DOI: 10.1590/1413-81232023288.06452023EN

Evaluating the Adequate and Healthy Food Promotion Program in Primary Care: a mixed methods research

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Abstract *This article aims to analyze the implementation of an Adequate and Healthy Food Promotion Program in Primary Health Care in the municipalities of Minas Gerais. Mixed Methods Research with Data Concomitant Embedded Strategy. Evaluative research from the perspective of the implementation analysis was employed in the quantitative approach. An exploratory-descriptive study was conducted using content analysis in the qualitative approach. Qualitative and quantitative data were incorporated for analysis from their imbrication. The Program Implementation Level (IL) was 92.5%, representing an adequate implementation. The methodology of the actions proposed in the program and the implementation of Continuing Education were convergent strengths that emerged from data imbrication. The need for more human resources for planning and implementing the program and the lack of a kitchen for cooking workshops were identified as challenges. The Program's implementation was adequate and can be extended to other Brazilian municipalities to help professionals structure interventions to promote adequate and healthy food in the Primary Care work routine.*

Key words *Evaluation of Research Programs and Tools, Nutrition Programs and Policies, Health Promotion, Diet Healthy, Primary Health Care*

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Introduction

Inadequate nutrition is one of the main risk factors for morbidity, years lost due to disability, and mortality in several countries worldwide[1], emphasizing non-communicable chronic diseases (NCDs), such as Obesity, Systemic Arterial Hypertension, and Diabetes Mellitus. Improved nutrition could prevent one in five deaths globally[2].

In this context, healthy eating has been gaining ground on the international agenda, public policies, and national programs[3]. The Promotion of Adequate and Healthy Food (PAAS) is one of the National Food and Nutrition Policy (PNAN) guidelines[4]. It includes Food and Nutrition Education (EAN) actions, food regulation, and incentives for creating environments that promote healthy eating, with intersectoral articulation induced by the health sector, transcending the PHC limits[5]. In this sense, the Brazilian Population Food Guide[6], revised in 2014, innovated by proposing a classification of foods based on their processing level and bringing approaches to food systems, commensality, and overcoming obstacles related to food to increase individual autonomy[5,7]. The first development of the Food Guide called the Instructive Methodology of Group Work for Food and Nutrition Actions in Primary Care[7], was published in 2016 to contribute to the expanded PAAS actions in PHC.

The Adequate and Healthy Food Promotion Program (PPAAS) was developed Based on these instructions, with theoretical and practical support for developing PAAS actions in PHC[7-9]. The PPAAS proposes educational strategies and materials to promote dynamic, participatory, and understandable meetings for clients with different education levels. Adopting methodologies based on integrative and participatory teaching-learning models, such as active methodologies, are crucial for promoting people's health[9,10].

Group activities with food and nutrition themes in PHC, such as those proposed by the PPAAS, can promote empowerment, autonomy, and shared responsibility of clients for healthier food choices through the support of health professionals[11]. Furthermore, using methodologies that help organize the work process can integrate professionals and strengthen the team conducting educational activities[8]. Food and nutrition actions with an interdisciplinary approach are indispensable in the quest to improve the population's quality of life based on the principle of comprehensiveness[12]. Thus, the PPAAS is an innovative experience in streamlining the work process, planning and implementing educational actions that aim to improve the quality and access to actions on adequate and healthy food in PHC, encouraging changes in dietary habits, and maintaining a healthy weight. However, it is necessary to monitor its implementation to assess the reorganization of collective actions to promote adequate and healthy eating that this program may or may not achieve[9].

Thus, it is essential to evaluate the implementation of the PPAAS, which began in Minas Gerais in 2017 to streamline work processes in the planning and implementation of educational actions and their results. To this end, evaluative research has gained prominence, as the knowledge raised in this type of investigation can contribute to identifying problems related to the organization and functioning of programs and support decisions aimed at their improvement and consolidation[13]. Considering this context and the importance of the PAAS for health promotion and the prevention of NCDs, this study aimed to evaluate the implementation of the PAAS in municipalities in the state of Minas Gerais.

Methods

We conducted Mixed Methods with Data Concomitant Incorporated Strategy research[14]. This strategy enables triangulating methods (evaluative research from the perspective of type 1b implementation analysis[13] and qualitative exploratory-descriptive study using content analysis[14]) and techniques (multidimensional questionnaire and semi-structured interview). Type 1b implementation analysis prioritizes reflection on program implementation, understanding the variation in its complete implementation degree or level[13]. The methodological aspects used in this research are summarized in Chart 1.

Incorporating qualitative data supported the quantitative information, which had more significant weight in this study. It deepened the findings about the context of the implementation of the PPAAS, giving more significant evidence to the results. Quantitative and qualitative data were analyzed separately and integrated at the interpretation level to identify convergences, differences, or combinations[14].

This study limited its scope of investigation to the structure (resources employed and their organization) and process (services or goods produced) dimensions. The structure consists of the framework of health services that supports the

Chart 1. Methodological aspects used in the analysis of the implementation of the Program for the Promotion of Adequate and Healthy Food (PPAAS) in Primary Health Care (PHC).

Study Design	Mixed methods research with concurrent built-in data strategy	
	Quantitative	**Qualitative**
	Evaluative research from the perspective of type 1b implantation analysis (implementation level variation)[13]	**Exploratory-descriptive[15]**
Specific Objective	Classify the implementation level of the PPAAS* according to the structure and process dimensions	To analyze the implementation of the PPAAS* as perceived by the PHC managers and health professionals
Participants	Six professionals from the PHC teams** who coordinated PPAAS actions in the municipalities	18 professionals from the PHC teams** who coordinated and performed the PPAAS actions* and 2 PHC coordinators - Saturation sampling[36]
Data Collection	Multidimensional Questionnaire (structure and process)	Semi-structured interview with PHC health professionals who conducted the implementation (14 questions) and PHC coordinators (6 questions)
Data Analysis	- Descriptive statistics - PPAAS implementation level[13]*	Content Analysis[15]: 1. Pre-analysis 2. Exploring the material and processing the results 3. Inference and interpretation
Approach integration	- Incorporation of quantitative and qualitative results - Synthesis from the imbrication of information and the expanded analysis of the results - Creation of a figure to present the analysis of combined qualitative and quantitative data	

Note: *Program for the Promotion of Adequate and Healthy Food. **Primary Health Care.

Source: Authors.

program's implementation and involves physical, human, and material resources and the necessary regulation. On the other hand, the process covers all activities developed in the health service and how they are run. To this end, we included actions involving health professionals and clients, whose analysis can be from a technical or administrative viewpoint based on accepted standards[16].

For a better understanding of the intervention (PPAAS), Chart 2 presents, in detail, the description of the items underpinning the program's framework, such as the setting, the development time, and the activities performed.

The ESF and NASF-AP PHC coordinators and professionals who implemented the PPAAS in the UAPS of the municipalities involved in this study participated in the research. Selecting these participants is justified by the possibility of obtaining more detailed information about the structure and process of the program, as they were directly involved in its implementation. Data were collected in 2017 in the medium-sized municipality and 2019 in the small-sized municipality.

A structured multidimensional questionnaire with evaluative questions about the structure and process was employed for collecting data, with content validated by the Delphi technique[9]. The questionnaire was sent through Google Forms® to the health professionals who implemented the PPAAS in the UAPS and who had already signed the informed consent form at the beginning of the implementation.

Data were descriptively analyzed to characterize the participants' profiles. The median was used as a measure of position, and the interquartile range as a measure of dispersion for age and time working in public health. The criteria for the structure (physical, human, and material resources, standardization) and process (continuing education and tutoring, planning activities, performing activities, and completing instruments) were analyzed by adjusting the median against the maximum score assigned to each criterion.

Analysis and judgment matrices were used[9] to classify the PPAAS implementation level (IL). The criterion, the calculation method, the parameter, the assigned value, and the cut-off point

Chart 2. Description of the intervention proposal - Program for the Promotion of Adequate and Healthy Food.

Program for the Promotion of Adequate and Healthy Food (PPAAS)	Based on the methodological proposal of group activities described in the Instructions on Group Work Methodology for Food and Nutrition Actions in Primary Care[7]
Setting of the implementation PHC from a small-sized municipality and another from a medium-sized municipality in the state of Minas Gerais	Small-sized municipality: - Population of 22,900 inhabitants[37] - Midwestern Region of MG, 112 km off Belo Horizonte - 100% ESF coverage with 8 ESF teams and 1 NASF-AP team
	Medium-sized municipality: - Population of 97,378 inhabitants[37] - Metropolitan Region of MG, 18 km off Belo Horizonte - 71.9% ESF coverage: 23 UAPS with 19 ESF and 6 NASF-AP teams
Selecting the units for the implementation By draw	Small-sized municipality: - Drawn 4 of the 8 UAPs for the implementation of the PPAAS with the support of 50% of NASF-AP professionals (1 speech therapist, 2 psychologists, and 1 nutritionist) - The other UAPS continued to offer group activities according to the routine, supported by other NASF-AP professionals
	Medium-sized municipality: - Drawn 3 of the 6 NASF-AP teams for the implementation of the PPAAS in the ESF unit they support. The other NASF-AP teams continued to offer group activities according to the routine, supporting the other ESF units
Duration	About 5 months with 11 biweekly meetings
PPAAS methodological strategies	- Workshops: enable dialogue and interaction, favoring the collective construction of knowledge and practices
	- Actions in the environment: they imply the modification of the environment and discussion, critical reflection on food practices and their resulting outputs
Each meeting's roadmap To assist in the planning	- Objectives and brief theoretical framework on the theme - Indication of other related readings - Complete description of the strategies and educational materials used - Suggestions for use of the onboard diary, cookbook, panel, and folders
Proposed activities	- 7 structured workshops lasting about 40 to 60 minutes
	- 4 structured actions in the environment lasting about 15 to 20 minutes
Supporting educational material To support methodological strategies	- 7 structured workshops lasting about 40 to 60 minutes
	- 4 structured actions in the environment lasting about 15 to 20 minutes
	- Panels: they promote reflection, inform clients, communicate during the breaks of workshops and actions in the environment
	- Onboard diary: note notebook for registering feelings, emotions, and experiences, reflections, comments on actions and their constructions
	- Book Demystifying Doubts about Food and Nutrition: doubts and frequent myths in the PPAAS actions[18]
	- Kitchen cookbook with fruits, legumes, vegetables: focused on healthy culinary preparations and incentive for the consumption of fruits and vegetables[19]
	- Folders: 10 steps for Adequate and Healthy Food for everyday use

Note: PHC: Primary health care. ESF: Family Health Strategy. UAPS: PHC Unit. NASF-AP: Extended Family Health Center and Primary Care. PPAAs: Program for the Promotion of Adequate and Healthy Food.

Source: Authors, based on the Ministry of Health[7].

were defined to analyze whether the observed values complied with the established standards for each of the 42 evaluative questions in the analysis matrix. Eleven of these evaluative questions referred to specific material resources for each activity (Actions in the Environment and

Workshops), with an assigned value of 5 points. In this article, these questions are taken as a single criterion with a maximum value of 55 points, thus making a total of 32 criteria that will be presented in the results.

The PPAAS IL scoring system was defined by researchers and experts using the consensus technique. This system has different values for each of the selected criteria, per the level of importance of each as defined in the analysis matrix. At first, the observed values were determined (Σ of criteria points), and the IL was calculated (Σ of observed criteria points/Σ of expected maximum points X 100) for each component. Subsequently, the components were added to calculate the Full IL. The scores obtained were transformed into percentages from the sum of the criteria points of each dimension, taking as reference (100%) the maximum possible expected score. The four categories for the PPAAS IL were defined according to these percentages: Adequate implementation (AI: 80.0 to 100%); Partially adequate implementation (PAI: 60.0 to 79.9%); Inadequate implementation (II: 40.0 to 59.9%); Critical implementation (CI: <40.0%). Excel software was used for data processing and analysis.

We employed content analysis to analyze, deepen, and expand the findings on the PPAAS implementation context, which comprises a set of communication analysis techniques aimed at obtaining, through systematic procedures and accurate description of the content of messages (quantitative or not). These indicators allow inferring the knowledge related to the production/reception (inferred variables) conditions of the messages[15].

For this purpose, a semi-structured interview was conducted with the participants who implemented the PPAAS in the municipalities. The roadmap included questions about the facilitating and hindering factors and necessary adaptations for implementing the PPAAS. Eighteen health professionals and two PHC coordinators were interviewed. The respondents were informed about the objectives and methods adopted in the research and signed an informed consent term after clarification of their doubts.

The interviews were individual, recorded, held in a private place, and later transcribed for analysis, which consisted of three stages: pre-analysis, material exploration, and treatment of results and interpretation[15,17].

The respondents were identified by codes per the position followed by the number: Community Health Workers (ACS); Social Workers (AS); PHC coordinators (CA); Nurses (ENF); Speech therapists (FON); Nutritionists (NUT); Psychologists (PSI); Occupational Therapists (TO).

Data were incorporated to present the combined qualitative and quantitative data analysis[14] at the end of the quantitative and qualitative data analysis.

The Human Research Ethics Committee approved this work under Opinion CAAE 56698716.2.0000.5149.

Results

All participants (n=20) were women, with a median age of 37 years (IQ: 29.5-41.5) and a median time working in public health of 5.5 years (IQ: 1.0-11.5). As for the position, 25% of the participants were Community Health Workers, 20% were nutritionists, 15% were nurses, 10% were PHC coordinators, 10% were occupational therapists, 10% were psychologists, 5% were speech therapists, and 5% social workers. Approximately 33.3% of the participants completed high school, 33.3% graduated, 16.7% had a specialization, and 16.7% achieved a master's degree.

The PPAAS IL was 92.5% (adequate implementation), and the process was the best-evaluated dimension compared to structure, with an IL of 93.1% against 91.9%.

All components were adequate in the structure dimension, except for Human Resources (HR), which was assessed as partially adequate. The components classified as partially adequate included the availability of a kitchen to hold a cooking workshop and the provision of materials by the Municipal Health Secretariat (Table 1).

Continuing Education and Tutoring and Completion of Instruments components were the best evaluated in the Process dimension, followed by Implementation of Activities and Planning of Activities, which were adequate. In the Planning of Activities component, the criteria Reading the materials in advance by the team and the coordinator obtained an inadequate evaluation. In the Implementation of the activities component, the Developed activities criterion was assessed as partially adequate (Figure 1).

Figure 2 shows the intertwining of the results obtained in the quantitative and qualitative approaches used in the evaluation to identify convergent and divergent aspects and the specificities of the PPAAS implementation.

Regarding the qualitative analysis, some PPAAS facilitating points were highlighted, con-

Table 1. Distribution of the implementation level in evaluating the criteria of the Structure Dimension according to components of the Program for the Promotion of Adequate and Healthy Food - PPAAS.

Dimension: Structure	Maximum Score	Median of Observed Points	Implementation Level* (%)
Components			
Physical Resources	30	27.5	91.7
Space for activities	10	10	100
Place to store materials	10	10	100
Kitchen for Culinary Workshop	10	7.5	75.0
Human Resources	15	9.0	60.0
Professionals or interns available for activities	15	9.0	60.0
Material Resources	105	100.5	95.7
Tables, chairs, projector, and computer	10	10	100
Office material	10	10	100
Access to books for activities	10	10	100
Onboard diary for participants	10	10	100
Specific material for each of the 11 activities**	55	53	96.0
Provision of materials by the Municipal Health Secretariat	10	7.5	75.0
Standardization	10	10	100
Instructional content: working methodologies in groups of food and nutrition actions in PHC	10	10	100
Overall	160	147	91.9

Notes: *Implementation Level = σ observed/ σ of the expected maximum points x 100). **The 11 questions that refer to specific material resources for each activity (Actions in the Environment and Workshops), with an awarded score of 5 points each, and in this article, they were added with a maximum value of 55 points. Adequate Implementation: AI = 80.0 to 100%; Partially adequate implementation: PAI = 60.0 to 79.9%; Inadequate Implementation: II = 40.0 to 59.9%; Critical Implementation: CI = ≤40.0%).

Source: Authors.

verging with the quantitative results of the evaluation, such as conducting continuing education with the professionals participating in the implementation of the Program and the quality of the information contained in the Instructions[7] that underpinned the PPAAS. The respondents highlighted that the proposed workshops are detailed, with step-by-step instructions for all the steps for their preparation and implementation, from the necessary materials, duration, and suggestions of professionals.

The respondents also highlighted the variety of themes and methods of the workshops, which makes the meetings interesting for the clients, converging the quantitative approach. Regarding Instructions[7] and its methodology, the participants reported:

I had positive feedback for the type of methodology. I highlight the active methodologies and the active involvement of clients in the process. A positive strategy. I am interested in keeping this implementation. This program can help other groups perform (CA 2).

The respondents also pointed out that the information in the book *Demystifying Doubts about Food and Nutrition*[18] clarified misconceptions about healthy eating based on scientific evidence. The book *Na Cozinha com as Frutas, Legumes e Verduras*[19] ("*In the kitchen with fruits, legumes, and vegetables*") was highlighted for containing culinary recipes with affordable and tasty ingredients, as can be seen in the ACS statement:

I had access to all the material. Easy language, simple recipes. Healthy food with what we have at home (ACS 1).

Regarding continuing education, a respondent highlights:

[...] It was very positive to have participated. It opened up a range of activities I can work on in a group that does not just lecture and will benefit the clients so that they acquire more information that we want them to have (FON 1).

Ciência & Saúde Coletiva, 28(8):2247-2260, 2023

Components	Criteria	Implementation level* (%)
Continuing Education and Tutoring 100%	Conducting Continuing Education	100
	Conducting Virtual Tutoring	100
Planning of Activities 85.7%	Elaborating a schedule	100
	Agenda to organize activities	100
	Reserving the place in advance	100
	Team meeting	100
	Participation of other professionals	100
	Team reading in advance	50.0
	Coordinator reading in advance	50.0
Implementing the Activities 96.4%	Assembled panels	100
	Team integration with clients	100
	Compliance with the schedule	100
	Disclosure to clients	100
	Active search for clients	100
	Activities developed	75.0
	Client participation	100
Completion of Instruments 100%	Presence list	100
	Client evaluation of the activities	100
		93.1

Figure 1. Distribution of the Implementation Level in evaluating the criteria of the process dimension, according to components of the Program for the Promotion of Adequate and Healthy Food (PPAAS).

Notes: *Implementation Level = Σ observed/ Σ of maximum expected points X 100). The maximum score for the component is 10, totaling 180 points. Adequate Implementation: AI = 80.0 to 100%; Partially adequate implementation: PAI = 60.0 to 79.9%; Inadequate implementation: II = 40.0 to 59.9%; Critical implementation: CI = <40.0%).

Source: Authors.

The participation and interaction of clients in PPAAS actions were also identified as a positive point of the Program:

Clients were specific and interested. They had a good bond and interaction. [...] Some changes in life habits were reported by clients (ACS 2).

The clients' interaction was excellent. Participating clients. They didn't want [the program] to end. Clients would like it to continue. Clients provided positive feedback about improving eating habits and even sleep quality (ACS 4).

The respondents also highlighted the integration of the PHC team with the clients and the team's involvement in assembling the panels in the dissemination and active search for clients, emphasizing the involvement of the ACS as facilitators for the implementation of the PPAAS, as shown below:

There was teamwork with good integration. ACS planned and organized in advance. A meeting was held to share assignments. Prominent participation of the psychologist (ACS 5).

Despite the involvement of the continuing education professionals, the HR deficiency and the non-involvement of other professionals on the team were identified as difficulties, converging with the evaluation of the PPAAS IL. We highlight the need for HR to plan and perform the activities, as the work overload led to difficulties in scheduling face-to-face meetings for planning activities. The activities were planned via WhatsApp® in some units:

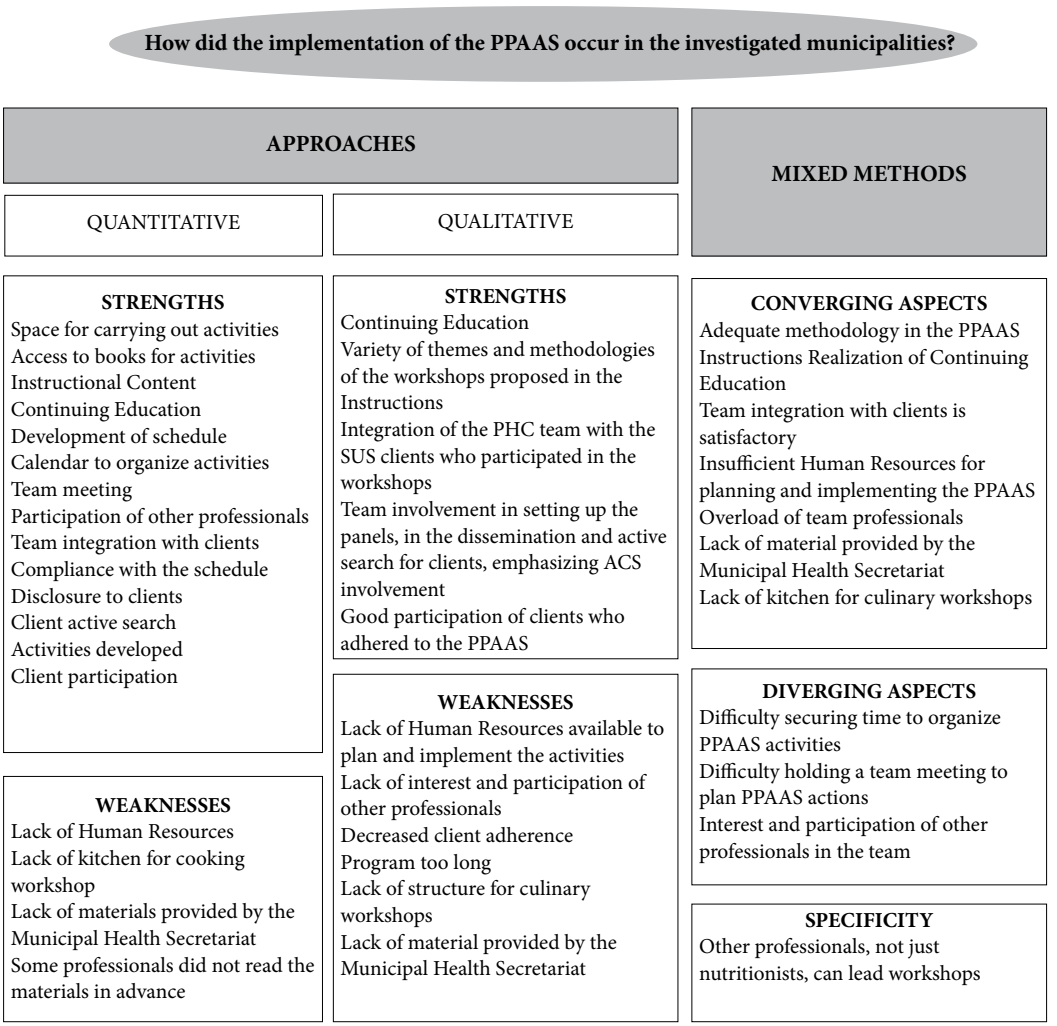

Figure 2. Imbrication of the results of the Quantitative and Qualitative approaches of the Evaluation of the Implementation of the PPAAS.

Note: PPAAS - Program for the Promotion of Adequate and Healthy Food.

Source: Authors.

Good team integration and communication via WhatsApp®. Our contact was via WhatsApp® (PSI 2).

Lack of time to plan, we had to prepare at home. Lack of communication between professionals due to work overload (PSI 1).

The lack of involvement of other professionals, who did not participate in continuing education, also emerged in the statements:

We needed more participation from ESF professionals. Perhaps due to work overload. The participation of ESF professionals would strengthen the bond between patients and the team (AS 1).

The difficulty regarding the availability of materials by the Municipal Health Secretariat was identified as a limiting factor:

I took material from home to conduct the workshops (ENF 3).

Ciência & Saúde Coletiva, 28(8):2247-2260, 2023

The materials were easy and cheap in most meetings, but you have to ask for them at the secretariat well in advance (PSI 1).

There is an administrative difficulty factor for the purchase of perishable foodstuffs. The procedures are complex (CA 2).

The respondents presented a strategy to solve this issue:

Groups from other units shared materials: blindfolds [for the eyes], for example (ENF 2).

One respondent pointed out another critical difficulty concerning physical resources:

Some places needed the structure for culinary workshops (CA 2).

The declining adherence throughout the workshops was identified as a hindrance to the PPAAS implementation:

We think about promotion due to the care model, albeit focused on the disease when we talk. Usually, even the health center team doesn't talk about this idea. Adherence difficulty. The ACS often invite, and for them to invite to the group, they must first believe in this work. There's a "belief" that individual care is more effective than group participation (TOC2).

As mentioned above by TO, other respondents also reported the difficulty of clients adhering to the biomedical model culture still present in health units, valuing appointments to the detriment of collective activities. Another cause pointed out for low adherence was related to the PPAAS duration:

The program needed to be shorter. Adherence was good at first (PSI 2).

One respondent commented on an issue pertinent to the group methodology proposed by the PPAAS:

This methodology allowed clients to be more participatory than in other groups. However, it demands more time for preparation (PSI 1).

A PPAAS specificity highlighted by the respondents is that other professionals, not just nutritionists, can lead the workshops, which facilitates its implementation in PHC and can be conducted by different professional categories, including ACS:

Besides the nutritionist, other professionals could develop the PPAAS with the materials (ACS 4).

Other professionals can lead, although the participants' direct questions to a nutritionist in some cases (ENF 1).

We observe from the reports that some professionals drew attention to the importance of a nutritionist in some workshops to address food-specific issues.

Discussion

The implementation of the PPAAS in the PHC of the municipalities of Minas Gerais was adequate. The continuing education with the professionals involved in the implementation, using instructions with active methodologies, integrated the team and the clients and, consequently, the clients' adherence to the Program.

One of continuing health education's objectives is to help each professional and team acquire the ability to be their self-co-authors in reinventing professional practices. This strategy aims to transform work processes and is essential to provide spaces for critical, reflective, propositional, committed, and technically competent action[12].

The Instructions on Group Work Methodology for Food and Nutrition Actions in Primary Care[7], in turn, was pointed out as a strength for implementing the PPAAS by proposing group active methodology-based activities didactically and objectively. Furthermore, support materials, such as the book *In the Kitchen with Fruits, Legumes, and Vegetables*[19] about culinary preparations and *Demystifying Doubts about Food and Nutrition*[18], were resources that facilitate learning about educational work with groups, providing essential clarifications to support the planning and development of proposed group educational activities[7,11].

Group methodologies are good strategies for organizing and conducting the work process and favor the integration of different professional categories, strengthening the team in interdisciplinarity and establishing collective spaces for exchanges, care, and empowerment of individuals assisted and the team[8]. However, only one of the 11 studies on EAN actions conducted in the PHC published from 2006 to 2016 had active and debating educational approaches for developing workshops, revealing the importance and innovation of PPAAS[20].

Another critical point in implementing the PPAAS was team integration with the clients around the same theme. Health promotion occurs between people, but it is still necessary to improve the relationships established between health services and their clients[21]. PAAS is a topic that all PHC professionals must work on in an interdisciplinary way, starting from the perspective of food as an experience inherent to human beings, whether clients or health professionals[11]. In this sense, EAN actions play a crucial role, especially for the ESF, as they draw the education-

al work closer to the community, expanding the field of health promotion interventions[20].

In this context, we underscore the importance of the PPAAS since it was created based on scientific evidence, the characteristics, and needs of PHC clients. It was innovative when adopting a debating theoretical-practical approach, whose primary references were the EAN Framework Reference Guide for Public Policies[22] and the Food Guide for the Brazilian Population[6]. Selecting these references to build the Instructions, and consequently, the PPAAS, aimed to value the active participation of the subjects, their empowerment and autonomy, and respect their food culture[11].

Despite the appropriate IL and its strengths, we identified some weaknesses in the implementation of PPAAS, which should be discussed to resolve or adapt to further favor the program's implementation in other municipalities. In contrast to the professionals' work overload, the lack of a kitchen to run the culinary workshops, the shortage of materials for the workshops, and insufficient HR for planning and implementing the PPAAS were cited as obstacles to its implementation.

Difficulties related to the dimension of the Program's structure are faced by PHC countrywide. Most UAPS are located in adapted houses without ideal conditions for performing group activities[23]. The historical inexistence of meeting rooms in most units can hinder developing activities with the community, articulating the planning, and evaluating practices among professionals[24]. In this study, although many UAPS did not have a meeting room, activities were run even in adapted spaces in the units or territorial spaces, such as community halls or churches, for example. However, this may compromise the implementation of the PPAAS vis-à-vis the lack of kitchens to hold the culinary workshops, as pointed out in the results. Notwithstanding this, the Instructions propose the possibility of adapting to simplify the realization of these workshops, such as taking sanitized and pre-prepared foods and preparing more straightforward recipes, such as juices and salads, available in the recipe book[19], dispensing with the need for complex utensils and equipment[7].

Another issue identified was the need for some materials from the workshops to be obtained by the professionals since they were not made available by the Municipal Health Secretariats. The lack of funds destined for the purchase of materials for PAAS educational activities, financially burdening health professionals[8], is an issue that must be discussed with health managers since federal funding for implementing food and nutrition actions is available, and the state and municipal spheres are responsible for securing and implementing the financial resources. This financial incentive is called Financing Food and Nutrition Actions (FAN) and aims to support the implementation of the PNAN in states and municipalities. It is passed on to all states and municipalities with more than 150,000 inhabitants. Currently, the FAN also includes municipalities with a population between 30,000 and 149,999 inhabitants, subject to budget availability from the Ministry of Health[25].

Another critical, difficult point that emerged was the need for more HR in the PHC to plan and implement PPAAS actions adequately. Developing group activities in the PHC still comes up against barriers related to team organization in the face of the services' demands. There are many challenges in the daily life of health services, and they even involve gathering professionals around a common goal: planning educational activities in groups to encourage participation, learning, empowerment, autonomy, and the leadership of clients to promote their health[11]. One cannot deny the advances in Brazil in making available and qualifying sufficient, well-prepared, and better-distributed professionals. However, there is no doubt about the difficulties in responding to the growing health demands arising from NCDs[26]. However, competencies and abilities are needed to ensure that health professionals can adapt to the different characteristics and cultural values of the population served, such as working in multidisciplinary teams in an interprofessional fashion, sensitively and empathetically[27].

Similar to other studies[28,29], a weakness identified in implementing the PPAAS was a declining client adherence to the Program over time, despite the active search. PPAAS adherence was 61.9%, meaning that 38.1% of the clients who started the Program still needed to finish it. Despite this, clients reported positive changes in eating habits, with an increase in the frequency of consuming fresh or minimally processed foods and reducing the consumption of ultra-processed foods[30].

Declining adherence to collective health promotion actions in PHC is a challenge already identified in a previous study. The most significant difficulty in creating groups is people's low adherence[31]. One hypothesis is the effect of the preventive culture on healthcare by clients, pro-

fessionals, and managers, limiting the scope of these actions in health services[32]. We emphasize that collective health promotion actions must overcome the nature of "collective appointments" and be dynamic reflection moments in which clients develop their creativity, communication, and democracy toward an adequate discussion of their experiences[10].

A specific and positive point concerning the PPAAS was that other professionals, not just nutritionists, can conduct their activities, which is possible due to the methodology proposed by Instructions[7] that include the details of each educational activity, acting as a guide for its development. This approach allows each professional category to contribute with its knowledge, adding more experiences and knowledge to the food topic[8]. However, this task is still challenging due to the difficulties of developing interdisciplinary practice and defining the attributions of each health professional in collective approaches when addressing intersectoral themes but still considered as belonging to a specific professional category. In this sense, the PPAAS methodology strengthens interdisciplinary teamwork and the integration between NASF-PHC and ESF[11] professionals.

Despite the converging results, some points diverged between the evaluative research approaches. They were well evaluated in the quantitative research but pointed out as difficulties in the qualitative research. One of these points was the interest and participation of other team professionals in PPAAS activities, which was adequately evaluated by the IL, but pointed out as a weakness by the respondents. Other health professionals, besides the nutritionist, need to get more involved in EAN actions in PHC[31]. The effectiveness of EAN groups is directly influenced by the organization of the health service, the leadership, the professionals involved, and the team's dialogue through the recognition of the affective, social, and health needs of the clients[31,33]. In this sense, the teams with the most significant involvement of professionals with the Program in this work were those in which the leaders, recognized in the PHC as nurses, actively implemented the PPAAS.

Another divergent issue that emerged in the qualitative approach was the extended length of the PPAAS. Some respondents pointed to the high number of proposed activities and the long duration (five months) as possible reasons for the drop in adherence. However, a study conducted on EAN PHC strategies pointed out that one of the main areas for improvement of the actions was the short duration, and most studies so far had a duration of less than or equal to five months, without continuity[20]. The PAAS is a process that takes time, requires maintenance and continuity, and is a challenge for health professionals[11].

As a limitation of this study, the evaluation of the Program was conducted in only two municipalities in Minas Gerais. However, scientific rigor is necessary to perform an evaluative research. Furthermore, as it is a mixed method research, which involves greater complexity, we decided to hold the study in municipalities in which all the stages planned in the PPAAS had been implemented.

On the other hand, a strength of this study was to evaluate a program that works with adequate and healthy food from a systemic perspective, based on the integration of the multiple dimensions that involve eating practices, including their social, affective, cultural, and sustainability-related meanings since food is more than nutrients[34]. This aspect corroborates the perspective that the sociocultural, economic, and political contexts must be considered when formulating PAAS programs[35]. Another important strength of this research is evaluating the Program's implementation through mixed methods research, which allows a more significant deepening by considering quantitative and qualitative approaches. Finally, we note that health assessment is gaining increased importance in PHC, also articulating with funding, denoting the need for more research in this field.

Conclusion

This evaluative research showed that the implementation of PPAAS in the municipalities of Minas Gerais was adequate and could be extended to other Brazilian municipalities, according to the interest of managers and health professionals. Furthermore, it pointed out issues related to the structure, which can be improved toward better program implementation. Thus, this research will contribute to developing and disseminating more effective collective food and nutrition activities and qualifying Brazilian PHC professionals, currently emerging issues.

Collaborations

All authors are responsible for the reported research and made substantial considerations for the drafting, study design, and data analysis. They also approved the manuscript as submitted. Finally, the authors declare that there is no conflict of interest.

Acknowledgments

We are grateful to the Universidade Federal de São João Del Rei, the Universidade Federal de Ouro Preto, and the Universidade Federal de Minas Gerais.

Funding

Conselho Nacional de Desenvolvimento Científico e Tecnológico - CNPq (ACSL research productivity grant); Fundação de Amparo à Pesquisa do Estado de Minas Gerais - FAPEMIG (project) and Coordenação de Aperfeiçoamento de Pessoal de Nível Superior - CAPES (code 001).

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Article submitted 29/10/2022
Approved 17/04/2023
Final version submitted 03/05/2023

Chief editors: Romeu Gomes, Antônio Augusto Moura da Silva

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