FOOD FOR COLLECTIVES
DOI: 10.12957/demetra.2024.79323

DEMETRA
Alimentação, Nutrição & Saúde

Suzane da Silva Barbosa[1]
Jullyana Braga Mattos [1]
Lia Silveira Adriano [2]

[1] Universidade de Fortaleza, Centro de Neurorreabilitação. Fortaleza, CE, Brasil.

[2] Universidade de Fortaleza, Curso de Nutrição. Fortaleza, CE, Brasil.

Correspondence
Lia Silveira Adriano
liasilveira0404@gmail.com

Analysis of hospital food service preparations under the Qualitative Preparation Assessment Score

Análise das preparações de um serviço de alimentação hospitalar segundo o Escore para Avaliação Qualitativa de Preparação

Abstract

Introduction: The provision of healthy and sustainable food environments should include the assessment of adequate menus beyond the nutritional dimension, and, among other factors, the food processing levels recommended by the Food Guide for the Brazilian Population. ***Objective***: To analyze the preparations of a hospital food service under the Qualitative Preparation Assessment Score. ***Methods***: This quantitative, observational, cross-sectional, and analytical study was conducted in a hospital nutrition service in Fortaleza, Ceará, Brazil, from January to June 2023. The sample consisted of all the lunch and dinner menu preparations for employees, patients, and companions. Besides other recommendations, we adopted the Qualitative Preparation Assessment Score for analysis to evaluate the ingredient industrial processing level. ***Results***: The results showed that 80% of the 315 preparations were classified as "high quality". Desserts and salads had the highest percentage of preparations classified as "high quality", 97% and 95.7%, respectively ($p<0.001$). One preparation (1.2%) was classified as "very low quality". The quality of patients' meals was higher than that of employees and companions ($p<0.05$), confirming the study's hypothesis. ***Conclusions***: The quality of the preparations analyzed was satisfactory and aligned with the recommendations of the Food Guide for the Brazilian Population.

Keywords: Collective Food. Food Guides. Menu Planning. Sustainable Food System.

Resumo

Introdução: A oferta de ambientes alimentares saudáveis e sustentáveis deve contar com a avaliação de cardápios que estejam adequados para além da dimensão nutricional, devendo contemplar, entre outros fatores, o grau de processamento dos alimentos conforme recomendações do *Guia Alimentar para a População Brasileira*. ***Objetivo****:* Analisar as preparações de um serviço de alimentação hospitalar segundo o Escore para Avaliação Qualitativa de Preparação. ***Métodos:*** O estudo foi do tipo quantitativo, observacional, transversal e analítico, desenvolvido em um serviço de nutrição hospitalar no município de Fortaleza-CE, no período de janeiro a junho de 2023. A amostra foi composta por todas as preparações do cardápio de almoço e jantar dos colaboradores, pacientes e acompanhantes. Para análise, foi utilizado o Escore de Avaliação Qualitativa de Preparação, que avalia o grau de processamento industrial do ingrediente, além de outras recomendações. ***Resultados:*** Os resultados mostraram que 80% das 315 preparações foram classificadas como de "alta qualidade". As sobremesas e saladas apresentaram maior percentual de preparações classificadas como de "alta qualidade", 97% e 95,7%, respectivamente ($p <0,001$). Uma

preparação (1,2%) foi classificada como de "muito baixa qualidade". A qualidade das refeições dos pacientes foi superior à dos colaboradores e acompanhantes ($p < 0,05$), confirmando a hipótese do trabalho. ***Conclusões:*** A qualidade das preparações analisadas apresentou resultados satisfatórios e em concordância com as recomendações do *Guia Alimentar para a População Brasileira*.

Palavras-chave: Alimentação Coletiva. Guias Alimentares. Planejamento de Cardápio.Sistema Alimentar Sustentável.

INTRODUCTION

The supply of highly processed industrial products and the lack of natural foods have contributed to the population's dietary pattern, from a decline in malnutrition to increased obesity. This transformation is known as the nutritional transition.[1-3]

Ultra-processed foods (UPF) have been associated with an increase in overweight, obesity, other types of malnutrition, and food-related chronic non-communicable diseases (NCDs). More convenience, accessibility, and sometimes lower cost make UPF more attractive, favor an obesogenic food environment, and threaten agrobiodiversity.[4-9]

Brazil witnessed a critical breakthrough in 2014, as the Ministry of Health launched the updated Food Guide for the Brazilian Population (GAPB), one of the world's most relevant food guides regarding adherence to sustainability.[10,11]

The GAPB refers to using the NOVA food classification, characterized by the processing level of foods organized into fresh and minimally processed foods, culinary ingredients, processed foods, and ultra-processed foods. Processing involves chemical, physical, and biological factors in foods obtained from nature after industry harvesting.[10,11]

Organizational environments must incorporate GAPB recommendations to promote healthy eating and restrict ultra-processed foods, supporting healthier and more sustainable food systems. Examples of these environments include Food and Nutrition Units (FNU), which can purchase and offer food from local agriculture, strengthening regional aspects.[12]

In this sense, preparing menus suited to the nutritional needs of the people served is one of the many mandatory duties of the nutritionist. One of these professionals' complementary activities is to promote actions that encourage sustainable development.[13] To develop sustainable menus, choosing fresh and minimally processed foods and avoiding ultra-processed foods is essential.[14]

Several methods can be adopted to prepare and evaluate menus in a FNU.[15-19] However, these methods did not consider the new GAPB food recommendations per the food processing level and extent.[10,11] An unprecedented tool called the Qualitative Preparation Assessment Score (EAQP)[20] was developed in 2022. Besides evaluating foods under the NOVA food definition,[11] another differential of this instrument is analyzing each ingredient of the preparation.[20]

Thus, considering the current context of inadequate diet-related diseases, the adverse outcomes of the consumption and production of ultra-processed foods on the planet, and people's health, in coherence with the GAPB recommendations for sustainable nutrition, there was a need to apply an instrument to evaluate the preparations offered in the FNU, especially in hospitals, to assess whether they follow current food recommendations per the ingredients' processing levels.Thus, the following research problem was raised: what is the classification of the quality of preparations in a hospital food service under the EAQP?

This research is relevant because it allows an analysis of the menu and the possibility of including fresh and less ultra-processed foods in people's diets, which contributes to environmental, economic, and social sustainability, promotes healthier eating, and prevents diseases.

This evaluation is essential in hospital FNUs, given food's role in improving the health of patients and diners. To this end, the research should be conducted to analyze the quality of preparations aligned with the GAPB recommendations. Therefore, this study aims to analyze the preparations of a hospital food service under the EAQP.

METHODS

This quantitative, observational, cross-sectional, and analytical study was conducted in a hospital nutrition service in Fortaleza, Ceará, from January to June 2023.

The hospital treats patients for neurological rehabilitation of adults and children with spinal cord and brain injuries. Neurological diseases impacting mobility or sensitivity are diagnosed, and clinical care is provided for adults with spinal pain.

The FNU is self-managed and operates from Monday to Friday. It serves breakfast, lunch, dinner, and supper for employees, and breakfast, brunch, lunch, snack, dinner, and supper for inpatients and their companions. Around 400 meals are served daily to employees and patient companions at lunchtime, and around 100 are served to patients. Around 100 meals a day are served to employees and patient companions at dinner, and around 80 meals to patients.

The FNU offers an intermediate menu: lunch consists of four types of salad, two main courses, a garnish, three base dishes (white rice, brown rice, and beans), and dessert (fruit every day and sweets once a week). Dinner consists of two types of salad, a main course and a side dish, or a single dish combining the protein and side dishes. No juices are served at lunch or dinner.

The healthy clientele comprises all the healthcare professionals and support teams, such as maintenance, hygiene, nutrition, administration, and the patients' companions. The sick clientele includes adolescents (16-19 years), adults (20-59 years), and older adults (60 years or over).

The sample included the large meals, lunch, and dinner for patients on the general diet and the preparations served in the cafeteria for employees and companions. Repeated preparations and diets with specific characteristics and consistencies were excluded.

All the preparations from January to May 2023 were analyzed. They included 139 salads, 82 main courses, 38 garnishes, 23 side dishes, and 33 desserts, totaling 315 meals. All the ingredients and preparation methods were evaluated for this analysis.

The EAQP method was used to analyze the preparations. We adopted the Microsoft Excel® spreadsheet provided by the method's authors, in which the instrument is structured to apply this tool. This spreadsheet is organized by groups of preparations arranged in tabs. Each preparation type was analyzed within the corresponding group tab, namely, salad, main course, side dish, garnish, and dessert.[21]

This spreadsheet was compiled from the service's technical preparation sheets. The ingredients of each preparation and the information on the labels of each product used in the preparation were entered in this spreadsheet in amounts descending order.[21]

The first part of the instrument identifies the preparation, describing its name, the list of ingredients, and their respective groups. The second part evaluates the preparation and includes the questions, then classifies the preparation's quality per its allocated score.[21]

The evaluation of the preparations was based on the EAQP questionnaire consisting of 10 questions that assessed the ingredient's industrial processing, the predominant and abundant use of fresh ingredients; use (or not) of animal protein or low-fat fish; whole cereals and seeds; sugar, raw brown sugar, honey, or molasses; and oil-immersed fried foods.[20]

The preparations were classified according to their score and displayed automatically after answering the questions. We assigned four preparation quality levels: high, intermediate, low, and very low. They were symbolized by green, yellow, red, and black circles (Box 1).[20,21]

Box 1. Preparation quality score and classification

Preparation quality classification	Score	
High quality	11 and over	
Intermediate quality	6-10	
Low quality	0-5	
Very low quality	-1 or less	

Source: DOHMS; STANGARLIN-FIORI; MEDEIROS, 2022b

When completing the EAQP application, all the preparations were automatically presented in the "EAQP Summary Analysis" tab of the Excel 2013® spreadsheet. All the preparations were grouped by type in the list generated. Next to each preparation, its respective score and quality classification symbol were displayed.[21]

The analyses were conducted through the Statistical Package for the Social Sciences (SPSS) software, version 21.0. The Kolmogorov-Smirnov test assessed the normality of the variables. The quality of the preparations was compared categorically through the chi-square test or Fisher's exact test and continuously by using the Mann-Whitney t-test and the Kruskal-Wallis test, followed by Tukey's *post hoc* test. Values of $p<0.05$ were considered significant.

The research was only conducted after the person in charge of the study site signed a letter of consent.

RESULTS

The evaluated hospital service offers quality preparations, according to the EAQP analysis, given that 80% of the 315 preparations analyzed were classified as "high quality".

Almost 100% of the dessert and salad groups' preparations were of "high quality". Furthermore, only one preparation in the main course category was classified as "very low quality", while more than half of the protein meals were classified as "high quality" (Table 1).

Table 1. Preparation quality classification by category. Fortaleza, CE, 2023.

	Very low quality n (%)	Low quality n (%)	Intermediate quality n (%)	High quality n (%)	Total n (%)	p*
Salad	0 (0.0)	3 (2.2)	3 (2.2)	133 (95.7)	139 (100.0)	
Side order	0 (0.0)	3 (13.0)	2 (8.7)	18 (78.3)	23 (100.0)	
Main course	1 (1.2)	12(14.6)	27 (32.9)	42 (51.2)	82 (100.0)	p <0.001
Garnish	0 (0.0)	5 (13.2)	6 (15.8)	27 (71.1)	38 (100.0)	
Dessert	0 (0.0)	1 (3.0)	0 (0.0)	32 (97.0)	33 (100.0)	
All preparations	1 (0.3)	24 (7.6)	38 (12.1)	252 (80.0)	315(100.0)	

*Pearson's chi-square test or Fisher's exact test

Source: Prepared by the authors

The median score of all the preparation categories was more significant than or equal to 11 and was, therefore, in the "high quality" range. Moreover, the dessert and salad groups scored significantly higher than the other preparation groups, which were similar regarding quality (Table 2).

Table 2. Preparation quality scores by category. Fortaleza, CE, 2023.

	Very low quality Median (min; max)	Low quality Median (min; max)	Intermediate quality Median (min; max)	High quality Median (min; max)	Total Median (min; max)
Salad	-	5 (4; 5)	10 (7; 10)	13 (11; 14)	13 (4; 14)[a]
Side order	-	2 (0; 5)	6 (6; 6)	13 (12; 13)	13 (0; 13)[b]
Main course	-5.5 (-5;-5)	4 (1; 5)	10 (6; 10)	12 (11; 13)	11 (-5; 13)[b]
Garnish	-	4 (2; 5)	7 (6; 8)	12 (11; 14)	12 (2; 14)[b]
Dessert	-	1 (1; 1)	-	13 (13; 13)	13 (1; 13)[a]
p*					p <0.001

*Kruskal-Wallis test and Tukey's post hoc test
Source: Prepared by the authors

When the quality analysis was stratified by clientele, we observed that the quality of meals for patients was higher than that for employees and patient companions ($p<0.05$). We identified no significant difference ($p > 0.05$) when the analysis was stratified by type of meal (lunch and dinner) (Table 3).

Table 3. Preparation quality scores by clientele and meal type. Fortaleza, CE, 2023.

	Median	Minimum	Maximum	P*
Score by clientele				
Preparations for employees and companions	12.5	-5	14	0.002
Preparations for patients	13	4	14	
Score by meal				
Lunch	13	-5	14	0.189
Dinner	13	4	13	

* Mann-Whitney's test
Source: Prepared by the authors

One hundred thirty-nine evaluated preparations were from patients, and 176 were from employees and companions. Table 4 shows a significant difference in the classification of the quality of the preparations between patients and employees/companions: less than 3% of the patient preparations were of low quality, and more than 86% were of high quality. Only one employee's preparation was classified as "very low quality", the *feijoada* dish, with a -5 score (Table 3).

Table 4. Preparation quality classification by clientele. Fortaleza, CE, 2023.

	Very low quality n (%)	Low quality n (%)	Intermediate quality n (%)	High quality n (%)	Total (%)	p*
Employees and companions	1 (0.6)	21 (11.9)	22 (12.5)	132 (75.0)	176 (100.0)	p = 0.008
Patients	0 (0.0)	3 (2.2)	16 (11.5)	120 (86.3)	139 (100.0)	

*Pearson's chi-square test or Fisher's exact test
Source: Prepared by the authors

What sets the service apart is the more significant number of meals with fresh and minimally processed foods and the frequent avoidance of processed and ultra-processed foods. Moreover, other aspects contributed to the satisfactory scores obtained by the EAQP method, such as the use of lean meats in the main meals of both clienteles, the use of vegetable proteins, and the preparation of combinations of animal proteins with vegetables, cereals, and legumes, reducing the meat percentage.

Other aspects that favored satisfactory scores using the EAQP method were using whole seeds and cereals and including vegetables or legumes in brown rice. The following meals stand out: brown rice, chickpea puree with sesame, and meat stew with oats.

In the patients' preparations, analyzing the few that obtained lower scores and ratings, we identified industrialized coconut milk to replace cow's milk and canned corn and soy sauce as negative aspects. As for the employees' preparations, we identified dry red and white wine used in marinades and sauces; canned food used in sauces or fillings (olives, corn, Paris mushrooms, and capers); cheeses used in fillings and sauces (mozzarella, curdled cheese, and parmesan).

The few ultra-processed foods in the employee's/companion's preparations were industrialized coconut milk and cream, soy sauce, beef jerky, bacon, pepperoni, mustard sauce, catupiry, and cognac.

Regarding fried food, we identified two preparations: Fish à Doré and vegetable tempura. Sugar was used as a culinary ingredient in preparing roast pork neck stuffed with apple and leek and diced Chinese beef.

DISCUSSION

The results of this study showed that most preparations were classified as "high quality", with more fresh and minimally processed foods being used in the preparations, aligned with the GAPB recommendation.[10]

Evidence shows that these foods are the basis for a sustainable and healthy diet and that greater consumption of vegetables should be prioritized over meat. These foods are fresh, enjoyable to eat, nutritious, and appropriate to cultural, social, sustainable, and environmental aspects.[10,11]

This study analyzed menu preparations using the EAQP method, published in 2022. Because the method was recently published, we have yet to identify any studies that used it to evaluate preparations. However, other studies using different tools have already evaluated preparations or menus concerning food processing.

The study by Ramos et al.[22] conducted in a popular restaurant in Belo Horizonte, Minas Gerais, Brazil, analyzing an 84-day menu regarding the food processing type showed that most ingredients used were fresh or minimally processed (75.6%), followed by culinary ingredients (10.8%), processed (9.1%), and ultra-processed (4.6%).

Our study reveals the use of low-fat meats and fish in preparations for patients, which is a positive aspect, given that excessive consumption of saturated animal fat can increase the risk of cardiovascular disease.[10] Although some fatty meats are identified in the preparations of employees and companions, these meals are popular and highly accepted by the clientele, such as feijoada and tripe stew, as they meet the regional and cultural eating habits of diners and should be considered per the GAPB.[10] The study by Santos et al.[23] evaluated the quality of 42 days of servants' menus at a hospital FNU in Jequié, Bahia, using the AQPC method and identified a high presence of fatty meat (54.8%), which led to a poor evaluation.

Another favorable aspect in our evaluation was the offer of fruit as a dessert, which was the category with the highest percentage of "high quality" preparations, an advantage when compared to the study that evaluated the quality of a menu using the PAT criteria and the AQPC method, which observed an absence of fruit (0%) and received a very poor rating in this regard.[24]

Our study identified a low offer of processed and ultra-processed ingredients, which resulted in higher quality ratings for the preparations. However, the frequent use of ultra-processed foods is still a common practice in most FNUs.

A study in which preparations from five food establishments (including hospitals) located in the Campinas, São Paulo, region were evaluated per the occurrence of UPFs found that around 10.8% of the 3,770 ingredients used corresponded to UPFs, more prevalent in the main course and dessert categories ($p<0.05$).The following products stand out most frequently: industrialized tomato sauces, industrialized meat seasonings and sauces, margarine, industrialized sausages, sausages, ham, ultra-processed cheeses, ready-made farofas, mashed potato powder, gelatine, powdered preparations for sweets, mayonnaise, and curd cheese. UPFs are often widely used in FNUs due to their acceptance by diners, year-round availability, and convenience. They are easy to store and require less pre-preparation, making them a strategy adopted by services with minimal employees.[25]

Similar results were found in another study analyzing the menu of an institutional FNU located in Campinas, São Paulo, using the AQPC method, incorporating the analysis of ultra-processed foods as a negative aspect. UPFs were found on the daily menu (100%; n=19).[26]

The study by Guilherme et al.[27] evaluating industries in the Brazilian Northeast on the nutritional quality of menus using the AQPC method adapted to the NOVA food guidelines found that ultra-processed foods were offered every day, especially artificial drinks and sweets. However, natural drinks, fruit, and vegetables were also offered daily.

UPFs are manufactured in industry, and more than five ingredients are employed in their formulations, mostly including additives, preservatives, antioxidants, and stabilizers. They use several industrial processes that are impossible to replicate in a domestic kitchen.

UPFs should be avoided because they contain addictive ingredients, are nutritionally unbalanced, and their production process adversely affects sustainable nutrition principles. The main objective in creating UPFs is to develop hyper-palatable and easy-to-consume products, marketed in seductive packages and violent advertisements, with the argument that they are healthy and aimed above all at children and young people.[10,11,28]

According to data from the 2019 National Health Survey (PNS), the frequency of UPF consumption was 14.3%, consumption of sugar-sweetened beverages was 9.2%, and consumption of sweets was 14.8%.[29] Based on data from the National Surveillance System for Risk and Protective Factors for Chronic Diseases by Telephone Survey (VIGITEL), in the adult group, UPF intake was 18.5%, and consumption of soft drinks was 15.2%. Moreover, 77.5% did not consume the recommended fruit and vegetables.[30] Given this situation, one of the goals proposed by the Strategic Action Plan to Combat Chronic Diseases and Non-Communicable Conditions in Brazil, 2021-2030 (PLANO DANT) is to increase the recommended consumption of fruit and vegetables by 30%, reduce the consumption of ultra-processed foods and regular consumption of sweetened beverages by 30%.[31]

In the current setting marked by an increase in UPF consumption, the nutritionist's role in mass feeding is relevantto meeting the GAPB recommendations and promoting healthy eating.

We should underscore which ingredients reduce the preparation's quality and replace them with fresh, less processed foods, thus improving the quality of the preparations. Thus, food establishments should aim for not using or using a minimal amount of UPF in preparations.

We highlight the EAQP's potential as a strategy for evaluating menu preparations. It thoroughly verifies all the ingredients in the preparations, encouraging the reading and analysis of ingredient labels. Furthermore, it is a practical tool, with a manual and spreadsheet for entering data the authors provide. It can be used as an auxiliary tool for nutritionists when managing menu preparations.

CONCLUSION

The quality of the preparations analyzed showed satisfactory results. Most preparations were classified as "high quality", and the categories with the highest scores were desserts and salads. Only one preparation was classified as "very low quality". Patients' meals had a higher quality rating than those of employees and companions.

Therefore, the results align with the recommendations of the Food Guide for the Brazilian Population. Given the low availability of UPFs and the high availability of fresh and minimally processed foods, these findings are essential for strengthening the hospital food environment.

REFERENCES

1. Committee on World Food Security. Nutrition and food systems. A report by the High Level Panel of Experts on Food Security and Nutrition. Rome: Committee on World Food Security; 2017 [acesso em 2023 Jun 01]. Disponível em: http://www.fao.org/3/a-i7846e.pdf.

2. Popkin BM, Reardon T. Obesity and the food system transformation in Latin America. Obes Rev. [Internet]. 2018 Aug ;19(8):1028-1064. https://doi.org/10.1111/obr.12694.

3. Costa RP, Macedo LCA, Souza ANV, Hasegawa RE, Abreu LGC. Doenças cardiovasculares. In: Cuppari L. Nutrição clínica no adulto. 4ª ed. Barueri: Manole; 2019. p. 360-390.

4. Mendonça RD, Lopes ACS, Pimenta AM, Gea A, Martinez-Gonzalez MA, Bes-Rastrollo M. Ultra-Processed Food

Consumption and the Incidence of Hypertension in a Mediterranean Cohort: The Seguimiento Universidad de Navarra Project. Am J Hypertens [internet]. 2017;30(4):358-366. https://doi.org/10.1093/ajh/hpw137.

5. Hall KD, Ayuketah A, Brychta R, Cai H, Cassimatis T, Chen KY, et al. Ultra-Processed Diets Cause Excess Calorie Intake and Weight Gain: An Inpatient Randomized Controlled Trial of Ad Libitum Food Intake. Cell Metab. [Internet]. 2019;30(1):67-77.e3. https://doi.org/10.1016/j.cmet.2019.05.008.

6. Santos FS, Dias MS, Minten GC, Oliveira IO, Gigante DP. Processamento de alimentos e fatores de risco cardiometabólicos: revisão sistemática. Rev. Saúde Pública [internet]. 2020;54(70). https://doi.org/10.11606/s1518-8787.2020054001704.

7. Jaime P, Campello T, Monteiro C, Bortoletto AP, Yamaoka M, Bomfim M, organizadores. Diálogo sobre ultraprocessados: soluções para sistemas alimentares saudáveis e sustentáveis. São Paulo: Nupens USP; 2021.

8. Carvalho AM. Sistemas alimentares como sistema complexo. In: Marchioni DML, Carvalho AM, organizadores. Sistemas Alimentares e Alimentação Sustentável. Santana de Parnaíba: Manole; 2022. p. 32-43.

9. Lucca da Silva J, Milhomens LM, Luquine Júnior CD, Domene FM, Araújo BC, Bezerra da Silva LAL, et al. Consumo de alimentos ultraprocessados e risco de sobrepeso e obesidade: O consumo de alimentos ultraprocessados aumenta o risco de desenvolvimento de sobrepeso e obesidade na população em geral? Brasília: Fiocruz Brasília; São Paulo: Instituto de Saúde de São Paulo, 2021.

10. Brasil. Ministério da Saúde. Secretaria de Atenção à Saúde. Departamento de Atenção Básica. Guia alimentar para a população brasileira / Ministério da Saúde, Secretaria de Atenção à Saúde, Departamento de Atenção Básica. – 2. ed., 1. reimpr. – Brasília : Ministério da Saúde, 2014. 156 p [acesso em 2023 jun 1]. Disponível em: https://bvsms.saude.gov.br/bvs/publicacoes/guia_alimentar_populacao_brasileira_2ed.pdf.

11. Monteiro CA, Cannon G, Levy R, Moubarac J-C, Jaime P, Martins AP, et al. NOVA: A estrela brilha. World Nutrition [Internet]. 2016 [acesso em 2023 Jun 01]; 7(1-3):28–40. Disponível em: https://files.cercomp.ufg.br/weby/up/896/o/Nova_classifica%C3%A7%C3%A3o_dos_alimentos.pdf.

12. Salles-Costa R, Ferreira AA, Castro Junior P, Burlandy L. Sistemas alimentares, fome e insegurança alimentar e nutricional no Brasil. Rio de janeiro: FIOCRUZ; 2022. https://doi.org/10.7476/9786557081686.

13. Conselho Federal de Nutricionistas. Resolução CFN n° 600, de 25 de fevereiro de 2018. Dispõe sobre a definição das áreas de atuação do nutricionista e suas atribuições, indica parâmetros numéricos mínimos de referência, por área de atuação, para a efetividade dos serviços prestados à sociedade e dá outras providências. Brasília: CFN; 2018 [Acesso em: 2023 jun 1]. Disponível em: https://www.cfn.org.br/wp-content/uploads/resolucoes/Res_600_2018.htm.

14. Basso C. Alimentação Coletiva: Técnica Dietética e Segurança Alimentar. Rio de Janeiro: Guanabara Koogan; 2021.

15. Veiros MB, Proença RCP. Avaliação Qualitativa das Preparações do Cardápio em uma Unidade de Alimentação e Nutrição – Método AQPC.Nutr Pauta [Internet]. 2003 [acesso em 2023 jun 01];62(11):36-42. Disponível em: https://www.researchgate.net/publication/236832762_Avaliacao_Qualitativa_das_Preparacoes_do_Cardapio_em_uma_Unidade_de_Alimentacao_e_Nutricao_-_Metodo_AQPC.

16. Hering B, Proença RCP, Souza AA, Veiros MB. Evaluation of nutritional and sensorial quality in meal production - NSQE System. Journal of Foodservice [Internet]. 2006 [acesso em 2023 jun 1];17(4):173-181. https://doi.org/10.1111/j.1745-4506.2006.00033.x.

17. Bandoni DH, Jaime PC. A qualidade das refeições de empresas cadastradas no Programa de Alimentação do Trabalhador na cidade de São Paulo. Ver Nutr [Internet]. 2008;21(2):177-184. https://doi.org/10.1590/S1415-52732008000200006.

18. Uggioni PL, Proença RPC, Zeni LAZR. Avaliação da qualidade de patrimônio gastronômico em restaurantes tradicionais. Rev Nutr [Internet]. 2010; 23(1):7-16. https://doi.org/10.1590/S1415-52732010000100002.

19. Ministério da Educação (BR), Fundo Nacional de Desenvolvimento da Educação. Índice de qualidade da coordenação de segurança alimentar nutricional - IQ COSAN 2018. Brasília: Ministério da Educação; 2018.

20. Dohms PO da S, Stangarlin-Fiori L, Medeiros CO. Elaboration and validation of an instrument for qualitative assessment of food preparations offered to workers. International Journal of Gastronomy and Food Science [Internet]. 2022;28(100488). https://doi.org/10.1016/j.ijgfs.2022.100488.

21. Dohms PO da S, Stangarlin-Fiori L, Medeiros CO. Escore para Avaliação Qualitativa de Preparação (EAQP): manual de aplicação. Curitiba: Universidade Federal do Paraná, Programa de Pós-Graduação em Alimentação e Nutrição; 2022. Disponível em: http://www.prppg.ufpr.faobr/site/ppgnutricao/pb/eaqp/.

22. Ramos SA, Lima JFC, Carvalho ACM, Soares GC, Batista JA. Avaliação da qualidade das refeições servidas em um restaurante popular. HU Rev[Internet]. 2020;46:1-8. https://doi.org/10.34019/1982-8047.2020.v46.28417.

23. Santos EO, Santos LM, Santos ASF, Pelagatti PS, Brito AJ, Souza TAA. Avaliação Qualitativa das Preparações do Cardápio (AQPC) de uma unidade de alimentação e nutrição hospitalar em Jequié-BA. Research, Society and Development [Internet]. 2023;12(4). http://dx.doi.org/10.33448/rsd-v12i4.41034.

24. Silva MN, Tagliapietra BL, Agostini C. Avaliação da qualidade de cardápios ofertados para trabalhadores por um serviço de alimentação no norte do Mato Grosso, Brasil. Research, Society and Development [Internet]. 2022; 11(14). https://doi.org/10.33448/rsd-v11i14.36500.

25. Padovan M, Cunha DT, Martins CA, Botelho AM, Bim NS, NicolettoAR.Ultra-processed foods in institutional food services: what are diners eating? Archivos Latinoamericanos de Nutrición [internet]. 2023;73(1):8-18. https://doi.org/10.37527/2023.73.1.002.

26. Lago LS, Oliveira CRA, Popolim WD Análise qualitativa do cardápio pelo método Avaliação Qualitativa das Preparações do Cardápio (AQPC), índice de resto e pesquisa de satisfação dos clientes de uma Unidade de Alimentação e Nutrição institucional do município de Campinas-SP. Health SciInst[Internet]. 2021 [acesso em 2023 Jun 01]; 39(3):170-5. Disponível em: https://repositorio.unip.br/wp-content/uploads/tainacan-items/34088/82597/03V39_n3_2021_p170a175.pdf.

27. Guilherme RC, Canuto R, Clark SGF, Vasconcelos FN, Padilha VM, Tavares FCLP, et al. Alimentação do Trabalhador: uma avaliação em indústrias no nordeste do Brasil. Ciênc. saúde coletiva [internet]. 2020;25(10):4013-4020. https://doi.org/10.1590/1413-812320202510.29512018.

28. Brasil. Ministério da Saúde. Fascículo 1 Protocolos de uso do guia alimentar para a população brasileira na orientação alimentar: bases teóricas e metodológicas e protocolo para a população adulta [recurso eletrônico] / Ministério da Saúde, Universidade de São Paulo. – Brasília : Ministério da Saúde, 2021. 26 p.: il.. Disponível em: https://bvsms.saude.gov.br/bvs/publicacoes/protocolos_guia_alimentar_fasciculo1.pdf.

29. Instituto Brasileiro de Geografia e Estatística. Pesquisa Nacional de Saúde 2019: informações sobre domicílios, acesso e utilização dos serviços de saúde: Brasil, Grandes Regiões e Unidades da Federação. Rio de Janeiro: IBGE; 2020. Disponível em: https://biblioteca.ibge.gov.br/visualizacao/livros/liv101748.pdf.

30. Brasil. Ministério da Saúde, Secretaria de Vigilância em Saúde, Departamento de Análise em Saúde e Vigilância de Doenças Não Transmissíveis. Vigitel Brasil 2020: vigilância de fatores de risco e proteção para doenças crônicas por inquérito telefônico: estimativas sobre frequência e distribuição sociodemográfica de fatores de risco e proteção para doenças crônicas nas capitais dos 26 estados brasileiros e no Distrito Federal em 2020. Brasília: Ministério da Saúde; 2021. [Acesso em 11nov 2022]. Disponível em: https://www.gov.br/saude/pt-br/centrais-de-conteudo/publicacoes/publicacoes-svs/vigitel/relatorio-vigitel-2020-original.pdf/view#:~:text=POR%20INQU%C3%89RITO%20TELEF%C3%94NICO-,VIGITEL%20BRASIL%202020%20%2D%20VIGIL%C3%82NCIA%20DE%20FATORES%20DE%20RISCO%20E%20PROTE%C3%87%C3%83O,no%20Distrito%20Federal%20em%202020.Acesso em: 11 nov. 2022.

31. Brasil. Ministério da Saúde, Secretaria de Vigilância em Saúde, Departamento de Análise em Saúde e Vigilância de Doenças Não Transmissíveis. Plano de ações estratégicas para o enfrentamento das doenças crônicas e agravos não transmissíveis no Brasil 2021-2030. Brasília: Ministério da saúde; 2021. Disponível em: https://www.gov.br/saude/pt-br/centrais-de-conteudo/publicacoes/publicacoes-svs/doencas-cronicas-nao-transmissiveis-dcnt/09-plano-de-dant-2022_2030.pdf. Acesso em: 11 nov. 2022.

Contributors

Barbosa SS, Mattos JB,and Adriano LS: conception and design; data analysis and interpretation; review and approval of the final version.

Conflict of Interest: Authors have no conflict of interest to declare

Received: October 2, 2023
Accepted: December 12, 2023