

Information for menus planning and preparation contained in bidding documents for university restaurants of federal universities in Southern Brazil

Informações para planejamento e elaboração de cardápios, contidas em editais de licitação de restaurantes universitários em universidades federais do Sul do Brasil

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Abstract

Objective: To assess, in bidding documents (BD) of university restaurants of federal universities in southern Brazil, information for menu planning and preparation. **Methods:** Cross-sectional study with evaluation of information about menus planning and preparation as specified in the BDs of 35 university restaurants of federal universities in South Brazil in 2015. **Result:** Regarding *per capita* information and frequency, 34.3% of the BDs contained requirements for proper planning and preparation of menus. More than half of the BDs had no information about application of appropriate technical procedures for food pre-preparation and preparation (54.29%); most of the BDs did not provide information on incentives for acquisition of family farming products (85.71%); no BD required mandatory food production datasheets; more than half of them did not include a requirement for special dietary needs (57.14%); less than half of the documents determined that the menus planning should consider the local culture and dietary habits of users (45.71%). There are significant differences among the states of southern Brazil for the scores obtained from information on menus planning and preparation specified in the BDs of public higher education institutions. **Conclusion:** It was found that the bidding documents for contracting companies that provide and / or produce meals to students of public higher education institutions need to be better outlined, clearly addressing basic items for proper menus planning and preparation.

Keywords: Food Services. Restaurants. Request for Bids.

Resumo

Objetivo: Avaliar as informações para planejamento e elaboração de cardápios contidas nos editais de licitação dos restaurantes universitários de universidades federais do Sul do Brasil. **Métodos:** Estudo transversal com avaliação das informações contidas em editais de licitação, sobre o planejamento e a elaboração de cardápios de 35 Restaurantes Universitários das universidades federais do Sul do país, vigentes em 2015. **Resultados:** Em relação às informações *per capita* e de frequência, 34,3% dos editais contiveram informações para a realização de um planejamento adequado no que se refere à elaboração de cardápios; mais da metade dos editais não apresentou informações sobre aplicação de procedimentos técnicos apropriados de pré-preparo e preparo dos alimentos (54,29%); a maioria dos editais não manifestou informações de incentivo à aquisição de produtos da Agricultura Familiar (85,71%); nenhum edital exigiu obrigatoriedade da presença de Ficha Técnica de Preparo; mais da metade dos editais não contemplou cardápios para necessidades alimentares especiais (57,14%); menos da metade dos editais determinou que o planejamento de cardápios respeitasse a cultura e o hábito alimentar local dos usuários (45,71%). Foram verificadas diferenças significativas entre os estados da Região Sul do Brasil quanto às pontuações obtidas por meio do levantamento das informações sobre planejamento e elaboração de cardápios contidas nos editais de licitação das instituições de ensino superior. **Conclusão:** Verificou-se que os editais de licitação para contratação de empresas que forneçam e/ou produzam refeições aos acadêmicos, necessitam de melhor elaboração, abordando claramente itens básicos para um planejamento adequado dos cardápios.

Palavras-chave: Serviço de Alimentação. Restaurantes. Proposta de Concorrência.

Introduction

Establishments that provide meals are known as Food Production Units (FPU), or simply foodservices. They can be private businesses, such as cafeterias and restaurants, or collective, public spaces, called in Brazil *Unidade de Alimentação e Nutrição (UAN)* (Food and Nutrition Unit – FNU), ensuring foods supply and, successively, Food and Nutrition Safety. The foodservice that provides meals for collectivities involves large segments, and school feeding is one of them, which may be located in institutions like day care centers, schools and universities.¹

Higher Education Institutions (HEI) provide inexpensive meals for the college population, available in public spaces called University Restaurants (UR), places that offer meals and allow sociability among students, besides allowing the integration of the federal university to the *Programa Nacional de Assistência Estudantil (PNAES)* (National Program for Students Assistance). This program supports actions aimed to stimulate the permanence of young people in public Higher Education Institutions. Regarding food and nutrition, the program aims to provide meals to students in appropriate quantities and quality, as well as dishes sensorially acceptable by students, having as one main goal the provision of nutritionally balanced food to help improve the students' academic performance and reduce college dropout rates.^{2,3}

Managers that control food services at URs must always achieve the users' satisfaction by planning and providing nutritious and healthy meals at low prices, which should also be in balance with the financial capacity of the catering company.⁴⁻⁶

For this reason, in any FPU, especially educational institutions, the menu is an instrument of key importance for the good functioning and performance of the foodservice. Menus display a list of dishes that make up the prepared meal; in addition, they are the starting point for the production process, providing helpful information for the procurement of the ingredients used, leading to its preparation or respective preparation and offering to the user nutritionally appropriate and tasty products with positive acceptance.⁷⁻¹⁰ In addition to the menus, a foodservice must maintain food production records (FPR) or datasheets for meals production, which are management tools that offer operational support to the company. The food production records must contain cooking methods, *per capita* information, incidence, among other important items to support production and management of a foodservice.¹¹

Other key aspect is related to the responsible individuals for meals preparation who must be careful in following the appropriate procedures for meals preparation and perform the Best Practices for Foods Handling and Production of Foods (BPP).¹²⁻¹⁴

At public HEIs, meals are prepared and served by private companies, and because it is a service provided to governmental institutions, it must be accomplished through a bidding process. The obligation to request for bids is described in the Brazilian Federal Constitution, Article 37, paragraph XXI, as follows:

XXI – with the exception of the cases specified in law, public works, services, purchases, and disposals shall be contracted by public bidding proceedings that ensure equal conditions to all bidders, with clauses that establish payment obligations, maintaining the effective conditions of the bid, as the law provides, which shall only allow the requirements of technical and economic qualifications indispensable to guarantee the fulfilling of the obligations.¹⁵

Due to the lack of studies in this area, the present work is justified by the intention to analyze, in official written documents (invitation/requests for bids) issued by URs at federal universities in southern Brazil, all information related to menus preparation and verify whether they can meet and provide useful information for execution of the same.

Methods

It is a cross-sectional study carried out with the bidding documents (BD) of all federal universities located in the southern states of Brazil (Paraná, Santa Catarina and Rio Grande do Sul) and their diverse campuses and/or units that had bidding documents for URs effective in the year 2015.

The universities and number of restaurants that participated in the study, located in the state of Paraná, were: Universidade Federal do Paraná (UFPR) with five URs in operation at different campuses/units; Universidade Federal da Fronteira Sul (UFFS), with one UR, and Universidade Tecnológica Federal do Paraná (UTFPR), which has 11 URs.

In Santa Catarina, the Universidade Federal da Fronteira Sul (UFFS), with one UR, and the Universidade Federal de Santa Catarina (UFSC), with four URs, were also included in the study.

Finally, in the state of Rio Grande do Sul, the BDs of the following universities were studied: Universidade Federal do Rio Grande (FURG), with one UR; Universidade Federal da Fronteira Sul (UFFS), with two URs; Universidade Federal do Rio Grande do Sul (UFRGS), with one UR; Universidade Federal de Santa Maria (UFSM), with two URs, and Universidade Federal do Pampa (UNIPAMPA), with seven URs.

Data were collected from 35 BDs and was carried out from December 2015 to February 2016. These documents were obtained on the websites of the institutions and/or by direct request to the purchase sector and proposals submitted to the universities.

In the present work, information on essential items that foodservices should observe to plan and prepare menus properly were examined, which are fundamental for the Public Administration to award efficient administrative contracts that do not put an unreasonable burden on one of the parties, respecting the fundamental principles for planning and developing a menu that can satisfactorily meet the users' expectations, offering nutritionally balanced meals and with quality.

To better understand the real situation of the BDs studied, a questionnaire was used, prepared by the researchers, with 25 closed-ended questions. These questions verify key items for the good planning and preparation of menus such as: frequency and *per capita* information (portion, serving size, weight, etc.) of main dish, garnish and side dishes in the form of salads and starch dishes

(rice and beans), desserts, beverages; application of best production practices (BPP); application of appropriate technical procedures for foods pre-preparation and preparation; purchase of produces from family farmers; availability and mandatory food production datasheets; distribution of micronutrients and dietary fibers in the menus; menus or dishes for special dietary needs; control of food leftovers and wastes; users' satisfaction evaluation; and menus that respect the local culture and habits.

All questions were arranged in electronic spreadsheets for analysis of frequencies and percentages.

In addition to the application of descriptive statistics relating to frequency and percentages, the first 22 questions (Table 1) were scored by the researchers according to the classification by adding 1 point when information was available in the BD and 0 point when it was not available or clearly described. After this scoring, the public HEIs were ranked in decreasing order, which were identified in this study by letters and numbers, i.e., from A to li. Afterwards, nonparametric testing (Kruskal-Wallis and Mann-Whitney) was conducted for analysis of variation of the scores obtained by the HEIs. The software R Studio,¹⁶ version 0.99.473, was used to verify differences between the states relating to the information contained in the BDs, of 35 public HEIs, at 5% significance level.

Regarding questions 23 and 24 (Table 2), which were not scored, the researchers evaluated by answering “yes” or “no”. The last item assessed in this research, question no. 25, was about the reference used in the BD to determine macro- and micro-nutrients in the menu, and this was answered by the researchers in a descriptive manner, based on the analyses of the BDs. As mentioned earlier, these last questions were demonstrated through frequencies and percentages.

Results

Based on the evaluation of the information for proper planning and preparation of menus, it was found that none of the 35 BDs examined had 100% of data considered important for the good performance and functioning of the URs operations.

Regarding the supply requirement to indicate the frequency of main dish offered, it was observed that most of the BDs contained this information. Likewise, the frequency of preparation of the side dish was also described in the majority of the bids. However, information related to the frequency of desserts and beverages was less observed in the BDs assessed (Table 1).

Table 1. Information for appropriate menu planning and preparation. Realeza-PR, 2016.

Questions	Yes (n)	Yes (%)	No (n)	No (%)	Not clearly stated (n)	Not clearly stated (%)	Not offered by the UR (n)	Not offered by the UR (%)
1. Does this BD require frequency of main dishes offered?	24	68.57	2	5.71	9	25.71	0	0.00
2. Does this BD contain <i>per capita</i> information on main dish?	25	71.43	5	14.29	5	14.29	0	0.00
3. Does this BD specify frequency of side dishes?	20	57.14	6	17.14	9	25.71	0	0.00
4. Does this BD require <i>per capita</i> information on side dishes?	12	34.29	22	62.86	1	2.86	0	0.00
5. Does this BD specify the frequency of salads?	20	57.14	6	17.14	9	25.71	0	0.00
6. Does this BD require <i>per capita</i> information on salads?	7	20.0	24	68.57	4	11.43	0	0.00
7. Does this BD specify the frequency of starch side dishes (rice and bean)?	23	65.71	3	8.57	9	25.71	0	0.00

to be continued

Questions	Yes (n)	Yes (%)	No (n)	No (%)	Not clearly stated (n)	Not clearly stated (%)	Not offered by the UR (n)	Not offered by the UR (%)
8. Does this BD contain <i>per capita</i> information on starch side dish (rice and bean)?	12	34.29	22	62.86	1	2.86	0	0.00
9. Does this BD specify the frequency of desserts?	17	48.57	6	17.14	12	34.29	0	0.00
10. Does this BD contain <i>per capita</i> information on desserts?	2	5.71	21	60.0	12	34.29	0	0.00
11. Does this BD specify the frequency of beverages offered?	10	28.57	2	5.71	22	62.86	1	2.86
12. Does this BD contain <i>per capita</i> information on beverages offered?	15	42.86	3	8.57	16	45.71	1	2.86
13. Does this BD contain information on the application of best practices of production and handling (BPP)?	26	74.29	7	20.00	2	5.71	0	0.00

to be continued

Questions	Yes (n)	Yes (%)	No (n)	No (%)	Not clearly stated (n)	Not clearly stated (%)	Not offered by the UR (n)	Not offered by the UR (%)
14. Does this BD contain information on the application of technical procedures for proper pre-preparation and preparation of foods?	16	45.71	19	54.29	0	0.00	0	0.00
15. Does this BD require information about the purchase of produces from family farmers?	4	11.43	30	85.71	1	2.86	0	0.00
16. Does this BD specify the obligation to maintain Foods Production Records (FPR)?	0	0.00	35	100.0	0	0.00	0	0.00
17. Does this BD provide for proper distribution of micro- nutrients in the menus?	1	2.86	26	74.29	8	22.86	0	0.00
18. Does this BD provide for proper distribution of dietary fibers in the menus?	9	25.7	24	68.57	2	5.71	0	0.00

to be continued

Questions	Yes (n)	Yes (%)	No (n)	No (%)	Not clearly stated (n)	Not clearly stated (%)	Not offered by the UR (n)	Not offered by the UR (%)
19. Does this BD provide for menus/ dishes for special dietary needs (e.g. celiac, vegetarian)	6	17.14	20	57.14	9	25.71	0	0.00
20. Does this BD contain information on the control of leftovers/ wastes?	4	11.43	23	65.71	8	22.86	0	0.00
21. Does this BD specify the obligation to conduct users' satisfaction evaluations?	23	65.71	12	34.29	0	0.00	0	0.00
22. Does this BD specify that the menus are planned considering the local habits and culture?	16	45.71	19	54.29	0	0.00	0	0.00

*Real values for the availability of information, with exception of one BD which does not offer beverage. Frequency YES, 29.41%; *Per capita* YES, 44.11%.

Regarding the *per capita* information related to the main dish, it was found that most of the BDs specified this data. The second most frequent preparation specified in the supply requirements contained in the BD was beverage. Regarding *per capita* information for garnish and side dishes, less than half of the BDs presented this data. It was found that the dishes with less *per capita* specifications were salads and desserts (Table 1).

It was also observed that the majority of the BDs contained information about the application of BPP of foods. With respect to the application of proper technical procedures for foods pre-preparation and preparation, more than half of the BDs did not outline this requirement. Regarding incentives for the URs to purchase produces from family farmers, most of the BDs did not include this requirement, and 100% of them did not require mandatory FPR. It was also found that more than half of the BDs did not require distinct menus for users with special dietary needs. It was also found that not all BDs specified control of leftovers. With respect to user satisfaction evaluation and menus planning that consider local culture and food habits, this information was not available in all BDs assessed (Table 1).

Regarding the references used to determine macro- and micro-nutrients in the menus, less than half of the BDs did not contain information on this aspect. Of the BDs that outlined this requirement, most of them used as reference dietary information for healthy adults and information contained in the *Programa de Alimentação do Trabalhador (PAT)* (Workers' Food Program); only one BD specified recommended percentages as reference for a balanced diet. However, in general, these data were not required on the BD (Table 1).

Based on analysis of items 23 and 24, the researchers came to the conclusion that it would not be possible to develop a properly nutritional plan for this population, and with the *per capita* information and frequency of the dishes in the BDs, it was found that most of the URs would not be able to develop an adequate menu planning (Table 2).

Table 2. Information on macro- and micro-nutrients, *per capita* and frequency of foods/dishes for an appropriate menu planning and preparation. Realeza-PR, 2016

Questions	Yes (n)	Yes (%)	No (n)	No (%)
1. Based on the information contained in this BD with respect to micro- and macro-nutrients, is it possible to develop an adequate nutritional plan for this population?	2	5.7	33	94.3
2. Based on <i>per capita</i> and frequency information specified in this BD, is it possible to plan adequate menus for this population?	12	34.3	23	65.7

The public HEIs were also scored and ranked by state. The highest scores were for the five BDs of the state of Paraná, which presumably presented more information for the URs to properly plan and prepare their menus compared to the other states examined.

Based on the total sum of the scores of the 22 first questions, it was verified the likelihood of occurring significant differences between the scores obtained by the HEIs examined in the southern states of Brazil, i.e., Paraná, Santa Catarina and Rio Grande do Sul. As shown in Figure 1, the BDs issued by the public HEIs located in Paraná reached the highest scores (13 points) and median of 12 points, compared to the Rio Grande do Sul state, with 12 points and median of 10 points, and the Santa Catarina state, with a lower score of 5 points and median of 3 points. Thus, based on the statistical analysis between the states, it was found that for the states of Paraná and Rio Grande do Sul there are no significant differences between the scores obtained from the information contained in the BDs announced by the public HEIs (Pvalue > 0.05); both states showed significant differences from the state of Santa Catarina (Pvalue < 0.05).

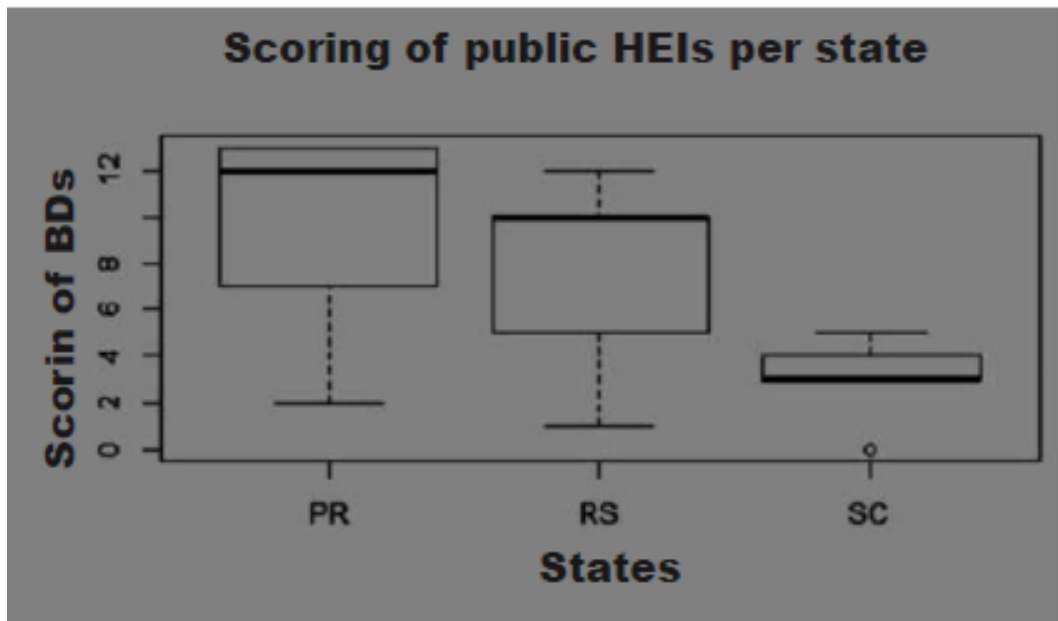


Figure 1. Scores obtained after analysis of the bidding documents (BDs) of each public HEI evaluated, according to the state of origin. Realeza-PR, 2016.

Kruskal-Wallis test for analysis of three states (Pvalue<0.05). Mann-Whitney' statistical test between the states: Paraná (PR) *versus* Rio Grande do Sul (RS) (Pvalue > 0.05); Paraná *versus* Santa Catarina (SC) (Pvalue<0.05) and RS *versus* SC (Pvalue<0.05).

Discussion

The results found in the present study showed important failures or gaps in the documents that compose the requests for bids relating to the implementation and/or functioning of URs located in South Brazil, which may directly interfere with the restaurant operations and with the support to meals production and supply to the college community.

According to the data relating to the specification of frequency and *per capita* information of the basic dishes of a simple menu, comprised of main dish, garnish, salads, side dish (rice and bean), dessert and beverages, the BDs under analysis showed a low percentage of these values, if one takes into account that such data should be clearly specified to ensure a good plan of the meals offered. The information on frequency and *per capita* quantities allows to make calculations in the preparation of menus and the respective evaluation of the nutritional balance between meals, besides supporting the procurement process of the necessary products, serving as a parameter in the control of food wastes.⁸⁻¹¹ As a result, the likelihood of occurring serious problems in meals production and serving can be analyzed and determined beforehand, such problems being a consequence of high percentages that were not clearly specified or not included in the BDs.

It was found that not all BDs drafted by the public URs included information on the use of BPP, and this would probably generate risks related to foods production and quality and, therefore, cause damage to the clients' health. The BPPs are incorporated into the operations of all establishments that produce and/or supply meals in order to ensure organization and hygiene in production and supply of safe products to the population.^{12,17,18}

Regarding the question about the application of appropriate technical procedures in foods pre-preparation and preparation, there was a low rate of BDs that specified this requirement. This can generate failure or neglect in meals production, given that the literature shows that the pre-preparation and preparation stages are key factors to reduce wastes, to guide and supervise the production process and in the control of the process foods cleaning, peeling and cutting.^{19,20}

It was possible to find a very low rate of BDs mentioning incentives for the purchase of produces from family farmers. However, it should be noted that only in January 1st, 2016, the Decree no. 8473 of June 22, 2015²¹ was in force, which sets 30% as the minimum purchase of foodstuffs from local family farmers and their organizations, rural family entrepreneurs and other beneficiaries that fall under Law no. 11.326, of July 24, 2006,²² by bodies and entities from direct Federal Public Administration, autarchies and foundations.

About the requirement for foods production records (FPR), it was observed that no BD mentioned this aspect. The importance of FPR is considered a management tool for operational support, allowing that cost estimates, preparation sequencing, and calculation of the dish

nutritional value can be defined, as well as the ingredients and cooking methods to be used as well as the foods correction factor, production cost, calories per portion/serving, and *per capita* and nutritional information.^{23,24}

Other issue that is worth mentioning is the small percentage of BDs that requested different menus for users with special dietary needs. This aspect is of concern if one takes into account the poll conducted by the *Instituto Brasileiro de Opinião Pública e Estatística* (Brazilian Institute of Public Opinion and Statistics) in 2012, which highlights that 8% of Brazilians do not consume any kind of meat.²⁴ Furthermore, 2 to 4% of the adults in the world have food allergies and more than 45% of the respondents suffer from symptoms of some form of foods intolerance.²⁵

Regarding the aspect of food leftovers control, it could be seen that more than half of the BDs did not mention this aspect. According to the *Resolução da Diretoria Colegiada* (Collegiate Board Regulation), RDC no. 216 of September 15, 2004, the reuse of foods leftovers and wastes is only allowed if the cooling and heating chain, and the deadline for consumption of the prepared and preserved food are adequate.¹⁷

It this work, it was found little information in the BDs regarding the mandatory use of customer satisfaction evaluation at the URs, which is aimed to assess the foodservice performance from the perspective of the users and, therefore, assess needs for improvements.²⁶

It was also found a very small number of BDs that specifically require the preparation of menus that respect the local culture and food habits, given the great diversity of culinary cultures existing in this country. This aims to stimulate and respect nutritional references, eating habits, culture and food traditions, thus contributing to value local specificities. All this is designed to enhance social identities, always consolidating the principle of respect to local cultural diversity and food habits. Despite the fact that when students enter university, they will change their eating habits, it is important to stimulate and value the culture and dietary habits of the population.²⁷

Regarding the parameters used for determination of macro- and micro-nutrients in the nutritional composition of planned and prepared menus for the users of the URs at the HEIs located in the southern region of Brazil, it was found that no information is specifically designed for the college population, considering that the URs must achieve the nutritional goals of collective meals, i.e., they must comply with the daily nutritional recommendations for UR users in Brazil.^{28,29}

With respect to information on macro- and micro-nutrients distribution, it was observed the impossibility of developing menus nutritionally suitable to the users of URs. The literature shows that when planning a meal, it is vital to determine the minimum nutritional information on nutrients in order to provide a balanced menu.³⁰

Regarding the ranking of the BDs announced by public HEIs, after the scores attributed to the universities, it was found that the greatest number of information/requirements was found in the BDs of the universities located in the state Paraná, followed by Rio Grande do Sul. It is confirmed that in units that serve meals, planning the operational steps is of vital importance to achieve the quality standard of production processes, following the specific criteria and characteristics of the foodservice, especially regarding menus planning and preparation.²³

In this study, it was not possible to know which professionals are involved in drafting the documents that compose the requests for bids. Therefore, more studies aiming to correlate the variables relating to the team of civil servants involved in the preparation of BDs *versus* the quality of information drafted in the BDs are important to clarify this issue. We assume that in the multi-disciplinary team that prepare these official documents there must be professionals from the area of Nutrition, which would certainly justify more well-prepared BDs regarding menu planning and preparation. In addition, there is a hypothesis that the public HEIs use, as reference for the preparation of their BDs, models used by the HEIs of their respective state only, which can explain the result in the ranking.

Conclusion

It is clear the need to set standard criteria for preparation of BDs by URs in order to minimize failures/errors that presumably appear in these documents, which directly or indirectly affect the service and production of meals for the college community. After this study, the researchers suggest that the BDs contain at least the following requirements for the URs to properly plan and prepare menus: frequency and *per capita* information of all foods served; BPP to be followed by the foodservice regarding foods preparation and control of leftovers; guidelines on methods for foods pre-preparation and preparation; information about purchase of produces from family farmers; suggest that the technical staff of the URs prepare and maintain food production records or datasheets; include in the specifications adequate micro- and macro-nutrients and dietary fibers to suit the needs of this population; suggestions of menus for people with special dietary needs and menus that respect local culture and eating habits; require regular evaluation of user satisfaction.

It is concluded that the errors and failures in the planning and preparation of menus found in these documents are due to the lack of knowledge by those who write the BDs. For this reason, it is vitally important to involve the nutritionist and the individual responsible for the operations of the foodservice in the preparation of the BDs of URs, thus ensuring that key issues to be assessed for good menus planning and preparation are not lacking in these documents, in order to assure a good execution of the services and the provision of adequate meals, regarding hygienic-sanitary, sensory and nutritional aspects.

It was then found that not all BDs were effective in fulfilling the requirement to offer quality meals to the students.

Collaborators

Cavaler SC contributed to the manuscript drafting; Heilmann MA, Santos AP contributed to data collection and the project development; Ferreira HC participated in the statistical analysis and data interpretation, and Fatel ECS participated in the conception, design and critical review of the manuscript.

Conflicts of interest: The authors declare that there are no conflicts of interest whatsoever.

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Received: January 08, 2018

Reviewed: July 16, 2018

Accepted: July 26, 2018

