, respectively, were overweight, and 17.05% of those aged 0-5 years were at risk of being overweight. For the adolescent age group, the reported overweight was 27.87%.[42]

Another aspect to be considered is the fact that the adult population – although served by the PNAE in a smaller proportion than children and adolescents – is the group responsible for providing food in the homes of most Brazilian children and adolescents. It is considered that this can be another element of alert for the care of the school public, since in 2019 Brazil reached the highest prevalence of obesity (19.8%) among adults in the last 13 years. It should be noted that, although the population in general has improved some eating habits, such as the consumption of fruits and vegetables, this consumption is still far below that recommended by the World Health Organization (WHO) – 400g/day – which is reached by only one in four people in the country.[43] This observation highlights the importance of conducting food and nutrition education actions with the school community, with great potential for the formation of healthy habits in the whole family and society.

According to the Study of Cardiovascular Risks in Adolescents (ERICA), on food intake among Brazilian adolescents, the foods with the highest prevalence of consumption in this population were rice (82%), beans (68%), juices and soft drinks (56%), bread (53%) and beef (52%). However, the high prevalence of consumption of ultra processed foods, such as soft drinks, fried and baked snacks, and sweet and salty cookies, being the soft drink the sixth most referred food (45.00%). The prevalence of fruit consumption was low, and this group of foods was among the 20 most consumed only among boys aged 12-13 years (18%).[44]

In this setting, the PNAE is a protagonist in encouraging healthy eating practices, through school meals and food and nutritional education actions, considering that Brazilian households are still supplied with unhealthy food and habits, and that schoolchildren, due to their experience at school, can be agents of change in family life.

In this regard, the new FNDE resolution for the PNAE foresees an increase in the per capita amount of fruits and vegetables, with the obligation to offer both types of food, guaranteeing food diversity. In addition, this resolution establishes different recommendations for school children who attend part and full time schools.[2] According to the recommended values for part or full time schools, the PNAE would be responsible for offering 14% (56g/day) and 26% (104g/day), respectively, of the WHO recommendation for fruits and vegetables.[45] Thus, it is argued that, although positive, this new recommendation can still be considered low, especially for full-time school children who, in family life, should consume 74% of the recommended daily amount. This may be made impossible due to the number of meals left to be taken at home and the nutritional and food consumption characteristics of the Brazilian population. Despite this analysis, it is reinforced that the changes represent an important evolution in relation to what was observed in previous resolutions, which was 10% (40g/day) of the WHO recommendation, regardless of the length of stay in the school environment.

With the intention of strengthening the importance of a food based on natural and minimally processed foods, the PNAE, in its new resolution, prohibited the supply of ultra-processed products for children up to three years old, reduced to 20% the limit of resource use for the purchase of processed and ultra-processed foods, limited the supply of saturated fat and simple sugar, prohibited the supply of trans fat and restricted, in a very significant way and proportional to the time spent in school, the supply of sweet preparations, breads, cakes, cookies, margarine, canned vegetables and vegetables, dairy beverages and meat products. Finally, the new resolution defined the adequate quantity of food per degree of processing, serving as a marker for the acquisition of healthier products, in addition to indicating the mandatory presence of food sources of iron and vitamin A, favoring the nutritional adequacy of school menus in terms of these essential nutrients.[2] All these recommendations meet the epidemiological and nutritional scenario of the Brazilian population and converge with the recommendations of the Ministry of Health and WHO on dietary factors considered protective for the prevention of obesity and other chronic non-communicable diseases.

The PeNSE conducted in 2015 indicates that, when assessing the food consumption of schoolchildren compared to 2009 survey data, there was a reduction of approximately 10% in the proportion of students with weekly consumption of beans, while the consumption of fruit showed no improvement. In addition, the daily consumption of at least one group of ultra-processed foods (sweets – candies, chocolates, gums or lollipops; soft drinks and industrialized/processed foods such as hamburger, ham, mortadella, salami, sausages, instant noodles, package snacks, savory cookies) was reported by 39.7% of respondents.[41,46]

In this direction, Ferreira et al.,[47] in a study that aimed to compare and analyze the consumption of minimally processed, processed and ultra-processed food among public and private schoolchildren, point out that public schoolchildren consume a higher percentage of the energy value of food in natura, a factor possibly associated with the supply of these foods in the school environment. The consumption of ultra-processed food was higher among private schoolchildren. However, even if public schoolchildren have a higher consumption of in natura and minimally processed, the consumption of ultra-processed food also represents an expressive percentage of the daily energy value, with differences in the type of food consumed. In the private network, foods such as ready-made juice, stuffed cookies, industrialized cake, morning cereals and sweetened milk-based beverages appeared, while in the public network, snacks and juice powder.

Previously, a study conducted with children aged 2-10 years old, in Porto Alegre-RS, showed that the frequency of overweight was 34% and that 47% of the average value of energy consumed (1,672.3 kcal) came from ultra-

processed foods. The study considered this expressive proportion and highlighted that the highest frequency of consumption of these foods occurred among school age children.[48]

More recently, research that evaluated the consumption of ultra-processed foods by 545 children under two years of age reported that 74.3% of them consumed some type of ultra-processed food.[49] In the same sense, Souza et al.,[50] in a study conducted with 283 children under two years of age, also recorded an early supply of ultra-processed foods, but more frequently after 12 months of age. The supply of these products is prohibited by the Resolution CD/FNDE n. 06/2020 in the school feeding of children up to three years old, as well as the addition of sugar, honey and sweeteners to the food preparations of this public, conduct consistent with that observed in scientific studies[51,52] and timely at this stage of formation of eating habits and behaviors.

Finally, it is worth underlining that researchers have indicated that the participation of ultra-processed food – recognized for its association with increased risk for the development of chronic non-communicable diseases – in the diet of Brazilian children is worrying, especially because it has been replacing and/or restricting the consumption of food in natura and minimally processed. It should be emphasized that the foods of the in natura and minimally processed group are essential in the process of adequate and healthy development of the child and adolescent, in view of their nutritional quality.[53]

FINAL CONSIDERATIONS

Based on the comparative analysis performed, it is possible to state that there has been a positive evolution of the food – in a more noticeable way – and nutritional recommendations of the National School Feeding Program (PNAE), although there is a period of time of four to seven years at each review of the resolutions, dated from 2009, 2013 and 2020. It is worth underlining that such evolution took place in line with the changes in the food consumption profile and nutritional status of the Brazilian population, besides following the recommendations established by the Ministry of Health and the World Health Organization (WHO).

In a very emphatic and clear way, over the years, the recommendations have strengthened the need for school feeding to consist mostly of in natura and minimally processed foods, instead of processed and ultra processed foods. However, only in the most recent resolution (n. 06/2020) are quality standards defined by degree of food processing established, which represents a quality indicator easily applicable in the planning of menus, bids and public calls for the purchase of food for the PNAE. In addition, since this resolution came into effect, restrictions and prohibitions for processed and ultra-processed foods have also become stricter, corroborating the understanding that the school cannot be another space for valuing these foods, since studies indicate important consumption of these products at home and in the community. Thus, the school is expected to be a space of protection and promotion of adequate and healthy food, as well as a space to produce changes in the food profile of the population in general.

Finally, the increase in the weekly recommendation for fruits and vegetables, adjusted to the length of school stay, and the limitations in the supply of bakery products, sweets and preparations of this category, as well as sweetened beverages, including dairy products, stand out.

Nevertheless, it is still necessary to establish criteria, related to nutritional quality, for the acquisition of food from family agriculture, based on the vocation of this category of food production, on the availability of organics and on the objectives of this approach with the PNAE. In addition, the food specificities that involve the care of children under two years of age need to be further explored, translating into recommendations directed to this public, in a phase of habit formation and food behavior. It is also important to underline that the prohibition of the supply of ultra-processed food for children up to three years old in school feeding should be extended to the program as a

whole, taking into account the deleterious effects of these products to human health, the consumption profile of the Brazilian population outside school and the role of school feeding in the promotion of healthier feeding practices.

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Contributors

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