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Dietary planning in the production of care for the SUS: a report on teaching strategies in Nutrition training

Planejamento dietético na produção do cuidado para o SUS: relato de estratégias de ensino na formação de graduação em Nutrição

Abstract

It is essential to move beyond hegemonic models that define the nutritionist's role as solely focused on dietary prescription with reductionist, fragmented, and ineffective approaches, particularly in light of Brazil's complex food and nutritional conditions. To address this, we present a set of teaching strategies employed in the Dietary Planning course at the School of Public Health, University of São Paulo, aligned with the principles of the Brazilian Unified Health System (SUS). The course's educational pathway was structured using interactive lectures, hands-on activities, and group discussions. Central theoretical frameworks and assessment tools for nutritional status and food consumption are introduced to guide dietary planning in care delivery through dietary strategies, while concepts of active listening for health history-taking are developed. In a pioneering approach, we employed the Protocols for the Use of the Brazilian Dietary Guidelines to reposition individualized care across the life course, favoring Primary Health Care settings. In a review of the hierarchical stages of dietary prescription based on the Brazilian Dietary Guidelines, we propose the development of diet plans following food- and meal-based guidelines, with critical subordination of energy and nutrient intake goals. This approach combines culinary considerations with dietary planning through practical activities in a teaching kitchen. By fostering actions for food and nutritional care delivery, these initiatives aim to enhance understanding of dietary planning within the SUS framework and advance education in this critical area.

Keywords: Dietetics. Dietary Planning. Evidence-Based Healthcare. Dietary Guidelines Teaching. SUS.

Resumo

É necessário superar modelos hegemônicos que caracterizam a atividade privativa do nutricionista de prescrição dietética com abordagens reducionistas, fragmentadas e pouco resolutivas ante a complexidade da situação alimentar e nutricional no Brasil. Para tanto, objetivamos apresentar um conjunto de estratégias de ensino utilizadas na disciplina de Planejamento Dietético do curso de Nutrição da Faculdade de Saúde Pública da Universidade de São Paulo, alinhadas aos princípios do Sistema Único de Saúde (SUS). Estruturamos o percurso formativo da disciplina com uso de recursos expositivo-dialogados, atividades práticas e discussões coletivas. Referenciais teóricos centrais e ferramentas de avaliação do estado nutricional e do consumo alimentar são apresentados para pautar o planejamento dietético na produção do cuidado por meio

de estratégias alimentares, e são trabalhados conceitos de escuta qualificada para a prática de anamnese. De forma pioneira, empregamos os Protocolos de Uso do Guia Alimentar para reposicionar o cuidado individual no curso da vida, privilegiando cenários da Atenção Primária à Saúde. Em uma revisão da hierarquização das etapas de prescrição dietética ancorada no Guia Alimentar para a População Brasileira, propomos a elaboração de planos alimentares segundo orientações baseadas em alimentos e refeições, com subordinação crítica de metas de ingestão de energia e nutrientes, e aliamos considerações culinárias ao planejamento dietético com atividade prática em cozinha didática. Induzindo a atuação para a produção do cuidado alimentar e nutricional, estas iniciativas almejam agenciar a compreensão do planejamento dietético implicada com o SUS e contribuir para o avanço do ensino nesta área essencial.

Palavras-chave: Dietética. Planejamento Alimentar. Cuidado à Saúde Baseado em Evidências. Guias Alimentares. Ensino. SUS.

INTRODUCTION

Dietary Planning, a mandatory course in the Nutrition program at the School of Public Health, University of São Paulo Health (FSP/USP), equips students to develop dietary plans for individuals across different life course stages. With emphasis on promoting adequate and healthy eating, it considers nutrition in its social determination, alongside available human, financial, and material resources.¹ This manuscript aims to share experiences of the course with teaching strategies designed to foster commitment to food and nutritional care delivery, using approaches aligned with the Unified Health System (SUS) principles and the Brazilian Dietary Guidelines framework.

The manuscript begins with theoretical frameworks central to the educational pathway. Teaching strategies are presented below, including health history-taking, Protocols for the Use of the Brazilian Dietary Guidelines in Individual Counseling, dietary plans, nutritional goals and critical considerations, and hands-on culinary experiences for dietary planning. These strategies were updated in 2023 with the revision of the program's political-pedagogical project, alongside the incorporation of protocols and related case studies. Finally, the concluding remarks outline the potential challenges and opportunities of this proposal to advance teaching in this essential area of Nutrition.

THEORETICAL FRAMEWORKS FOR THE EDUCATIONAL PATHWAY

The Dietary Planning course, offered in the sixth semester of the Nutrition program at FSP/USP, consists of 45 hours and falls under the "Food and Nutritional Care" teaching area within the political-pedagogical project.² A proposed organization of topics is presented in Table 1. In this section, we discuss the central theoretical frameworks and tools for evaluating nutritional status and food consumption.

Table 1 Content organization and teaching and learning strategies in the Dietary Planning course of the Nutrition program at the University of São Paulo's School of Public Health, 2023

Contents	Teaching and learning strategy
1 - Introduction to the course: health promotion, care delivery, and dietary planning	Interactive lecture
2 - Tools for assessing nutritional status and food consumption	Mind mapping in small groups, large group discussion; hands-on practice with the form of food intake markers
3- Active listening and medical history-taking; expanded clinical care and support strategies to overcome barriers to adequate and healthy eating	Interactive lectures, small-group medical history-taking followed by large-group discussion, and discussion of videos featuring nutritional care scenarios
4 - Setting dietary planning objectives and goals	Interactive lecture
5 - "Protocols for the Use of the Brazilian Dietary Guidelines in Individual Counseling	Interactive lecture on technology for individualized care based on the Brazilian Dietary Guidelines, followed by a large-group case study discussion to apply the Protocols.
6 - Dietary planning for each stage of the life course: adults, elderly, pregnant women, adolescents, and children	Interactive lectures and small-group case study discussion using protocols, followed by large-group discussion
7- Food plans: guidelines for preparing food based on energy and nutrient recommendations	Interactive lectures with dietary plans, nutritional calculations practice, and small-group meal preparation in the teaching kitchen.
8- Course Completion	Final presentation in seminar format and written paper with students' reflective analysis of the dietary planning developed during the course

Broadening the discussion on dietary planning to include food and nutritional care delivery is crucial to overcome reductionist perspectives³⁻⁵ on nutrition, where technical expertise is primarily focused on "calculating diets". To this end, the course is grounded in the understanding that health and food are inextricable human rights,⁶ with dietary planning serving as a strategic tool for addressing public health challenges, including escalating trends and unequal population distribution of obesity, chronic diseases, and food insecurity.⁷⁻⁹

To challenge hegemonic models regarding the exclusive activity of dietary prescription, we highlight the multifaceted process that characterizes dietary planning, whose conception is developed in the course as: *a set of actions and procedures in successive stages for the assessment of nutritional status and eating practices, the definition of a nutritional diagnosis and the joint and shared construction of dietary strategies and other behaviors for the maintenance or recovery of health, in a manner appropriate to the context and conditions of life and health of the individual.*¹⁰

Thus, theoretical frameworks are critically reviewed to coordinate dietary planning with: (i) a robust body of scientific evidence on adequate and healthy eating; (ii) a care-centered approach to understanding health needs and eating practices within individuals' life trajectories and living conditions; and (iii) strengthening the commitment to training within the SUS.

Firstly, the course bases dietary recommendations on the Dietary Guidelines.^{11,12} These guidelines prioritize culturally suitable dietary patterns and meals, rather than estimated requirements for isolated nutrients. They also acknowledge the importance of socially and environmentally sustainable eating patterns and food systems. These recommendations are summarized in the NOVA food classification system, which is supported by a vast and growing body of evidence linking ultra-processed food consumption to various adverse health outcomes.¹³

Secondly, the course references the Matrix for Organization of Food and Nutrition Care in Primary Health Care. It includes nutritional care actions aimed at ensuring comprehensive assistance within the SUS, from the perspective of the determinants and conditioning factors of nutrition.¹⁴ In an essential approach to challenging professional practice based on physiopathological considerations and guided by procedures, with frequent movements of medicalization and blaming of subjects, the matrix presents care practices throughout life from an emancipatory perspective for users, who are seen as experiencers and protagonists in their illness and health recovery itineraries.

Throughout the course, commitment to SUS emerges from the emphasis on attributes and characteristics of Primary Health Care (PHC) work process organization. This framework is justified by the extensive population coverage, problem-solving capacity and care coordination provided by PHC within the healthcare system.¹⁵ However, all the strategies developed are adaptable to other scenarios, taking into account the specific needs of individuals.

The tools used to assess nutritional status and food consumption are based on the SUS guidelines for life course stages, considering their feasibility in individual clinical practice.^{14,16}

For nutritional status, we highlight anthropometric assessment (Table 2), given its applicability across all age groups.¹⁷ Using standardized, minimally invasive techniques and readily available equipment, this evaluation method is crucial for dietary planning and is recommended in PHC monitoring documents, such as the children's and the elderly's booklets.¹⁸⁻²¹

Table 2. Anthropometric indices, references, and monitoring materials for assessing nutritional status across life course stages.

Life course stage	Anthropometric indices ^a	References ^a	Instrument for monitoring health status in the SUS
Adults	Body mass index (BMI), waist circumference	World Health Organization	—
Elderly	BMI, unintentional weight loss, calf circumference	World Health Organization	Elderly's booklets ^b
Children and adolescents	BMI-for-age, height-for-age	World Health Organization Growth Curves	Children's and adolescents' booklets
Pregnant women	Pre-pregnancy BMI, gestational weight gain	Kac G et al. (2021)	Pregnant women's booklets ^d

^a Brasil (2022)¹⁷. ^b Brasil (2018)²⁰. ^c Brasil (2023)¹⁸; Brasil (2023)¹⁹. ^d Brasil(2023)²¹.
Source: Author.

For food consumption evaluation, we prioritized the form of food intake markers, which is integrated into PHC information systems and recorded in the Food and Nutrition Surveillance System (Figure 1). This form provides a rapid assessment of previous-day food consumption and is supported by validity evidence for measuring dimensions of healthy eating (comprising three markers: beans, fresh fruits, and vegetables) and unhealthy eating (comprising four ultra-processed food group markers) across all Brazilian macro-regions, age groups, and time periods.²² The strong performance of the food intake markers in predicting dietary quality indicators, including ultra-processed food consumption, dietary diversity, and nutrient content, emphasizes their potential to inform dietary planning.²³

The markers can be used by any healthcare professional, with the investigation of food consumption, particularly by nutritionists, being enriched through inquiries about food availability, preferences, challenges with certain food groups, and preparation methods. Before assessing food consumption, we emphasize the importance of conducting Food Insecurity Risk Screening in PHC.²⁴

Figure 1. Food intake markers for individuals aged two years and older from the Food and Nutrition Surveillance System

Do you have the habit of eating meals while watching TV, using the computer and/or phone?	()Yes	()No	()Don't know
Which meals do you have throughout the day	()Breakfast	()Morning snack	()Lunch
	()Afternoon snack	()Dinner	()Late night snack
<i>Yesterday, did you eat</i>			
Beans	()Yes	()No	()Don't know
Fresh fruits (not including fruit juice)	()Yes	()No	()Don't know
Vegetables (not including potato, cassava, yam, cara root)	()Yes	()No	()Don't know
Hamburger and/or processed meats (ham, mortadella, salami, sausage, hot dog)	()Yes	()No	()Don't know
Sugar-sweetened beverages (soft drinks, boxed juice, powdered juice, boxed coconut water, guarana/grenadine syrups, fruit juice with added sugar)	()Yes	()No	()Don't know
Instant noodles, packaged snacks or salty crackers	()Yes	()No	()Don't know
Sandwich cookies, sweets or candies (candy, lollipops, chewing gum, caramel, jelly)	()Yes	()No	()Don't know

Source: Brazil (2022)¹⁷.

TEACHING STRATEGIES

Health history-taking

Based on a review of theoretical frameworks and key tools, the course proposes the discussion of the health history-taking as an essential resource for dietary planning and a privileged space for nutritionists to practice active listening. To promote skills for in-depth analysis and interpretation of healthcare service users' needs, we present provisions from the National Humanization Policy of the SUS,²⁵ notably the concepts of user embracement, ambience, and expanded shared care, as reiterated by the Matrix.¹⁴

The teaching strategy involves hands-on stations for practicing history-taking. Students work in trios, assuming the roles of interviewer, interviewee and observer, to conduct a dietary and nutritional assessment. Descriptive notes (aspects objectively observed in the dynamics), intensive notes (subjective elements arising from student interactions), and reflective notes (potential connections between the activity and theoretical framework) were recorded. Intra-group discussions and conversations among trios followed the experiment, focusing on the creation of listening spaces, the complexity of addressing others' dietary and health concerns, and engaging professionals as active participants in care delivery.

Using interactive lectures, we examined aspects of patient engagement and professional conduct essential for relationship building, while analyzing environmental attributes and limitations, particularly in PHC settings. The nutritionist's respectful support during health history-taking allows embracement, contextualizing, problematizing and understanding health and nutritional needs within individuals' life projects, enhancing active listening. Notions of patient engagement, shared responsibility, and the right to quality information are addressed to support the establishment of realistic objectives and goals for dietary planning. Finally, audiovisual resources from the series "The Brazilian Dietary Guidelines in Primary Care"²⁶ enable collective analysis of professional performance in individual and shared consultations, home visits, and therapeutic groups.

Protocols for the Use of the Brazilian Dietary Guidelines in Individual Counseling across the life-course

The Protocols for the Use of the Brazilian Dietary Guidelines in Individual Counseling²⁷⁻³¹ were innovatively incorporated for teaching Dietary Planning. The Protocols address an existing gap by systematizing the Brazilian Dietary Guidelines recommendations into an instrument for individualized dietary counseling, considering life-course stage specificities.³²⁻³⁴ The Protocols guide the evaluation of dietary practices using food intake markers, providing dietary guidance through a flowchart. The guidelines support healthcare professionals in advocating for healthy eating practices, providing meal preparation suggestions, establishing strategies to overcome identified barriers, and promoting healthy eating practices. Although the Protocols are designed for use by any healthcare professional, they are particularly valuable tools for guiding nutritionists' care delivery, as they establish priorities for dietary planning based on the Brazilian Dietary Guidelines paradigm. In the course, the theoretical foundations of the Protocols are presented as a strategy for dietary planning.

Through interactive lectures, the specificities of life-course stages (adults, elderly, pregnant women, children and adolescents) are reviewed, including epidemiological, physiological, sociocultural and dietary characteristics, and their implications for dietary planning. Case studies lead to protocol-based dietary counseling and meal planning practices. The case studies were developed and validated for a qualification course aimed at supporting healthcare professionals in incorporating the Protocols as a nutritional care tool in PHC.³⁵ The profile of the cases was created taking into account food consumption and the most common obstacles in the life course stage. The cases were then adapted for instructional purposes within the course.

Cases begin with the reception of the users by the Family Health team, who consults with the multiprofessional team and refers patients to the nutritionist. Case studies are conducted in groups and discussed in class. The first phase of the case describes user embracement, team discussion, and diagnostic assessment. Using guiding questions, groups reflect on dietary and nutritional assessments and are encouraged to formulate inquiries to understand the individual's eating habits and life context in order to develop a dietary plan. The second phase of the case focuses on the nutritionist's consultation, providing an in-depth analysis of the patient's dietary choices and other pertinent concerns. The groups reflect on barriers and facilitators to healthy eating and develop objectives, goals, and strategies for dietary planning, supported by the Protocols. Table 3 presents a summarized example of a case study.

The use of Protocols results in an updated approach to dietary planning, as it structures individualized nutritional care by prioritizing needs, proposing recommendations, and systematizing strategies to overcome barriers in accordance with the Brazilian Dietary Guidelines. The teaching and learning strategy in groups allows the exchange of ideas and perceptions, fostering dialogue and enhancing proposals for food and nutrition care delivery.

Table 3. Summarized version of the adult case study from the Dietary Planning course in the Nutrition program at the School of Public Health, University of São Paulo, 2023

Adult Case Study | Brief Version

Part 1: Case Presentation Example

José, 41, is a bricklayer who learned his craft from his father. He is married and has two children. José was working when he had an accident. He was rescued and taken to the Emergency Care Unit (Unidade de Pronto Atendimento - UPA). With no serious injuries, he was treated and referred to the reference Primary Health Care Center (Unidade Básica de Saúde - UBS). For a few weeks, José went to the UBS for wound care, always attended by the Family Health team (FHT). José, due to his on-demand work schedule, has never dedicated time to take care of his health. The workplace accident and wound care brought José closer to his FHT.

During one of the consultations, nursing technician Gilberto took the opportunity to assess food consumption using the food intake markers. Gilberto measured José's weight and height, completing the nutritional assessment. The form completed with José's responses was as follows: • does not habitually consume meals while watching television, using computer and/or mobile phone; • has breakfast, lunch, afternoon snack, and dinner; • yesterday's consumption included: beans, fresh fruits, hamburger and/or processed meats and sugar-sweetened beverages; • yesterday's consumption excluded: vegetables, instant noodles, packaged snacks or savory crackers, and sandwich cookies, sweets or candies.

Nurse Mariana opened the Electronic Health Record (EHR) in the e-SUS AB system and, upon reviewing the responses, identified an opportunity to provide José with nutritional counseling. On the day of the consultation, the UBS was crowded and Mariana had a lot of demands. She assessed José's wound, which had healed remarkably well. José was happy and said that regularly attending the UBS required significant effort on his part. Mariana says that the team was happy with his recovery and his closeness to the FHT. Mariana had to end the consultation and was unable to address the topic of nutrition.

On the day of the team meeting, Mariana discussed José's case with nutritionist Cristiane. With all the information, Cristiane suggested scheduling a consultation with him. The team agreed on the consultation. In her initial consultations, Cristiane uses the Protocols for the Use of the Brazilian Dietary Guidelines in Individual Counseling. In José's case, Module 1, designed for adults, will be used.

Part 2: Example of a dietary counseling step

Cristiane decides to better understand José responses, examining his food choices and context to develop appropriate dietary recommendations.

Cristiane reminds José about the dietary questions and expresses her intention to provide nutritional guidance based on his answers. José, always rushed due to work, initially resists the idea. Cristiane highlights the importance of making healthier food choices. José understands Cristiane's concern and convinces himself, after all, it might be interesting to take advantage of the fact that he's already there. Cristiane comments on José's 'yes' to eating beans. She asks if this is a habit or if it was a food he only ate that day. José replies firmly that this is a habit. He says that if he doesn't eat a plate of rice and beans, it's as if he hasn't had lunch. This tradition of rice and beans has been constant in his household since childhood. José says that his wife is the one who prepares the beans. He purchases groceries at both the supermarket and farmers' market. In addition, he reports that eating beans at lunch helps sustain him through the day's hard work. [...]

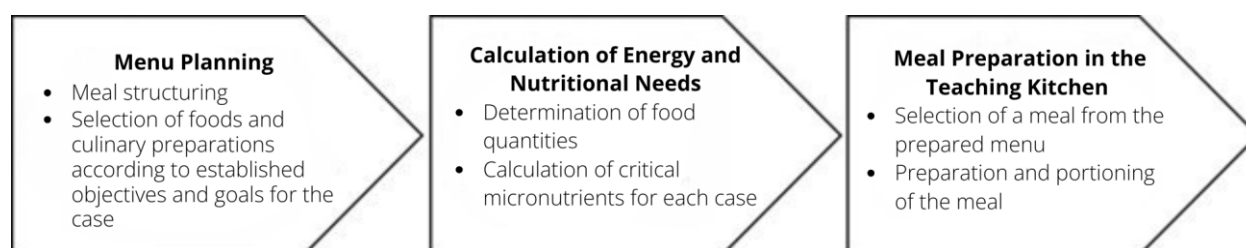
Source: Author.

Food and meal-based diet plans

The diet plan is one of the strategies used to achieve dietary planning objectives. Defined as an individualized menu, it consists of a detailed list of foods and culinary preparations, organized into meals throughout the day. The plan includes the respective portions in household measurements and quantities by weight or volume, along with substitution options.³⁶

Diet planning are commonly associated with establishing energy and nutrient intake goals, followed by selecting foods that fulfill these requirements. However, in the course, we proposed the new approach illustrated in Figure 2. The process of proposing a diet plan begins with meal structuring and food selection. In this context, the Brazilian Dietary Guidelines play a central role in developing the plan, grounded in food choices that create a flavorful and culturally appropriate diet focused on fresh and minimally processed foods.¹¹ Considering the evidence linking higher ultra-processed food consumption to poorer dietary nutritional profiles,³⁷ there is scientific support to assume that a diet plan developed with this approach meets nutritional targets for key aspects of diet quality.

Figure 2. Steps for the preparation of a diet plan in the Dietary Planning course, in the Nutrition program, School of Public Health, University of São Paulo, 2023.



Source: Author.

This evidence is discussed with the groups, consolidating a hierarchy of theoretical references for proposing the diet plan, led by the Brazilian Dietary Guidelines. In practical activities, student groups formulate diet plans based on case studied, using the Protocols while considering factors such as food and nutritional diagnosis, life context, and individual eating practices to ensure the delivery of appropriate care.

Nutritional goals in dietary planning and critical considerations

In the course, the assessment of the achievement of nutritional targets for macro and micronutrient intake is done a posteriori and critically (Figure 2), considering the restrictions of theoretical frameworks for nutritional recommendations. Nutritional recommendations are estimates that do not account for nutrient interactions in foods and preparations, nor dietary patterns. They often refer to nutrient equivalents, considering "average" individuals in binary terms, with specific objectives of avoiding deficiencies and toxicity, without accounting for the complex causal mechanisms of chronic non-communicable diseases. Furthermore, this level of detailed dietary planning is not always with the organization of work and the demands of PHC.

After problematizing these aspects through an expository dialogue, we incorporated the energy and nutrient intake guidelines from the World Health Organization (WHO)³⁸⁻⁴⁴ and United States Institute of Medicine (IOM)⁴⁵ during a computer lab session. Using Microsoft Excel® spreadsheets, we facilitated group discussions on calculations based on nutritional status assessments and physical activity levels from case studies. The food portion definitions, derived from estimated energy requirements,⁴⁵ considered total energy value, macronutrient distribution, and micronutrient intake targets relevant to different life course stages.³⁸⁻⁴⁵ We also calculate the proportion of ultra-processed foods and the minimum diversity of food groups in the diet.⁴⁶

Culinary experiences in dietary planning

To complement dietary plan development, we used a teaching strategy that facilitated visualization of the didactic process through a hands-on activity preparing individual portions of a main meal in the teaching kitchen (dietary techniques laboratory) (Figure 2). The aim is to provide students with hands-on experience and reflection on the skills required for purchasing, storing and preparing meals, the sensory characteristics of food preparation, appropriate portion sizes based on life course stages, and the physical and financial accessibility of foods selected for the diet plan. After meal preparation, potential adjustments to portion sizes, preparation methods, and food selection are discussed, considering cost and seasonal availability. The class in the teaching kitchen demonstrates the importance of dietary techniques in helping individuals overcome barriers to adequate and healthy eating while impacting the production of care at an individual level.

FINAL CONSIDERATIONS

During the Dietary Planning course at FSP/USP, we developed a critical perspective on the promotion of adequate and healthy eating through food and nutritional recommendations. We also examined care approaches through history-taking and worked on strategies for life-course dietary planning. Recognizing that dietary planning involves a variety of strategies tailored in collaboration with healthcare service users, we emphasize the essential role of Brazilian Dietary Guidelines. These guidelines serve as a foundational framework that directs and supports professional practice in defining objectives and goals, in the innovative use of Protocols for priority dietary counseling, in the detailed construction of diet plans, and in nutritional calculations, as needed for the individual cases.

It is important to note that the curriculum of the Nutrition program at FSP/USP favors Dietary Planning as a privileged space for reflection and practice with cases. Previous courses delve into aspects of assessing nutritional status and food consumption, characteristics of the stages of the life course, and discussions on dietetics and human nutrition. As a result, in this course it is possible to problematize instruments that make it possible to overcome hegemonic and reductionist models in health, as well as to leverage the specific skills of nutritionists to address the challenges of PHC. The relevance of this approach extends to practice scenarios such as clinics, outpatient clinics, among others, by affirming nutrition training for the production of care committed to the principles of SUS.

Through teaching strategies and especially case studies, we encourage nutritionists to work in a more dialogical way, open to the composition of health teams. The nutritionist's contribution can combine clinical-assistance and technical-pedagogical attributes, combining competencies from the professional core to qualify the approach to food in the health field. For example, the Protocols can be part of the production of care in the field of nutrition and a tool for matrix support and technical-pedagogical dialogue with other health professionals.

We hope that these educational initiatives in nutrition will contribute to the training of generalists, with a humanistic, critical and evidence-based practice. The discussion of dietary planning, anchored in the care within the SUS, is essential to guide food from the perspective of integrality and to improve the challenging food and nutrition panorama of the Brazilian population.

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Contributors

All authors participated in the conception, writing, and revision of this report and approved the manuscript for submission. Lourenço BH and Louzada MLC are professors responsible for the discipline. Couto VDCS and Scaciota LL carried out a teaching internship in the discipline in 2023, through the Teaching Improvement Program at the University of São Paulo.

Conflict of Interest: The authors declare that there is no conflict of interest.

Received: April 2, 2024

Accepted: December 17, 2024