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Scientific production on Food and Nutrition Education (FNE) and the FNE Reference Framework for Public Policies: a scoping review

A produção científica em Educação Alimentar e Nutricional (EAN) e o Marco de Referência de EAN para as Políticas Públicas: uma revisão de escopo

Abstract

Objective: The objective of this scoping review was to characterize and analyze the scientific production on Food and Nutrition Education (FNE) after the publication of the *Marco de Referência de Educação Alimentar e Nutricional para as Políticas Públicas* [FNE Reference Framework for Public Policies] in 2012. **Method:** Systematic searches were applied in the Lilacs, PubMed and Embase databases. Studies carried out in Brazil, published from December 2012, that addressed FNE, Nutrition Education and/or Food Education were considered eligible. **Results:** 611 studies were identified and 57 studies were selected. After characterization and analysis, we found a reduced use of the Framework as a methodological approach; on the other hand, the studies that addressed it presented active and reflective approaches. **Conclusion:** It is recommended that studies on FNE be designed and based on documents that translate theoretical advances in the field, such as the aforementioned Framework.

Keywords: Food and nutrition education. Review. Interdisciplinary practice. Public policy. Brazil.

Resumo

Objetivo: O objetivo desta revisão de escopo foi caracterizar e analisar a produção científica em Educação Alimentar e Nutricional (EAN) após a publicação do Marco de Referência de EAN para as Políticas Públicas em 2012. **Método:** Fez-se a busca sistemática nas bases de dados Lilacs, PubMed e Embase. Foram considerados elegíveis os estudos realizados no Brasil, publicados a partir dezembro de 2012, que abordaram a EAN, Educação Nutricional e/ou Educação Alimentar. **Resultados:** Foram identificados 611 estudos e 57 foram selecionados. Após caracterização e análise, constatou-se a reduzida utilização do Marco como referencial metodológico; em contrapartida, os estudos que o consideraram apresentaram abordagens ativas e reflexivas. **Conclusão:** Recomenda-se que estudos em EAN sejam delineados e instruídos em documentos que traduzam os avanços teóricos no campo, como o referido Marco.

Palavras-chave: Educação alimentar e nutricional. Revisão. Prática Interdisciplinar. Política pública. Brasil

INTRODUCTION

The “*Marco de Referência de Educação Alimentar e Nutricional para as Políticas Públicas*” [Food and Nutrition Education Reference Framework for Public Policies],¹ published in 2012, was the result of a collective debate coordinated by the Ministry of Social Development and Fight against Hunger, together with the interinstitutional agencies that sought to build a consensus for the field that reflected its theoretical production. This is a legitimate publication on the strategies, importance, modes of operation and possible paths for Food and Nutrition Education (FNE).^{2,3}

The Framework defines that FNE is associated with Food and Nutrition Security (FNS), with the Human Right to Adequate Food (HRAF), having the objective of fostering reflection and providing practical guidance for FNE, especially in public action and contribution to well-being.¹

The document establishes nine guiding and fundamental principles for action. These principles address issues such as sustainability in different areas, understanding the food system, valuing cooking and cultural aspects of food, promoting autonomy and self-care, continuing education, and elements related to management and intersectorality.¹

This is a publication of a methodological framework for FNE that formalizes and enables commitments, investments, strengthenings and actions. It can be considered a starting point for actions, since it conceptualizes and delimits the relevance of expanding practices, the development of new theoretical and methodological approaches, especially those that foster greater participation, valorization of popular knowledge, empowerment and construction of partnerships.¹

Thus, the objective of this review was to characterize and analyze the scientific production on FNE after the publication of the FNE Reference Framework for Public Policies.

METHODS

This is a scoping review (SR), an appropriate method for the synthesis of knowledge in relation to an exploratory question and which aims to map the evidence.^{4,6}

The recommendations of the Joanna Briggs Institute (JBI) were used as a methodological procedure, following the version updated in 2020,⁷ which informs the development of a research protocol. First, the SR protocol was prepared and published, on June 2, 2021, on a public registry, which can be accessed through the link: <<https://www2.fca.unicamp.br/portal/pt-br/paginas-docentes/434-docente-julicristieoliveira.html>>.

The guiding question was defined as: "How were FNE researches produced after the publication of the FNE Reference Framework for Public Policies?"

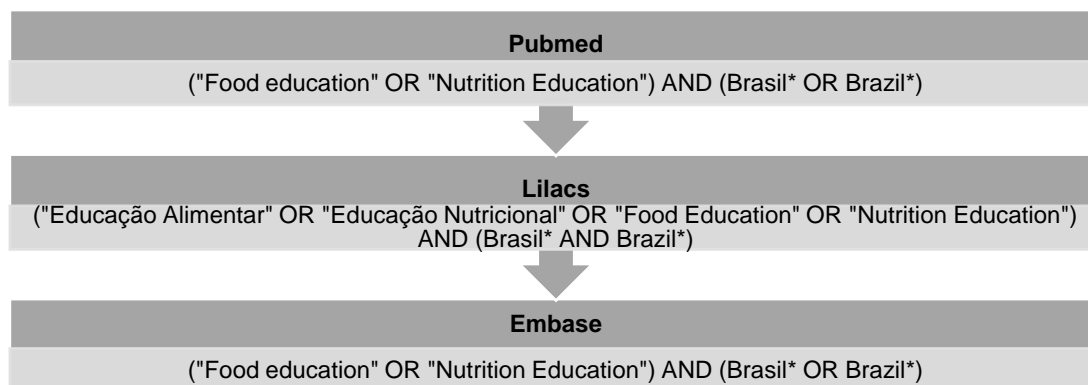
The Population, Concept and Context (PCC) strategy recommended by Aromataris & Munn,⁷ was applied with the following limits: Population = Brazilians; Concept = FNE; Context = publications related to research carried out after the publication of the Framework in 2012.

Thus, the inclusion criteria considered were: studies published from December 2012 – after the Framework was launched on November 30, 2012 – whose objective addressed FNE, Nutrition Education (NE) and/or Food Education (FE); strictly carried out in Brazil, even if published in international journals and in a foreign language; and with a qualitative and/or quantitative approach.

As for the exclusion criteria: studies whose objective did not address FNE, NE and/or FE were disregarded; review, reflection studies without theoretical-methodological contributions, letters to the editor, editorials, books, book chapters, monographs, dissertations, theses and abstracts in conference proceedings. In addition, there was no exclusion of studies according to age group, target public, sector, area or methodological quality criteria.

The searches were carried out in February 2021, updated in December 2021 and June 2023, on the following electronic databases: Latin American and Caribbean Health Sciences Literature (Lilacs), National Library of Medicine (PubMed) and Excerpta Medica DataBase (Embase). The search strategy is shown in Figure 1.

Figure 1. Description of the search strategy.



Source: Authors (2024).

At this stage of the systematic search, 611 studies were identified, but 113 studies were duplicated and were excluded. The initial screening of the studies was based on reading and analysis of title and abstract. Subsequently, the 101 selected studies were read in full and 44 were excluded for not meeting the eligibility criteria. Thus, 57 studies were selected and included⁸⁻⁶⁴ in this SR.

For the extraction process, a database was prepared in a spreadsheet in Microsoft Excel, 2009 version. The 57 studies were read carefully and in depth, and their data were recorded and tabulated for analysis and interpretation.

Based on the systematized data, the distributions of publications were presented by year, region, category of action, common terms synonymous with FNE, studies using active approaches, the application of FNE as a transversal and/or interdisciplinary theme, in addition to analyzing intersectoriality. Regarding the activities, the studies were classified into four categories, according to their central objective: 1) Direct intervention with the population, corresponding to initiatives, actions, projects, programs, strategies or practices with collective approaches or pedagogical instruments with a populational focus; 2) Policy and/or instrument evaluation, referring to the development, consolidation or evaluation of theoretical and methodological instruments, and the analysis of related public policies, such as school food; 3) Theory and reflection on the FNE field, with discussion of pedagogical strategies, approaches and themes related to practice; and 4) Professional training or continuing education, with initiatives, actions, projects, programs, strategies or practices for FNE training, for example, with health care or education professionals.

To understand the scientific production after the Framework, its nine principles for FNE actions¹ were used as an analytical matrix:

- Principle I – "Social, environmental and economic sustainability";¹
- Principle II – "Approach to the food system in its entirety";¹
- Principle III – "Valorization of the local food culture and respect for diversity of opinions and perspectives, considering the legitimacy of knowledges of different natures";¹
- Principle IV – "Food and food items as references; Valorization of cooking as an emancipatory practice";¹

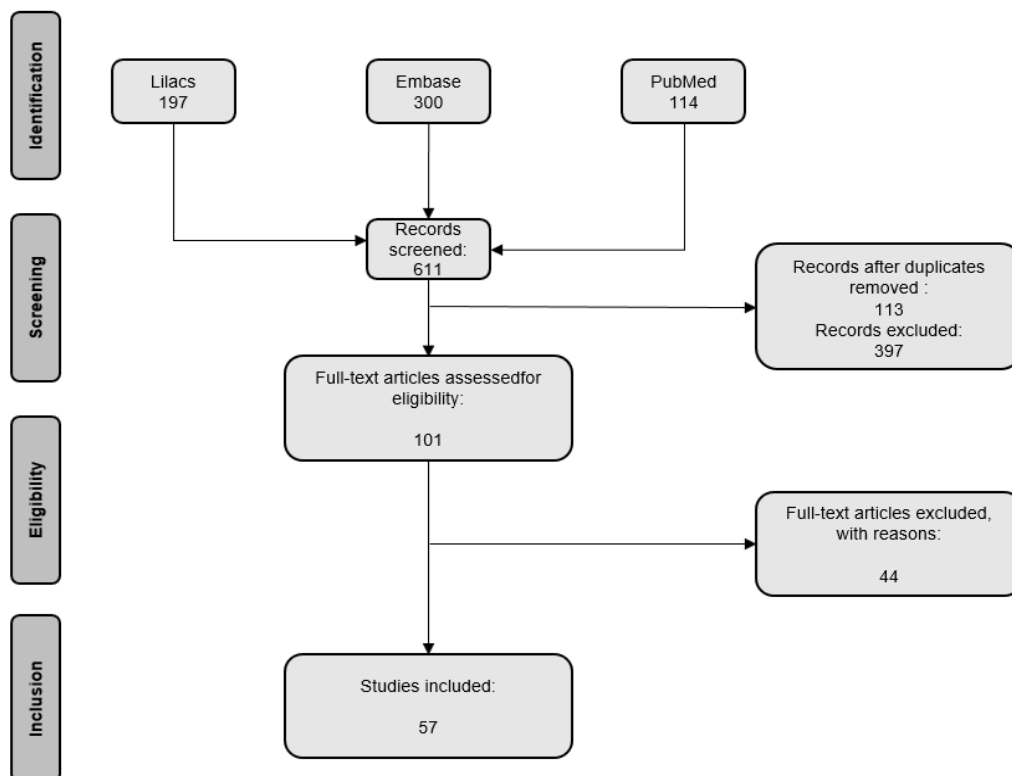
- Principle V – "The promotion of self-care and autonomy";¹
- Principle VI – "Education as a permanent process producing autonomy and active and informed participation of subjects";¹
- Principle VII – "Diversity in practice settings";¹
- Principle VIII – "Intersectorality";¹
- Principle IX – "Planning, evaluation and monitoring of actions."¹

In order to consider that the studies used the Framework, it should be mentioned at least once in the text.

Research reliability and confirmability were ensured by carrying out the study selection and reading and data extraction and tabulation stages in duplicate, by two evaluators (ABG, JPA) independently, and divergences were resolved by consensus, with the participation of a third evaluator (JMO). The entire process of writing this SR was informed by the parameters proposed in the "PRISMA extension for scoping reviews" (PRISMA-ScR).^{65,66}

RESULTS

Figure 2 illustrates the selection process, which resulted in 57 studies eligible for this SR.^{8,64}



Source: PRISMA-ScR (2023).⁶⁶

The 57 studies are described in Table 1, in the chronological order of publication.

Table 1. Distribution of the analyzed studies and identification of the research axis, resources, approaches, and principles of action of the Food and Nutrition Education Reference Framework for Public Policies articulated with centrality in the studies. Brazil, 2023.

Authors/ Year	Title	Journal	Population and sample	Place	Research Axis	Framework as theoretical approach	Conduct	Resource(s) used	Does it promote transversality?	Does it promote interdisciplinari ty?	Principle(s) identified with emphasis
Ribeiro et al., 2013 ⁸	“Porções alimentares adaptadas: proposta de instrumento para educação nutricional”	Revista Nutrire	Non applicable (N/A)	N/A	Policy/instrument evaluation	No	Prescription	Replacement list.	No	No	V and IX
Friedrich et al., 2015 ⁹	“Design, randomization and methodology of the TriAtiva Program to reduce obesity in school children in Southern Brazil”	BioMed Central Public Health	600 students	Porto Alegre – RS	Direct intervention with the population	No	Prescription	Playful approach, healthy lunch box contest and outdoor activities such as self-expression through music.	Yes, through tools to analyze food consumption.	No	VI
Deus et al., 2015 ¹⁰	“Impacto de intervenção nutricional sobre o perfil alimentar e antropométrico de usuárias do Programa Academia da Saúde”	Revista Ciência&Saúde Coletiva	124 women	Belo Horizonte – MG	Direct intervention with the population	No	Prescription	Educational and playful materials (games), replicas/photos of food and theater.	Yes, themes selected with the population. Individual as protagonist.	Yes, to enhance the action.	VI and VII.
Triches, 2015 ¹¹	“Promoção do consumo alimentar sustentável no contexto da alimentação escolar”	Revista Trabalho, Educação e Saúde	N/A	Dois Irmãos – RS	Theory and reflection on the FNE field	Yes	Reflection	Change in school food (organic products and improved palatability) school vegetable garden and pedagogical rural tourism.	Yes, indicating that FNE should not be limited and reductionist. Use of transversal methods.	Yes, encouraging practices contextualized with other subjects (calculations and languages).	I and II

Source: Authors (2024).

Table 1. Distribution of the analyzed studies and identification of the research axis, resources, approaches, and principles of action of the Food and Nutrition Education Reference Framework for Public Policies articulated with centrality in the studies. Brazil, 2023. (Continues)

Authors/ Year	Title	Journal	Population and sample	Place	Research Axis	Framework as theoretical approach	Conduct	Resource(s) used	Does it promote transversality?	Does it promote interdisciplinari ty?	Principle(s) identified with emphasis
Camozzi et al., 2015¹²	“Promoção da Alimentação Saudável na Escola: realidade ou utopia?”	CadernosSaúdeColetiva	22 school community actors	Brazilian capital	Policy/instrument evaluation	No	Prescription	Focus group.	Yes, with methods that are transversal with FNE beyond biological aspects.	Yes, mentioning FNE in a transdisciplinary manner.	VI and IX
Horta & Santos, 2015¹³	“Effectiveness of high-intensity nutritional interventions for overweight Brazilian women”	BioMed Central Public Health	N/A	Minas Gerais	Direct intervention with the population	No	Prescription	Workshops, short lectures, stands, sessions and information panels.	No	No	V
Minossi & Pellanda, 2015¹⁴	“The “Happy Heart” educational program for changes in health habits in children and their families: protocol for a randomized clinical trial”	BioMed Central Pediatrics	74 students	Rio Grande do Sul	Direct intervention with the population	No	Prescription and reflection	Cooking workshop, games, workshop, recreational activities, dynamic activities with the 5 senses, conversation circle, lecture, conversation with therapist, painting and sending text messages.	Yes, legitimizing the experiences of individuals.	No	VI
Menezes et al., 2015¹⁵	“Intervention based on Transtheoretical Model promotes anthropometric and nutritional improvements — A randomized controlled trial”	Eating Behaviors	77 women	Belo Horizonte – MG	Direct intervention with the population	No	Prescription	Workshops with playful materials (not described).	No	Yes, planning and conducting with an interdisciplinary team.	V

Source: Authors (2024).

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Authors/ Year	Title	Journal	Population and sample	Place	Research Axis	Framework as theoretical approach	Conduct	Resource(s) used	Does it promote transversality?	Does it promote interdisciplinari ty?	Principle(s) identified with emphasis
Guadagnin et al., 2016 ¹⁶	“Workplace nutrition knowledge questionnaire: psychometric validation and application”	British Journal of Nutrition	301 workers	Brazil	Direct intervention with the population	No	Prescription	Lecture without and with interaction.	No	No	VI and IX
Souza, Lima e Alves, 2016 ¹⁷	“Promoting public health through nutrition labeling – a study in Brazil”	Archives of Public Health	702 students	Rio Grande do Norte	Direct intervention with the population	No	Prescription	Lecture and delivery of materials.	No	No	VI
Machado et al., 2016 ¹⁸	“Análise de três estratégias de educação em saúde para portadores de hipertensão arterial”	Ciência&Saúde Coletiva	212 patients	Small municipality in Minas Gerais	Direct intervention with the population	No	Prescription and reflection	Dialogued lectures (knowledge sharing) exhibition of posters and videos.	Yes, approaching guidelines based on situation.	No	IV, V and VI
Micali & Diez-Garcia, 2016 ¹⁹	“Instrumento imagético de educação alimentar e nutricional para promoção da alimentação saudável”	Revista de Nutrição	N/A	N/A	Policy/instrument evaluation	Yes	Prescription and reflection	Images (image instrument).	No	No	VI and IX
Botelho et al., 2016 ²⁰	“Estratégias pedagógicas em grupos com o tema alimentação e nutrição: os bastidores do processo de escolha”	Ciência&Saúde Coletiva	28 health care professionals	São Paulo – SP	Theory and reflection on the FNE field	Yes	Reflection	Roundtable, lecture, consultation, workshops, physical practices, dynamic activities/games, body practices, tasting, music and others.	Yes, problematizing the use of active resources. Subject-centered.	Yes, assuming FNE as not restricted to Nutrition and conducted by other fields.	VI and IX

Source: Authors (2024).

Table 1. Distribution of the analyzed studies and identification of the research axis, resources, approaches, and principles of action of the Food and Nutrition Education Reference Framework for Public Policies articulated with centrality in the studies. Brazil, 2023. (Continues)

Authors/ Year	Title	Journal	Population and sample	Place	Research Axis	Framework as theoretical approach	Conduct	Resource(s) used	Does it promote transversality?	Does it promote interdisciplinari ty?	Principle(s) identified with emphasis
Patriota et al., 2017 ²¹	“Effectiveness of a 16-month multicomponent and environmental school-based intervention for recovery of poor income overweight/obese children and adolescents: study protocol of the health multipliers program”	BioMed Central Public Health	791 students	São Paulo – SP	Direct intervention with the population	No	Prescription and reflection	Lecture, conversation circle, clipping and gluing, video, slideshow presentation, cooking workshop, scavenger hunt, dance, stretching and others.	Yes, conducting workshops centered on the subject and their situation.	Yes, focusing on the multiprofessional.	IV and VI
Schuh et al., 2017 ²²	“Escola Saudável é mais Feliz: Design e Protocolo de um Ensaio Clínico Randomizado Desenvolvido para Prevenir o Ganho de Peso em Crianças”	Arquivos Brasileiro s de Cardiologia	N/A	Rio Grande do Sul	Direct intervention with the population	No	Prescription	Seminars, workshops, dynamic activities with ‘food traffic lights,’ encouragement of physical activity, vegetable garden and German dance course.	No	No	IV and IX
Geraldi et al., 2017 ²³	“Instrumento iconográfico para orientação da classificação de alimentos do Guia Alimentar para a População Brasileira”	Revista de Nutrição	N/A	N/A	Policy/instrument evaluation	Yes	Prescription	Creation of an iconographic instrument (size and colors).	No	No	V, VII and IX

Source: Authors (2024).

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Authors/ Year	Title	Journal	Population and sample	Place	Research Axis	Framework as theoretical approach	Conduct	Resource(s) used	Does it promote transversality?	Does it promote interdisciplinari ty?	Principle(s) identified with emphasis
Vincha et al., 2017 ²⁴	“Então não tenho como dimensionar”: um retrato de grupos educativos em saúde na cidade de São Paulo, Brasil”	Cadernos SaúdePública	27 nutritionists from the Family Health Support Center (NASF) and 21 other PHC professionals	São Paulo – SP	Theory and reflection on the FNE field	Yes	Reflection	Lectures, audiovisual resources, folders, food labels, photos, videos, games, presentation dynamic activities, workshops, vegetable gardens, dances, stretches, experiences and others.	Yes, motivating problematizing and contextualized strategies.	Yes, integrating professionals, subjects and knowledges.	VI
Pascoal, Paula and Maniglia, 2017 ²⁵	“Educação nutricional como estratégia no controle de hiperfosfatemia e hipercalemia em pacientes em hemodiálise”	BRASPEN Journal	37 patients on dialysis	Franca – SP	Direct intervention with the population	No	Prescription	Serial album, demonstration with test tubes, information leaflets with refrigerator magnet and oral presentation.	No	No	V and IX
Henriques et al., 2018 ²⁶	“Políticas de Saúde e de Segurança Alimentar e Nutricional: desafios para o controle da obesidade infantil”	Ciência&SaúdeColetiva	N/A	Brazil	Policy/instrument evaluation	Yes	N/A	N/A	Yes, with intersectorality.	Yes, comprising policies and possible resolutions.	VIII and IX

Source: Authors (2024).

Table 1. Distribution of the analyzed studies and identification of the research axis, resources, approaches, and principles of action of the Food and Nutrition Education Reference Framework for Public Policies articulated with centrality in the studies. Brazil, 2023. (Continues)

Authors/ Year	Title	Journal	Population and sample	Place	Research Axis	Framework as theoretical approach	Conduct	Resource(s) used	Does it promote transversality?	Does it promote interdisciplinarity?	Principle(s) identified with emphasis
Cândido, Sousa and Santos, 2018 ²⁷	"Effectiveness of different interventions in public nurseries based on food and nutrition education: promoting breast-feeding and healthy complementary feeding"	Public Health Nutrition	90 education professionals and 169 parents/guardians	Nova Lima – MG	Direct intervention with the population and professional training/continuing education	No	Prescription	Posters, lectures, gluing of guidelines in the students' notebooks.	No	No	VI
Bernardo et al., 2018 ²⁸	"Positive impact of a cooking skills intervention among Brazilian university students: Six months follow-up of a randomized controlled trial"	Appetite	82 university students	Santa Catarina	Direct intervention with the population	No	Reflection	Cooking workshop and group discussion.	Yes, encouraging the process of cooking as a health promotion.	Yes, with intervention in Nutrition and culinary practices.	IV
Menezes et al., 2018 ²⁹	"Promoção do consumo de frutas e vegetais: protocolo metodológico de um ensaio clínico randomizado controlado"	Contemporary Clinical Trials Communications	1483 patients	Belo Horizonte – MG	Direct intervention with the population	Yes	Reflection	Workshops with conversation circles, cooking theater, self-portrait, art with experience, cinema, interactive panel, delivery of information on postcards and other materials.	Yes, planned according to the local situation.	Yes, introducing several professional categories.	III, IV, V, VI and VII
Jaime et al., 2018 ³⁰	"Content validity of an educational workshop based on the Dietary Guidelines for the Brazilian Population"	Revista de Nutrição	N/A	São Paulo – SP	Policy/instrument evaluation	Yes	Prescription	N/A	Yes, developing a multidisciplinary protocol with transversality.	No	VII and IX

Source: Authors (2024).

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Authors/ Year	Title	Journal	Population and sample	Place	Research Axis	Framework as theoretical approach	Conduct	Resource(s) used	Does it promote transversality?	Does it promote interdisciplinari ty?	Principle(s) identified with emphasis
Figueiras & Sawayaa, 2018 ³¹	"Intervenção multidisciplinar e motivacional para tratamento de adolescentes obesos brasileiros de baixa renda: Estudo Piloto"	Revista Paulista de Pediatria	21 adolescents	São Paulo – SP	Direct intervention with the population	No	Prescription	Group activities, tours, games and tournaments.	Yes, providing guidelines based on the situation of each individual.	No	VI and IX
Daun & Gambardella, 2018 ³²	"Vídeos educativos com abordagem nutricional no YouTube"	Revista de Nutrição	78.546	N/A	Direct intervention with the population	Yes	Prescription	Videos and parodies.	Yes, encouraging practices to foster individual reflection on their context.	No	III and IV
Bernardes & Marín-Léon, 2018 ³³	"Educação alimentar e nutricional em grupo para o tratamento do excesso de peso em mulheres adultas na estratégia de saúde da família"	Revista de Nutrição	172 women	Poços de Caldas – MG	Direct intervention with the population	Yes	Prescription and reflection	Dialogued lecture, photo album, labels, documentary, recipes, delivery of leaflets and questionnaire.	Yes, approaching reflection, critical thinking and contextualized solutions.	No	VI
Mazocco et al., 2018 ³⁴	"Development to Assessment of a Strategy for Consumer Healthier Choices"	Nutrientes	1000 diners	Brasília – DF	Direct intervention with the population	No	Prescription	Banners and information cards with traffic light colors.	No	No	IV and V
Chagas et al., 2018 ³⁵	"Rango Cards, a digital game designed to promote a healthy diet: a randomized study protocol"	BioMed Central Public Health	168 students	Brasília – DF	Direct intervention with the population	Yes	Prescription and reflection	Development of a digital game with "Rango Cards."	Yes, using a game that simulates the context and routine situations.	Yes, facing knowledge as plural.	IV, V and IX

Source: Authors (2024).

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Authors/ Year	Title	Journal	Population and sample	Place	Research Axis	Framework as theoretical approach	Conduct	Resource(s) used	Does it promote transversality?	Does it promote interdisciplinari ty?	Principle(s) identified with emphasis
Almeida, Recine and Fagundes, 2019 ³⁶	“Objectives and Competencies in Food and Nutrition Education in the Brazilian Undergraduate Nutrition Program”	Journal of Nutrition Education and Behavior	104 teachers	HEIs (Brazil)	Theory and reflection on the FNE field	Yes	Reflection	N/A	No	Yes, with dialogues in other fields of action.	III, IV, V, VI and VII
Santos et al., 2019 ³⁷	“Students’ Perspective on Active Learning in Nutrition Education”	Journal of Nutrition Education and Behavior	53 students	Northeast region of Brazil	Theory and reflection on the FNE field	Yes	Reflection	Focus group	Yes, approaching active methodologies as essential in academic teaching.	Yes, presenting that economics and social, political and cultural aspects are necessary in training.	VI
Castro et al., 2019 ³⁸	“Convergência de políticas públicas educacionais na promoção da alimentação adequada e saudável”	Pan American Journal of Public Health	N/A	Brazil	Policy/instrument evaluation	Yes	Reflection	N/A	Yes, reporting practices based on the reality of each student.	Yes, relating with history, anthropology, arts, sustainability and economics.	IX
Ferreira et al., 2019 ³⁹	“Avaliação de reação e comportamento de enfermeiras após treinamento sobre alimentação infantil”	Revista Brasileira de Enfermagem	8 nurses	Rural area in a municipality in Ceará	Professional training/continuing education	No	Prescription and reflection	Serial album, dialogued oral presentation and tasting of regional recipes.	Yes, promoting dialogued construction.	No	III and IX

Source: Authors (2024).

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Donadoni, Costa and Netto, 2019⁴⁰	"Nutrindo o saber: relato de experiência em práticas de educação alimentar e nutricional com pré-escolares"	Revista de Atenção Primária à Saúde	56 students	Visconde do Rio Branco – MG	Direct intervention with the population	No	Prescription and reflection	Dialogued presentation, cooking workshop, tasting, sensory analysis practices, puppet theater, videos, dynamic activities with food traffic light, delivery of folder and recipe book.	Yes, engaging individuals with reflection on situation.	No	III and VI
Santos, Oliveira and Silva, 2019⁴¹	"Influência dos hábitos alimentares e perfil socioeconômico na saúde oral de escolares"	Revista Gaúcha de Odontologia	26 students	Alegre – ES	Direct intervention with the population	No	Prescription	Lecture	No	No	IV, V and VI
Weber et al., 2019⁴²	"Implementation of a Brazilian Cardioprotective Nutritional (BALANCE) Program for improvement on quality of diet and secondary prevention of cardiovascular events: A randomized, multicentre trial"	American Heart Journal	2521 patients	Brazil (35 locations)	Direct intervention with the population and Policy/instrument evaluation	No	Prescription	Lecture	No	No	V and IX

Source: Authors (2024).

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Fonseca et al., 2019 ⁴³	“Effects of a nutritional intervention using pictorial representations for promoting knowledge and practices of healthy eating among Brazilian adolescents”	PloS ONE	461 students	Brasília – DF	Direct intervention with the population	Yes	Prescription and reflection	Image instrument, guided discussions, dynamic activities with interactive table on food classification and preparation of the usual meal.	Yes, fostering critical thinking in food choices.	No	V and VI
Melo et al., 2020 ⁴⁴	“Tailored smartphone intervention to promote healthy eating among Brazilian adolescents: a randomised controlled trial protocol”	The BMJ open	4183 students	Brasília – DF	Direct intervention with the population	No	Prescription	Messages via <i>WhatsApp</i> .	No	No	V and IX
Lima et al., 2020 ⁴⁵	“Coverage and educational actions related to the national vitamin A supplementation program: a study in children from the state of Alagoas”	Jornal de Pediatria	509 children	Alagoas	Policy/instrument evaluation	No	Prescription	N/A (but indicated individual guidance, group meetings, lectures, role plays, videos).	No	No	VI and IX

Source: Authors (2024).

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Authors/ Year	Title	Journal	Population and sample	Place	Research Axis	Framework as theoretical approach	Conduct	Resource(s) used	Does it promote transversality?	Does it promote interdisciplinari ty?	Principle(s) identified with emphasis
Reis & Jaime, 2020 ⁴⁶	“Escala de avaliação de práticas de educação alimentar e nutricional na Atenção Primária em Saúde”	Revista de Nutrição	N/A	N/A	Policy/instrument evaluation	No	Prescription	N/A	No	No	VI and IX
Ferreira et al., 2020 ⁴⁷	“Quatro níveis de avaliação de um programa de treinamento de enfermeiras sobre alimentação regional”	Revista Brasileira de Enfermagem	8 nurses and 62 mothers	Rural area in a municipality in Ceará	Direct intervention with the population and professional training/continuing education	No	Prescription and reflection	Dialogued oral presentation, serial album, tasting of regional recipes, demonstration of the application of technology and simulation activity.	Yes, carrying out field activities, exchanging information and experiences.	Yes, fostering multiprofessional action.	III and VI
Pereira et al., 2020 ⁴⁸	“Ações de Educação Alimentar e Nutricional com grupos em vulnerabilidade social: Relato de Experiência”	Revista Ciência Plural	338 people in social vulnerability.	Itajaí – SC	Direct intervention with the population	No	Prescription and reflection	Dynamic activities (healthy dish, degree of food processing and sensory activity), banner, conversation circle, explanation of sugars and fats in food, tasting, mural, recipe, delivery of leaflets, bingo, cultivation of unconventional food plants (PANCs in Portuguese).	Yes, reflecting the situation of individuals and providing guidelines planned for each public.	No	VII

Source: Authors (2024).

Table 1. Distribution of the analyzed studies and identification of the research axis, resources, approaches, and principles of action of the Food and Nutrition Education Reference Framework for Public Policies articulated with centrality in the studies. Brazil, 2023. (Continues)

Authors/ Year	Title	Journal	Population and sample	Place	Research Axis	Framework as theoretical approach	Conduct	Resource(s) used	Does it promote transversality?	Does it promote interdisciplinari ty?	Principle(s) identified with emphasis
Martins et al., 2020 ⁴⁹	“Changes in Thyroid and Glycemic Status and Food Intake in Children with Excess Weight Who Were Submitted for a Multi-Component School Intervention for 16 Months”	BioMed Central Public Health	176 students	São Paulo – SP	Direct intervention with the population	No	Prescription	Lecture	No	No	V and VI
Felix et al., 2021 ⁵⁰	“Análise Qualitativa do Programa Crescer Saudável na Escola – Visão dos Profissionais de Saúde, da Comunidade Escolar e da Família”	Journal of Human Growth and Development		São Paulo – SP	Direct intervention with the population	Yes	Prescription and reflection	Role playing, playful dynamic activities, such as bowling and healthy food fishing, food calendar, child nutritionist, cookbook, riddles, food traffic lights, my healthy dish, music, scavenger hunt, storytelling, poster making and dialogued presentation.	Yes, fostering reflections for autonomous, voluntary and participatory practice.	No	IV and V
Maldonado et al., 2021 ⁵¹	“Proposta de educação alimentar e nutricional integrada ao currículo de Educação Infantil e Ensino Fundamental”	Cad. Saúde Pública	N/A	Brazil	Policy/instrument evaluation	Yes	Reflective	N/A	Yes, providing guidance based on the situation and encouraging self-care.	Yes, through an interdisciplinary team (physicians, nurses, psychologists, teachers and pedagogical coordinators).	I, II, III, IV, V, VI, VII, VIII and IX

Source: Authors (2024).

Table 1. Distribution of the analyzed studies and identification of the research axis, resources, approaches, and principles of action of the Food and Nutrition Education Reference Framework for Public Policies articulated with centrality in the studies. Brazil, 2023. (Continues)

Authors/ Year	Title	Journal	Population and sample	Place	Research Axis	Framework as theoretical approach	Conduct	Resource(s) used	Does it promote transversality?	Does it promote interdisciplinari ty?	Principle(s) identified with emphasis
Pessoa et al., 2022 ⁵²	"A six-month multicomponent intervention improves Down syndrome adolescents' physical fitness"	Rev. Ciência e esportes	16 adolescents with Down Syndrome	Paraíba – PB	Direct intervention with the population	No	Prescription	Dietary guidelines for parents and setting daily dietary goals (easy, moderate and hard).	No	Yes, through an interdisciplinary team (physical education teachers, pediatrician and nutritionist).	V and IX
Freitas et al., 2022 ⁵³	"Oficina culinária como estratégia didático-pedagógica interdisciplinar na formação do nutricionista"	Rev. de Medicina	147 Nutrition students	Uberlândia – MG	Theory and reflection on the FNE field	Yes	Reflection	Discussion on cooking, film watching, preparation of recipes with tasting and sensory analysis.	Yes, fostering reflection on the situation based on cooking.	Yes, approaching the cooking workshop as an interdisciplinary activity by fostering dialogue with the various contents studied throughout the undergraduate program.	III, IV and VI
Pagano et al., 2022 ⁵⁴	"Effects of a cardioprotective nutritional program (BALANCE program) on diet quality, anthropometric features and cardiovascular risk factors in primary cardiovascular prevention: A workplace feasibility study"	Human Nutrition & Metabolism	99 adult patients	São Paulo - SP	Direct intervention with the population	No	Prescription	Mnemonic and playful strategy according to the colors that appear on the Brazilian flag. Lecture and individual consultation.	No	No	V

Source: Authors (2024).

Table 1. Distribution of the analyzed studies and identification of the research axis, resources, approaches, and principles of action of the Food and Nutrition Education Reference Framework for Public Policies articulated with centrality in the studies. Brazil, 2023. (Continues)

Authors/ Year	Title	Journal	Population and sample	Place	Research Axis	Framework as theoretical approach	Conduct	Resource(s) used	Does it promote transversality?	Does it promote interdisciplinarity?	Principle(s) identified with emphasis
Coura et al., 2022 ⁵⁵	“Cardiovascular Disease after a Nutritional Intervention Program -A Randomized Clinical Trial”	Nutrients	1,354 patients with indicators of Cardiovascular Disease	Brazil	Direct intervention with the population	No	Prescription	Dietary prescription categorized by colors according to food energy density.	No	No	V
Inácio et al., 2022 ⁵⁶	“Food and Nutrition Education Using Intuitive Method and NOVA Food Classification: Implications for Food Practices of Children and Adolescents Intuitive Method in Food and Nutrition Education”	American Journal of Health Promotion	245 students	Lavras - MG	Direct intervention with the population	No	Reflection	Lecture,slideshow presentation, cooking workshop, role playing, film, videos and games.	Yes, conducting activities with personal, social and environmental factors.	No	V
Oliveira et al., 2022 ⁵⁷	“Interdisciplinary Educational Interventions Improve Knowledge of Eating, Nutrition, and Physical Activity of Elementary Students”	Nutrients	9,600 school-aged children	Guarapuava - PR	Direct intervention with the population	No	Reflection	Food traffic light, seasonality game, healthy bowling, hangman game and bean word search.	No	Yes, through an interdisciplinary team (nutrition and physical education).	V and VI
Manocho-Pino et al., 2022 ⁵⁸	“Instrumento educativo de intervenção no estilo de vida para gestantes com sobrepeso”	Rev. Bras. Saúde Mater. Infant.	7 pregnant women and 17 nutritionists	Ribeirão Preto - SP	Direct intervention with the population and professional training/continuing education	No	Prescription	Focus group, delivery of leaflet, educational material and conversation circle between professionals.	No	No	IX

Source: Authors (2024).

Table 1. Distribution of the analyzed studies and identification of the research axis, resources, approaches, and principles of action of the Food and Nutrition Education Reference Framework for Public Policies articulated with centrality in the studies. Brazil, 2023. (Continues)

Authors/ Year	Title	Journal	Population and sample	Place	Research Axis	Framework as theoretical approach	Conduct	Resource(s) used	Does it promote transversality?	Does it promote interdisciplinari ty?	Principle(s) identified with emphasis
Coura et al., 2022 ⁵⁹	"Innovative methods in nutritional interventions through sensory-based workshops with preschool children"	Rev. De Nutrição	231 children (aged 4–6 years)	Rio de Janeiro - RJ	Direct intervention with the population	Yes	Reflection	Sensory workshops and recipe delivery.	Yes, promoting food- related skills, such as familiarity with fruits and vegetables, food origin and tasting. Reflection on production environments and purchase locations.	No	III, IV, V, VI and IX
Rego et al., 2022 ⁶⁰	"Food and Nutrition Education integrated in a holistic educational model"	Rev. De Nutrição	13 children (aged 1–4 years)	N/A	Direct intervention with the population	Yes	Reflective	Holistic experiences based on anthroposophy, playful approaches, vegetable garden cultivation, meditation, cooking workshop, games, painting, storytelling, theater, embroidery, yoga (in a playful manner, imitating animals), free play, small tasks (watering plants, organizing meals, storing toys) among others.	Yes, through experimentation activities, with a holistic approach, fostering reflection, critical thinking and the search for contextualized solutions.	Yes, considering eating as multidimensional.	I, II, III, IV, V, VI, VII, VIII, IX and X

Source: Authors (2024).

Table 1. Distribution of the analyzed studies and identification of the research axis, resources, approaches, and principles of action of the Food and Nutrition Education Reference Framework for Public Policies articulated with centrality in the studies. Brazil, 2023. (Continues)

Authors/ Year	Title	Journal	Population and sample	Place	Research Axis	Framework as theoretical approach	Conduct	Resource(s) used	Does it promote transversality?	Does it promote interdisciplinarity?	Principle(s) identified with emphasis
Vasconcelos et al., 2022 ⁶¹	"Estudo de intervenção com escolares utilizando jogo de cartas "o enigma da pirâmide" sobre alimentação saudável"	Cogitare Enferm.	204 students	Recife - PE	Direct intervention with the population	No	Prescription	Card game	No	No	IV and VI
Escariota et al., 2023 ⁶²	"Nutrition Knowledge of Elderly Women: Effect of Two Food and Nutrition Education Programs"	Jornal da Associação Americana de Nutrição	Older women	Rio Grande do Sul - RS	Direct intervention with the population	Yes	Prescription	Presentation lecture, games and videos.	No	Yes, through an interdisciplinary team (nutritionist and psychologists).	III, IV, V and VI
Silveira et al., 2023 ⁶³	"Nutritional and food education as a complementary treatment approach in severe obese individuals"	Nutrition and Health	79 patients with obesity	Goiás - GO	Direct intervention with the population	Yes	Prescription and reflection	Discussion with professionals, group dynamic activities, food labels, videos, recipes, tasting, stretching, breathing and relaxation techniques, among others.	Yes, proposing reflections and actions for everyday life and encouraging autonomous and participatory practice.	Yes, through an interdisciplinary team (nutritionist, physical educator, psychologist and physician).	V and VI
Nonato et al., 2023 ⁶⁴	"Educação Alimentar e Nutricional em casa: a experiência do ensino remoto na escola pública em município Paraibano"	Rev. Ciência Plural	N/A	Cuité - PB	Direct intervention with the population	Yes	Prescription	Playful games to reproduce at home with guidelines on healthy eating and quality of life (hopscotch, charades, dead or alive, crossword puzzle).	No	No	V, VIII, VI and IX

Source: Authors (2024).

All studies were conducted in the Brazilian territory. In 44 (77.2%) studies, it was possible to identify the geographic region. The Southeast Region, especially the states of São Paulo and Minas Gerais, has the highest concentration of studies, with 50% (n=22).^{10,13,15,18,20,21,24,25,27,29,30,31,33,40,41,49,50,53,54,56,58,59} In contrast, no publications from the North Region were identified. The South, Northeast and Central-West regions presented similar contributions, with 18.2% (n=8)^{9,11,14,22,28,48,57,62}, 18.2% (n=8)^{17,37,39,45,47,52,61,64}, and 13.6% (n=6)^{12,34,35,43,44,63} studies, respectively.

The studies were classified into four categories of activity, according to their central objective: 70.2% (n=40)^{9,10,13-18,21,22,25,27-29,31-35,40-44,47-50,52,54-64} (1) Direct intervention with the population; 19.3% (n=11)^{8,12,19,23,26,30,38,42,45,46,51} (2) Policy and/or instrument evaluation; 10.5% (n=6)^{11,20,24,36,37,53} (3) Theory and reflection on the FNE field, and 7.0% (n=4)^{27,39,47,58} (4) Professional training or continuing education. Some studies, 7.0% (n=4),^{27,42,47,58} addressed two categories of activity.

In relation to the life cycle, in 49 studies it was possible to accurately identify it. Most studies had children and/or adolescents and adults as the target population, respectively, with 46.9% (n=23)^{9,11,14,21,22,26,27,35,38,40,41,43,44,45,49,50,52,56,57,59,60,61,64} and 42.8% (n=21),^{10,12,15-17,20,27-29,33,34,36,37,39,42,47,53-55,58,63} because the activities were usually carried out in schools or Primary Health Care (PHC) facilities.

With regard to the areas of operation, in 53 studies it was possible to delimit them. Thus, education (47.2%, n=25)^{9,11,12,17,21,22,27,28,35-38,40,41,43,44,50,51,53,56,57,59,60,61,64} and health care (47.2%, n=25),^{8,10,13,14,15,18,20,24,25,29,30,31,33,39,42,46,47,49,51,52,54,55,58,62,63} were the most present areas in the studies. The areas of work (3.8%, n=2),^{16,34} FNS (1.9%, n=1),²⁶ social care (3.8%, n=2),^{21,48} sport and leisure (1.9%, n=1),³⁵ and culture (1.9%, n=1)⁴⁸ were also contemplated. However, few intersectoral interventions were found (7.5%, n=4).^{21,35,48,51}

Regarding the duration of the FNE intervention, 43 studies had a delimited period, and 37.2% (n=16) reported it had been conducted for 12 months or more.^{18,20-22,27,31,33,41,42,45,49,50,55,60,62,64} It was found that the shortest period was one week (n=1)⁶¹ and the longest period was 48 months (n=2).^{42,53} In addition, it was found that a little more than half of the studies, 57.9% (n=33), received some financial subsidy from a funding agency.^{9,10,13-16,19-22,24,27-30,35,37,39,42-47,49,50,54,55,57,58,60,62,63}

The active methodologies used included cooking, guided discussion, conversation circle, theater, games, outdoor activities, stretching, self-expression, self-portrait, music, dance, cinema, interactive panel, painting, sensory activity, serial album, vegetable garden cultivation, tours, scavenger hunts, cookbook, among others.

It was observed that all studies contemplated at least one of the nine principles for FNE actions of the Framework,¹ probably because they were already consolidated in the field. However, only 40.3% (n=23) of the studies mentioned the Framework in their references.^{11,19,20,23,24,26,29,30,32,33,35-38,43,50,51,53,58,59,62-64}

Highlighting these studies that considered the Framework in their theoretical framework, Table 2 shows how the document was applied. Of these studies, all are compatible with the active approach, with 78.3% (n=18) identified as transversal,^{11,20,24,26,29,30,32,33,35,37,38,43,50,51,53,59,60,63} 60.9% (n=14) as interdisciplinary,^{11,20,24,26,29,35-38,51,53,60,62,63} and 52.2% (n=12) as reflection.^{11,20,24,29,36-38,51,53,59,60,63}

Table 2. Descriptions of the potential and limitations presented by the studies that used the Reference Framework for Food and Nutrition Education for Public Policies as a theoretical framework. Brazil, 2023.

Author/Year	Application of the Framework	Potential/Possibilities achieved through the Framework	Limitations/Difficulties described on the Framework
Triches, 2015 ¹¹	Defined Food and Nutrition Education(FNE)and the methods used. Argued that the Framework provides organizational and doctrinal principles.	Considered the use of problematizing and active approaches, resources. Criticized reductionist and taming FNE.	The strategies addressed occurred prior to the publication of the Framework. Therefore, there was no interference in the planning, but in the subsequent analysis of the results.
Micali & Diez-Garcia, 2016 ¹⁹	Used it as a framework to develop and analyze the strategy.	Argued about the importance of problematization, active strategies, valorization of cooking and autonomy.	Non applicable (N/A)
Botelho et al., 2016 ²⁰	Considered it according to the objective and principles of the Framework. Described some concepts.	Recognized the importance of inter/transdisciplinarity, contextualized solutions, diversity of settings and practices.	N/A
Geraldi et al., 2017 ²³	Defined FNE with references to the principles.	Valued Brazilian culture and regional habits.	N/A
Vincha et al., 2017 ²⁴	Described it as a theoretical framework, based on the objective and principles.	Encouraged interdisciplinary action and empowerment strategies.	N/A
Henriques et al., 2018 ²⁶	Described FNE and discussed the importance of the document.	Disseminated the Framework as an obesity prevention action and qualified other actions with the strategies in FNE.	Critically considered that the document does not provide for actions in the productive sector, which directly affects the articulation with FNE.
Menezes et al., 2018 ²⁹	Planned and executed interventions to achieve changes in behavior, respecting the situations of the participants.	Encouraged interdisciplinary team planning with dialogical pedagogy. Intervention following the concepts of 'Mobilization and Communication' of the Framework.	Argued about the lack of FNE strategies, as the Framework does not describe or exemplify them, which hinders practices.
Jaime et al., 2018 ³⁰	Mentioned it as a means of arguing for FNE in Primary Health Care (PHC).	Reflected on action-reflection methods, transversal practices and multidisciplinary team.	N/A
Daun & Gambardella, 2018 ³²	Used it to plan FNE. Mentioned the principle of action used.	Valued food culture, search for contextualized solutions and different knowledges.	N/A
Bernardes & Marín-Léon, 2018 ³³	Defined FNE, the importance of active methodologies and considered food in its social, cultural and economic aspects.	Conducted FNE with different approaches and in different settings.	N/A
Chagas et al., 2018 ³⁵	Disseminated the material as guidelines for FNE, providing structure for educational actions and implementation.	Encouraged the use of tools for contextualized reflections.	N/A
Almeida, Recine and Fagundes, 2019 ³⁶	Disseminated, defined FNE and its principles. The results are aligned with the principles. Discussed competencies of the Framework.	Problematized issues involving Nutrition and the overcoming of the technical view.	N/A
Santos et al., 2019 ³⁷	Mentioned that the curricular directive should be more participatory, reflective and comprise the Framework.	Relied on criticism of traditional/technicist education, with motivations for active methodologies.	N/A

Source: Authors (2024).

Table 2. Descriptions of the potential and limitations presented by the studies that used the Reference Framework for Food and Nutrition Education for Public Policies as a theoretical framework. Brazil, 2023. (Continues).

Author/Year	Application of the Framework	Potential/Possibilities achieved through the Framework	Limitations/Difficulties described on the Framework
Castro et al., 2019 ³⁸	It was the basis for the analyzed strategy. Observed that the principles were contemplated in the guidelines.	Provided intersectoral spaces for collective, dialogic, interdisciplinary and transversal construction.	N/A
Fonseca et al., 2019 ⁴³	Used it as a starting point, fulfilled the objective of the Framework with reference to the methods used.	Encouraged active, critical-thinking approach to the subjects' own experiences and behaviors.	Mentioned flaws/limitations of non-participatory methods and that the Framework does not describe practical methodologies.
Felix et al., 2021 ⁵⁰	Defined FNE, used the principles and guidelines to analyze and understand FNE.	Provided diversity of methods. Encouraged bonding, autonomous and participatory practice.	N/A
Maldonado et al., 2021 ⁵¹	Used it as a framework to plan, execute and evaluate the FNE material. Explicitly based on all the principles of the Framework	Achieved all principles for FNE actions by checking and pointing out if the set of proposed activities consisted with the document.	N/A
Freitas et al., 2022 ⁵³	Defined FNE, implicitly in accordance with the principles and guidelines for FNE.	Encouraged addressing sociocultural and emotional issues, valued sustainability, culture and seasonality in cooking.	N/A
Coura et al., 2022 ⁵⁹	Used it as a starting point, basis for FNE and strategies.	Argued for the importance of enhancing cooking skills, enabling the understanding of the sensory, cognitive and symbolic dimensions of food, in addition to active and empowerment strategies in FNE.	N/A
Rego et al., 2022 ⁶⁰	Used it as a framework to develop and analyze the strategy. Reflected and argued according to the principles for FNE actions.	Recognized FNE as transdisciplinary, transversal, autonomous, with active listening, problematizing resources, involved in sustainability and the food system.	N/A
Escariota et al., 2023 ⁶²	Used it as a starting point, basis for FNE activities more broadly and contextualized with the situation.	Valued affective, sensory factors, perceptions, beliefs, attitudes, meanings, social norms and environmental factors related to individual or group food preferences.	N/A
Silveira et al., 2023 ⁶³	Mentioned it to discuss the topic and described it as a theoretical framework.	Argued for plural initiatives related to food, food security and support for people seeking to address food issues through holistic approaches.	N/A
Nonato et al., 2023 ⁶⁴	Defined FNE and used it as a theoretical framework.	Emphasized schools as important public spaces for FNE activities.	N/A

Source: Authors (2024).

DISCUSSION

This SR sought to characterize and analyze the scientific production on FNE after the publication of the Framework.

There was a higher concentration of studies in category 1 - Direct intervention with the population, especially in the areas of health care and education. It is noted the usualness of FNE in these areas, as similar data were observed in a literature review that included 28 articles published between 2000 and 2012, the period prior to the publication of the Framework.⁶⁷

These experiments, conducted mainly in groups, favored by public health care and education facilities, show a context of maturity that enables new approaches, such as active and transversal practices.⁶⁸ On the other hand, it is necessary to point out that there are still few studies with an interdisciplinary approach, which reinforces the importance of more effective public policies in FNE in order to expand the places of operation, in the competencies of intersectoriality and decentralized actions.⁶⁹

In the literature review mentioned above, the authors describe the expectation of the publication of the Framework as a tool that triggers advances in the field, with diffusion in different areas, institutions and regions of the country, since most of the studies were conducted in the state of São Paulo, due to the predominance of universities.⁶⁷ Our findings demonstrate the same constant of publications, especially in the Southeast Region, with emphasis on the state of São Paulo.

Similarly, the compilation of experiments of the Laboratory for Innovation in Food and Nutrition Education (LIS-EAN), in celebration of the first decade of the Framework, indicated the predominance of projects in the Southeast Region and a reduced number of projects in the North and South regions of the country. Therefore, this smaller number reflects the lack of views and reflections on different experiences related to local food culture, unique traditional practices and knowledges, other aspects of the food dimension and of the particularities of these regions, such as public policies.⁶⁸

Regarding the duration of FNE, the Framework does not indicate any periodicity as ideal, but recommends its recurrence.¹ Many of the studies analyzed argue for the importance of long-term or recurrent interventions. Probably, projects limited to the context of the research itself, such as papers required for program completion, dissertations or theses, in addition to the scarcity of funding can imply their implementation, duration and recurrence, which results in interventions with reduced periods.

Moreover, it is important to consider that the effectiveness of FNE depends on several factors, such as target public, technique used, place of operation, frequency of intervention, proposed objectives, among others.⁶⁹ It is also noted that practices that are not rooted in normative and prescriptive discourse prove favored in the promotion of healthy habits.⁷⁰

Consistently with the Framework,¹ several studies included in this SR analyzed, promoted or discussed the importance of innovative strategies, using active methodologies that foster reflection, autonomy and encourage healthier habits. It is noted that some more recent studies discuss the possibility of *online* and remote FNE, with evidence of the validity of content of digital educational materials.^{53,54,61,64}

Of the selected studies, only 23 studies had the Framework as a theoretical reference. It is observed that these studies showed greater reflection on thinking and acting in FNE coherently to the document: dialogic, broad, contextualized, which considers the subject as active and promoting their health.^{11,19,20,23,24,26,29,30,32,33,35-38,43,50,51,53,58,59,62,63,64}

The information presented in Table 2 show that the Framework contributed to the theoretical and practical framework, the ways of researching and understanding the field. From this perspective, Amparo-Santos⁶⁹ recognizes that the Framework enables developments in training, research and extension, through new proposals, methodologies to guarantee and promote adequate and healthy food.

In order to understand the nine principles for FNE actions, we found the scarcity of studies related to principles I,^{11,51,60} II^{11,51,60} and VIII^{26,51,60} and their themes. According to Gentil, Bandeira & Coutinho,⁷¹ it is undeniable the essential commitment of the guidelines and reflections on food consumption related to other dimensions, such as the environment and social, environmental and economic sustainability. In addition, it is pertinent to consider the knowledges, memories, food identities and heritage, especially of indigenous peoples and traditional communities, in the decision-making processes for the implementation of policies and practices.⁶⁸

It was found that there are few studies addressing principles III,^{29,32,36,39,40,47,51,53,59,60,62} IV,^{18,21,22,28,29,32,34-36,41,50,51,53,56,59,60-62} and VII.^{10,23,29,30,36,48,51,60,64} In this context, it is discussed that prescriptive postures and/or the provision of various information is not sufficient to achieve the objectives of the educational process. However, when there is valorization and discussion of knowledges brought by individuals, cultural and social aspects, there is the possibility of an active, dialogic, autonomous and understandable theoretical and practical education.^{70,72,73}

In this sense, aspects related to eating, food and cooking can be elements to bring scientific knowledge closer to conducts and recommendations. Thus, the development of skills and autonomy can contribute to reflective processes and the preparation of healthier foods that respect cultural values.⁷⁴ It is important to note that most studies showed reflection on food and/or cooking, but as aspects that are practically mandatory for nutritional guidance, since all FNE developments relate to the act of eating.

Regarding the principles most used in the studies, we note principles V,^{8,13,15,18,23,25,29,34-36,41-44,49-52,54-57,59,60,62-64} VI^{9,10,12,14,16-21,24,27,29,31,32,36,37,40,41,43,45-47,49,51,53,57,59-64} and IX^{8,12,16,19,20,22,23,25,26,30,31,35,38,39,42,44-46,51,52,58-60,64}. In this sense, LIS-EAN also indicated principle V as the guiding principle of experiments, which is based on the subject's protagonism as a promoter of their health, strengthening autonomy and critical thinking.⁶⁸

In relation to principle IX, LIS-EAN explains that, in addition to situational diagnosis, evaluation and monitoring can contemplate quantitative and/or qualitative results, encouraging procedural performance and the consideration of aspects that are difficult to measure, such as feelings and values.⁶⁸

Thus, it is noted the importance of FNE as a promoter of reflections, emancipation with respect to culture, knowledges, social and economic aspects, to contribute to health and care through food.⁷² Therefore, building strategies and techniques with the subjects to overcome their difficulties can be a promising way that enables the inclusion of the population in decision-making processes.^{73,74}

The principles for FNE actions are also related to the concepts and practices in the context of FNS, as impacts on the food system, emphasizing that healthy eating is broad and goes beyond individual boundaries. In this sense, Aquino & Macedo⁷³ argue that data on population and territory characteristics support the planning, implementation of FNE and integration of public policies related to food.

Regarding the gaps, it was found the need to consolidate the Framework as a document that instructs and guides the field. It was also observed the lack of studies in the North Region of Brazil and in the professional training category, which compromises interdisciplinary and intersectoral articulation. There is also a need to expand the application of transversal and/or interdisciplinary methods, especially with a reflective and active approach to the subject.

Regarding the potential, it was observed, especially in the studies based on the Framework, a greater understanding of the field and of the reflective approach, overcoming the prescriptive model. The identification of the nine principles for FNE actions shows that the studies are consistent with the premises of the field, as the Framework is a reference of consolidation and shows the constructions and reflections carried out in previous decades.

The limitations found are those inherent to the SR method, such as the treatment of studies from a perspective of theme, the inclusion of heterogeneous studies in relation to population, design, objectives and approaches in FNE. In addition, there was no evaluation of methodological quality and reliability as to the findings of the studies, as these procedures are not expected in the conduction of a SR. Thus, no evidence was obtained to assess the effectiveness of applying a particular FNE approach or evaluate the impact of its direct use in public policies.

CONCLUSION

This SR characterized and analyzed the scientific production on FNE after publication of the FNE Reference Framework for Public Policies¹ and observed the progression of research on the subject. Thus, it was possible to apprehend the directions recently followed in this field of knowledge.

The absence of this instructive material in the theoretical framework of several of the studies shows possible weaknesses inherent to the field itself, such as the minimal use of principles I and II, and the tendency to prescriptive conduct. On the other hand, it was found that the construction of FNE, when supported by the Framework, fosters more reflective, active, transversal and/or interdisciplinary practices. Accordingly, it is necessary to conduct further and in-depth studies, in different contexts, areas, places of operation and based on the document.

It is also suggested the review and update of the Framework, since it was first published 11 years ago and the social, health and FNS demands change over time. Based on the reflections resulting from this SR, it is recommended the addition, in the revised version, of examples or guidelines for reflective, active, transversal and/or interdisciplinary practices, with the possibility of methodological adaptation or inspiration to support FNE activities in different contexts.

Therefore, this SR has the potential to contribute to the production of new reflections on the FNE field, expanding the possibilities of understanding the methodological approaches developed, in addition to the impacts of the Framework for pedagogical practice in food and nutrition.

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