DEMETRA
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Identification of regional foods and qualitative assessment of the menu preparations at the university restaurant of the Federal University of Rio de Janeiro

Identificação de alimentos regionais e avaliação qualitativa das preparações do cardápio do restaurante universitário da Universidade Federal do Rio de Janeiro

Abstract

Introduction: University restaurants contribute to the food and nutritional security of students, allowing access to adequate, healthy and unexpensive diets. *Objective*: To assess qualitatively the menus, as well as the use of regional foods and diversity of fruits and vegetables offered. *Method*: The method "*Avaliação Qualitativa das Preparações do Cardápio* (Qualitative Assessment of Menu Preparations) and the document "*Alimentos Regionais Brasileiro*s" (Brazilian Regional Foods) were used to assess the menus offered for lunch during November, 2019 at the Central Restaurant of the Federal University of Rio de Janeiro. *Results*: There was low frequency or absence of negative aspects, such as fried meat, fried food accompanied by sweet food, pickled salad, repeated cooking techniques, repeated dishes, fried foods, fatty meat and sweets for dessert, except for repeated colors and foods rich in sulfur. As positive aspects, there was high frequency of fruits and leafy vegetables, despite their low diversity, and predominance of foods from the Northeast, Southeast and South regions. *Conclusion*: Strategies to reduce color monotony and foods rich in sulfur should be adopted when planning a menu. In addition, it is important to consider a frequent presence of regional foods and a larger diversity and variety of fruits and vegetables.

Keywords: Collective food. Healthy eating. Biodiversity. Foods. Food Security.

Resumo

Introdução: Os restaurantes universitários contribuem para a segurança alimentar e nutricional dos estudantes, permitindo o acesso à alimentação adequada, saudável e de baixo custo. *Objetivo*: Avaliar qualitativamente os cardápios, bem como a utilização de alimentos regionais e a diversidade de frutas e hortaliças utilizadas. *Método*: Foram utilizados o método "Avaliação Qualitativa das Preparações do Cardápio" e o

documento "Alimentos Regionais Brasileiro" para avaliar os cardápios referentes ao almoço do mês de novembro de 2019 do Restaurante Universitário Central da Universidade Federal do Rio de Janeiro. *Resultados*: Observaram-se baixa frequência ou ausência dos aspectos negativos, como opção de carne frita, fritura acompanhada de doce, salada de conserva, repetições de técnicas de preparo, repetições de preparações, frituras, carne gordurosa e doce de sobremesa, exceto a repetição de cores e alimentos ricos em enxofre, e elevada oferta de frutas e folhosos, como aspectos positivos, mesmo que apresentem baixa diversidade no cardápio, predominando os alimentos das regiões Nordeste, Sudeste e Sul. *Conclusão*: Estratégias para diminuir as ocorrências de repetições de cores e de alimentos ricos em enxofre nas preparações do cardápio devem ser adotadas. Além disso, torna-se essencial a presença frequente dos alimentos regionais e maior diversidade e variedade de frutas e hortaliças.

Palavras-chave: Alimentação coletiva. Alimentação saudável. Biodiversidade. Alimentos. Segurança Alimentar.

INTRODUCTION

Food and nutrition units (FNU) are recognized as food management units where all necessary technical, managerial an administrative activities are carried out, from meals production to distribution to healthy or sick people, having the purpose of contributing to maintain, improve or recover the health of the clients.[1] These foodservices are characterized by a sequence of operations designed to supply meals in accordance with dietary, hygienic and sanitary standards in order to meet the nutritional needs of a given community.[2]

Among the diverse types of existing FNUs, there are the institutional ones, which are units present in higher education institutions, known as University Restaurants (UR).[1] The first UR dates back to 1950, established in the former University of Brazil, located in the state of Rio de Janeiro – Brazil, currently named Federal University of de Janeiro – UFRJ.[2,3] After years of interruption of the food services since the 1990s, in 2009 the new central UR of UFRJ (RUC/UFRJ) was opened and received the name of "Edson Luís de Lima Souto", in memory of the high school student that was killed in 1968 by the Military Police during the Military Dictatorship in Brazil, at the former Students' Central Restaurant, known as *Calabouço* (Dungeon), located in downtown Rio de Janeiro, which served low-priced meals to secondary and higher school students.[4]

The URs, when implemented in public universities, began to play a key role in the eating routines of the users of these restaurants, especially students, because they offered healthy, inexpensive meals during their stay at the university, given that many of these students could not afford having meals in other establishments during college or because they lived far from the university campus.[5]

In addition to financial constraints, the students' dietary habits are also an aspect of concern, because as soon as they enter the university, they usually choose fast and practical foods, such as fast foods and ultra-processed foods, either because of changes in their routines and place of residence or the little time available due to the huge demand of academic activities.[6] So, the Edson Luís de Lima Souto RUC has the objective of providing affordable and qualitatively balanced meals, contributing to keep the students at the university facilities and allowing time to their full dedication to studies.

According to the Dietary Guidelines for the Brazilian Population, fresh or minimally processed foods, provided in wide variety and mostly of plant origin, are the basis for a nutritionally adequate, tasty, diversified and culturally appropriate diet, contributing to build a socially and environmentally sustainable food system.[7] In addition, eating involves aspects that go beyond the intake of foods and nutrients, that is, the dishes resulting from the combination and preparation of foods contribute to build identity and the users' physical and mental well-being.[7] So, it is essential to offer to students foods and preparations from their local regions, which could be one of the strategies to make the university experience more pleasant, especially when the concern with their well-being in that space is of paramount importance.

To ensure the use of regional foods in the meals served to students, nutritionists need to use the menu as a planning tool. Besides planning it, it is essential to assess it qualitatively so that all preparations and combinations will provide a wide variety of nutrients, bioactive compounds, aromas and flavors, contributing to promote the health and satisfaction of those who enjoy them. [8,9]

Given the above, the present study aimed to assess qualitatively the menu of the Edson Luís de Lima Souto central university restaurant of the Federal University of Rio de Janeiro (RUC/UFRJ) so that the results obtained may contribute to the planning of future menus, taking into consideration the quality of the preparations, the foods that will compose them as well as their diversity.

MATERIAL AND METHODS

Characterization of the Food and Nutrition Unit

It is a cross-sectional study which assessed the menu of the Edson Luís de Lima Souto central university restaurant located at the Federal University of Rio de Janeiro (UFRJ), Ilha do Fundão – Ilha do Governador, municipality of Rio de Janeiro (RJ), Brazil. This is a project exempt from evaluation by the CEP/CONEP system in accordance with article 1 of CNS Resolution No. 510/2016, as it is data of free access to the public.[10]

It is a large-sized unit which offers around 8,500 meals per day to the university students for lunch and dinner, and 60% of the meals are consumed at the central restaurant (RUC) and 40% transported to the satellite units of the university.[11,12]

The RUC/UFRJ uses the fixed cafeteria system, where all items of the menu are portioned by waitresses during distribution. The meals are produced by an outsourced catering company contracted through a bidding process. The menus are planned monthly by the technical nutritionist staff of the catering company and approved by the technical nutritionist staff of UFRJ, according to the structure described in Chart 1.

Chart 1. Structure of the menu offered at the "Edson Luís de Lima Souto" central university restaurant at the Federal University of Rio de Janeiro (RUC/UFRJ), Rio de Janeiro, 2019.

Entrée	Soup or Salad
Main course 01*	Omnivorous food option
Main course 02*	Vegan option
Garnish	Plain or elaborated
Side dish 01**	White rice
Side dish 02**	Brown rice
Side dish 03	Beans (various kinds)
Dessert ***	Fruit
Drink (juice)	Fruit pulp

* The student may choose one of the main courses. ****** the student may choose one of the main types of rice. ******* Dessert: sometimes sweet foods are offered but do not replace the fruit that is also offered in the same day.

Choice of menu

The menu of November 2019 was chosen for the study because it was the last one offered with all items required by contract, with no restriction to access to the restaurant during the academic period before the pandemic caused by SARS-CoV-2.

A 27-day menu of the FNU was available for the study, which enabled to examine 4 weeks, comprising 3 weeks of 7 days and 1 week of 6 days.

Qualitative Assessment of Menu Preparations

The AQPC method ("*Avaliação Qualitativa de Preparações de Cardápio*", in English, Qualitative Assessment of Menu Preparations) developed by Veiros & Proença[13] was used for the qualitative assessment of the menu components The method has the purpose of assisting nutritionists in planning and assessing FNU menus. In this process, the following criteria are considered:

- Presence of fruits for dessert;

- Presence of leafy salads;

- Repeated colors: the menu was considered monotonous when two or more preparations with the same color were offered in the same meal;

- Sulfur-rich foods;

- Fried preparations (alone and\or accompanied with sweet foods);

- Presence of fatty meats;

- Pickled salad;

- Cooking techniques used for the preparations;

- Repeated preparations in the menus, when two or more identical preparations are offered in the same meal.

Based on the results found according to the parameters mentioned above, the aspects are rated as positive or negative. The presence of leafy vegetables and fruits were considered positive aspects, while repeated colors, foods rich in sulfur, fried meat, fatty meat, fried preparation accompanied with sweet food, sweet for dessert, pickled salad, repeated cooking techniques, and fried preparations were considered negative aspects. On Chart 2 it is possible to identify the values used for rating these aspects.[14]

Chart 2. Criteria for rating positive and negative aspects in the menus offered by the Edson Luís de Lima Souto central university restaurant at the Federal University of Rio de Janeiro (RUC/UFRJ), Rio de Janeiro, 2019.

Rating	Categories (%)
Positive (+)	
Excellent	≥ 90
Good	75 to 89
Fair	50 to 74
Poor	25 to 49
Very poor	< 25
Negative (-)	
Excellent	≤ 10
Good	11 to 25
Fair	26 to 50
Poor	51 to 75
Very poor	> 75

Source: Adapted from Prado; Nicoletti; Faria (2013).

Presence of regional foods

Identification of regional foods was based on the document published by the Ministry of Health named "*Alimentos Regionais Brasileiros*" (Brazilian Regional Foods).[15] The foods were classified as fruits, vegetables, legumes, tubers, roots and cereal grains and by the five Brazilian regions of origin (North, Northeast, Mid-West, Southeast and South)..

Assessment of diversity of fruits, vegetables and legumes

This assessment was based on the frequency of occurrence of diverse species/cultures of fruits, vegetables and legumes in the assessed menu.

Data analysis

The data obtained were tabulated by Microsoft Excel® (2010), and their relative frequencies were calculated.

$$Relative\ frequency(Rf): \frac{number\ of\ the\ frequency\ of\ the\ food\ in\ the\ menu}{total\ of\ days\ in\ the\ menu}\ x\ 100$$

RESULTS

Qualitative Assessment of Menu Preparations

The AQPC method was used to assess the menu offered by the Edson Luís de Lima Souto RUC/UFRJ, comprising four weeks, of which three weeks had seven days and one week six days, totaling 27 consecutive days. Based on the application of this method, the results described on Table 1 were obtained.

Tabela 1. Criteria of the Qualitative Assessment of Menu Components offered at the Edson Luís de Lima Souto central university restaurant at the Federal University of o Rio de Janeiro, Rio de Janeiro, 2019.

	Weeks	01	02	03	04	Total (dias)	Ocorrência (%)
Days		7	7	7	6	27	
Criteria QAMC	Fried foods	0	0	0	0	0	0
	Repeated preparations	0	0	0	0	0	0
	Repeated cooking techniques	0	0	0	0	0	0
	Pickled salad	0	0	0	0	0	0
	Sweet food for dessert	1	1	1	1	4	15
	Fried food accompanied by sweet food	0	0	0	0	0	0
	Fatty meat	0	1	0	1	2	7
	Fried meat option	0	0	0	0	0	0
	Foods rich in sulfur	5	5	6	6	22	81
	Repeated colors	1	5	2	0	8	30
	Leafy salad	7	6	7	5	25	93
	Fruits for dessert	7	7	7	6	27	96

Source: Veiros, Proença (2003).

With the values of occurrences expressed in percentage (Table 3), the AQPC criteria were rated qualitatively based on its percentage of adequacy, as shown in Table 2.

Table 2. AQPC criteria rated as positive and negative to the menu offered by the Edson Luís de Lima Souto central restaurant of the Federal University of Rio de Janeiro, Rio de Janeiro, 2019.

AQPC criteria	Occurrence (%)	Rating									
		Excellent		Good		Fair		Poor		Very poor	
		(+) ≥ 90	(-) ≤ 10	(+) 75 to 89	(-) 11 to 25	(+) 50 to 74	(-) 26 to 50	(+) 25 to 49	(+) 51 to 75	(+) < 25	(-) > 75
Fried foods	0		x								
Repeated preparations	0		x								
Repeated cooking techniques	0		x								
Pickled salad	0		x								
Sweet food for dessert	15				x						
Fried food accompanied by sweet food	0		x								
Fatty meat	7		x								
Fried meat option	0		x								
Foods rich in sulfur	81										x
Repeated colors	30						x				
Leafy salad	93	x									
Fruits for dessert	100	x									

(+): positive aspect. (-): negative aspect. Source: Veiros, Proença (2003).

By observing the data obtained, the criterion "fruits for dessert" was considered "excellent", because they were served almost every day (96%; n=26), except one day (Nov 30, 2019 – Saturday), when the fruit was replaced by a sweet food, "banana pudding". "Leafy salad" was rated as "excellent" (93%; n=25), but unlike the "fruits for dessert" criterion, in two days of the menu other kinds of salad were offered, namely "bow tie pasta, corn and peas mixed with mayonnaise" and "*fusilli* with grated carrot, raisins and onion".

One of the aspects considered negative, the parameter "repeated colors", was rated as "fair", because it showed, within a period of three weeks, eight days with repeated colors (30%; n=8), which was offered during the three first weeks of the month, especially on Monday. "Foods rich in sulfur" were offered in 22 days, and this parameter was rated as "very poor" (81%; n=22), because every week there was the presence of these foods in the meals served, except five days distributed in three weeks. "Fatty meat" was considered "excellent" (7%; n=2), for having been offered below the recommended level, only in two days of two weeks, i.e., in the second week of the month, in the dish "mixed meats with oriental sauce", and in the fourth week of the month, in "feijoada". "Sweet food for dessert" was also satisfactory since it was offered only once in the week, and was rated as "good" (15%; n=4).

The criteria "fried meats", "fried food accompanied with sweet food", "pickled salad", "repeated cooking techniques", "repeated dishes" and "fried foods" were rated as "excellent" since they had no occurrence (0%) during the month assessed.

Presence of regional foods

It was found that the most predominant regional foods were from the Northeast, Southeast and South regions, while foods from the other regions (North and Mid-West) were not present in the menu of Nov. 2019 (Table 3).

Table 3. Regional foods identified in the menu offered at the Edson Luís de Lima Souto central restaurant of the Federal University of Rio de Janeiro, Rio de Janeiro, 2019.

Group: Fruits				Group: Vegetables			
Region: Northeast		Region: Southeast		Region: Northeast		Region: Southeast	
Food	Occurrence % (n)*	Food	Occurrence % (n)*	Food	Occurrence % (n)*	Food	Occurrence % (n)*
Papaya	7 (n=2)	Orange	22 (n=6)	Pumpkin	11 (n=3)	Green bean	11 (n=3)
Cooking banana	4 (n=1)	Mango	4 (n=1)	Maxixe	7 (n=2)	Spinach	7 (n=2)
Cashew	4 (n=1)					Okra	7 (n=2)
Region: South				Region: South			
Food	Occurrence % (n)*			Food	Occurrence % (n)*		
Apple	19 (n=5)			Beet	15 (n=4)		
				Tomato	15 (n=4)		
				Cabbage	7 (n=4)		

Group: Legumes				Group: Tubers, Roots and Cereal grains			
Region: Northeast		Region: Southeast		Region: Northeast		Region: South	
Food		Food	Occurrence % (n)*	Food	Occurrence % (n)*	Food	Occurrence % (n)*
String bean	7 (n=2)	Chickpea	11 (n=3)	Sesame	7 (n=2)	Sweet potato	4 (n=1)
		White bean	4 (n=1)				
Region: South							
Food	Occurrence % (n)*						
Lentil	15 (n=4)						

(*) Number of offers. Fruits, vegetables, legumes, tubers, roots and cereals from the North and Mid-West regions were not observed.

In the fruit group, from the Northeast region we found papaya (7%; n=2), cooking banana (4%; n=1) and cashew (4%; n=1). From Southeast, there was orange (22%; n=6), the most common fruit present in the menu, and mango (4%; n=1). From South, only apple was present (19%; n=5), this being the second most common fruit found in the menu. All fruits were offered *in natura* for dessert and as part of a preparation.

Vegetables from the Northeast region included pumpkin (11%; n=3) and *maxixe* (gherkin) (7%; n=2). Representing the Southeast, we identified green beans (11%; n=3) and spinach (7%; n=2). From the South region, we found tomato (15%; n=4), which was the most common vegetable offered in the restaurant, as well as beet (14%; n=4) and cabbage (7%; n=2). These foods were used both in salads, omnivorous and vegan dishes, an as side dish or garnish.

Differently from fruits and vegetables, the legume group did not stand out as much, with emphasis only for string beans, (7%; n=2), from the Northeast region, chickpea (11%; n=3) and white bean (4%; n=1), from Southeast, and lentils (3%; n=1), from South. These foods were offered as salads, in omnivorous and vegan dishes, and as side dish or garnish. Among these foods, chickpea was the one most used in the preparations offered.

In the same way that the legume group had a low offer of regional foods in the menu, the group of tuber, roots and cereal grains was also marked by this characteristic, having only the presence of sesame (7%; n=2) and yam (4%; n=1), from the Northeast region, and sweet potato (3%; n=1), from South. All these foods were used in salads, vegan main course and side dish or garnish. Sesame was the most common out of the three foods.

Diversity of fruits, vegetables and legumes in the menu

After examining and identifying the occurrence of different species of fruits, vegetables and legumes in the restaurant menu, the diversity of foods in these groups was also determined, as described in Tables 4, 5 and 6, respectively. It is worth noting that the daily presence of these foods does not necessarily means a diversified offer of these foods during the period studied, as observed for the fruit group, which in 27 days of the menu, only 11 species were used, with emphasis on repeated use of these foods. The menu included fresh fruits for dessert, especially apple, the most common one, which was offered in five days of the monthly menu, followed by banana, pear, papaya, plum, cashew, mango, melon, tangerine and ruby grape.

Table 4. Number of occurrences of fruits in the menu offered at RUC/UFRJ, Rio de Janeiro, 2019.

Fruits		Occurrence % (n)*
1	Apple	19 (n=5)
2	Banana	15 (n=4)
3	Orange	15 (n=4)
4	Pear	11 (n=3)
5	Papaya	7 (n=2)
6	Plum	4 (n=1)
7	Cashew	4 (n=1)
8	Mango	4 (n=1)
9	Melon	4 (n=1)
10	Tangerine	4 (n=1)
11	Ruby grape	4 (n=1)

(*) Number of offers.

Table 5. Number of occurrences of vegetables in the menu offered at RUC/UFRJ, Rio de Janeiro, 2019

	Vegetables	Occurrence % (n)		Vegetables	Occurrence % (n)
1	Eggplant	30 (n=8)	12	Potato	11 (n=3)
2	Beet	26 (n=7)	13	Broccoli	7 (n=2)
3	Carrot	26 (n=7)	14	Spinach	7 (n=2)
4	Chicory	26 (n=7)	15	Maxixe	7 (n=2)
5	Kale	22 (n=6)	16	Okra	7 (n=2)
6	Butterhead lettuce	19 (n=5)	17	Chayote	4 (n=1)
7	Pumpkin	19 (n=5)	18	Yam	4 (n=1)
8	Zucchini	19 (n=5)	19	Turnip	4 (n=1)
9	Batavia lettuce	15 (n=4)	21	Swiss chard	4 (n=1)
10	Cucumber	15 (n=4)	22	Purple lettuce	4 (n=1)
11	Crisphead lettuce	11 (n=3)	23	Sweet potato	4 (n=1)

(*) Number of offers.

Table 6. Number of occurrences of legumes in the menu offered at RUC/UFRJ, Rio de Janeiro, 2019.

	Legumes	Occurrence % (n)
1	Black bean	37 (n=18)
2	Soybean	30 (n=8)
3	Carioca bean	26 (n=7)
4	Cowpea	7 (n=2)
5	White bean	4 (n=1)
6	Pea	22 (n=6)
7	Chickpea	15 (n=4)
8	Lentil	7 (n=2)

(*) Number of offers.

Regarding vegetables, 25 species and/or vegetable varieties were used as components of salads, omnivorous and vegan main courses and side dishes (Table 7). In most cases, more than one vegetable was available in the same dish. It could be seen that in a 27-day menu, most of the vegetables were used repeatedly, on a weekly basis, such as eggplant, beet and carrot, which indicates poor diversity of vegetables and absence of nonconventional ones.

The legume group was the least found in the menu, with only eight species present, black beans (37%; n=18) being the most frequent, followed by soybean, carioca bean, cowpea, white bean, chickpea and lentil, as shown in Table 8. However, despite its repeated use, black bean is a staple food of Brazilians, so its frequent offer is indispensable. It is worth noting, as a criticism, the large use of soybean in the RUC/UFRJ, considering that it is an emblematic food in agribusiness, which degrades Brazil's biodiversity due to an abusive use of glyphosate, genetically modified seeds, being in the opposite direction of what is considered healthy, sustainable food.

DISCUSSION

By applying the AQPC method on the menu of Edson Luís de Lima Souto RUC/UFRJ, we examined the nutritional quality of the meals offered to the diners. Among the parameters used to perform such methodology, the frequent presence of fruits for dessert and leafy greens in salads enabled a higher intake of vitamins, minerals, fibers and bioactive compounds. Studies have already reported that the regular consumption of these foods prevent the development of noncommunicable chronic diseases (NCD) due to their antioxidant, anticancer and anti-inflammatory action.[6,7,16,17]

In the study carried out by Benvindo, Pinto & Bandon,[6] which used the AQPC method, they observed that the menus of institutional FNUs established in federal universities in Brazil, the offer of fruits for dessert was noticeable in the Mid-West region, in 100% of the days. But when comparing with the menus of universities in the in the Southeast region (96%), in the FNU of the present study, which is also located in the same region, the frequency of fruits was lower (average of 77.78%), rated as "good" (between 75 and 89%).[14] Regarding leafy greens, in this same study, the menus of institutions in the Mid-West region also indicated a higher offer of these vegetables (100%) in the period of study, when compared with other regions. Meanwhile, the Southeast region, with an average of 87.88%, exhibited results close to the ones found in the present study (93%), but being rated as "good" (between 75 and 89%).[14]

With respect to the negative parameters considered, the study found for "repeated colors", a lower value (30%) than that found by Souza et al.,[18] with occurrence of 45%, rated as "fair" for having achieved a value between 26 and 50%.[14] When the value found for this parameter is close to zero (0%), the greater is the offer of preparations with different foods and colors. Meal color variety is related to increased nutrients and non-nutrients intake.[7,13]

When the presence of foods rich in sulfur is observed in the menu and rated as "poor", that is, with a value higher than 75%, it indicates that the offer of these foods to diners is excessive and may cause gastric discomfort and flatulence.[13] Likewise, the work of Souza et al.[18] also found an excessive offer of sulfured foods, in 85% of the days of the menu, being also rated as "very poor".[14] When planning menus, it is important to pay attention to this aspect in order to avoid excessive offer of foods of this species and possible discomforts.[6] The undesirable abdominal discomforts resulting from the intake of foods rich in sulfur can be explained by the presence of the oligosaccharide raffinose, which is found mainly in legumes. Due to its poor hydrolysis by enzymes present in human digestion, when combined with foods rich in sulfur, it impairs the action of the human digestive process.[8]

Sweet foods as desserts in the menu assessed are often offered with fruits in order to ensure the possibility of choosing fruit in detriment of sweets, but in the last day of the month only "banana pudding" was offered, and no fruit option. When this aspect was examined in different hospital FNUs in Sergipe,[19] four out of seven units indicated a higher offer of sweet foods for dessert (26%, 33%, 43.3% and 66.7%, respectively) when compared with the present study (14%), being rated as "good", "fair" and "poor".[14] An

excessive offer of sweet foods may raise the energy value of the menu and thus may diminish the choice of fruits as dessert, with direct implication in the development of NCDs, such as obesity.[20]

Fatty meats were one of the aspects with the lowest occurrence in the menu during the period of study, and this finding was due to the exclusive use of lean meat cuts, such as sirloin, chicken, and fish, except when the dishes contain spicy sausages as one of their components, e.g., "Mixed meats with oriental sauce" and "Feijoada". When fatty meats are frequently offered, the likelihood of developing NCDs is much higher, such as colorectal cancer.[21,22] Benvindo, Pinto, Bandon[6] observed in their study an average of 25% of fatty means in all institutional FNUs examined, being rated as "good".[14]

The offer of fried foods, fried meat, fried food accompanied of sweet food, pickled salad and repeated cooking techniques and dishes were the parameters that exhibited 0% of occurrence in the menus of the weeks studied, which are considered positive aspects of the FNU. This finding is justified by the use of different stoves to cook the meals offered and nonuse of pickled salads in order to diminish sodium intake.

Despite the daily presence of fruits and vegetables, as indicated by the AQPC method, when their diversity was assessed, the menu was considered monotonous, showing the need to offer other species of foods that are part of these groups. The WHO has prescribed and emphasized over the years that it is necessary to encourage strongly the intake of plant-origin foods, at a basis of 400 g/day, in order to build a colorful, varied and nutritionally balanced menu.[20,23]

In Brazil, it is estimated the existence of 350 thousand plant species, which indicate that individuals' diets can be free from nutritional and culinary monotony. Nonetheless, it is estimated that current population's diet has been comprised of 170 different plant-origin foods, which is lower when compared to the past century.[24]

Consumption of vegetables and fruits (VF) is considered a marker of a healthy dietary pattern, which diminishes the risks of death from NCDs due to their composition rich in vitamins, minerals and fibers and low energy density.[25] In addition, fostering consumption of VF and Brazilian socio-biodiversity foods, considering their variety, quality, accessibility, regionality and seasonality, is essential for the human health and preservation of biodiversity.[26-28]

Several native or exotic VFs, which are not included in the staple diet of Brazilians, are also called "non-conventional" foods". The species that fall under this concept are those which have not yet received due attention from techno-scientific communities, not yet driven the interest of the industry of seeds, fertilizers, agrochemicals, or food industries, and many of them are not organized in production chains, unlike the ones for conventional VF.[16,29] Such VF producers, currently marginalized, express the Brazilian biodiversity and are underused sources of nutrients, bioactive compounds, flavors and aromas. [30]

The Northeast, Southeast and South regions were the only ones that had typical foods used in the menu preparations. Regarding foods from the Northeast region, such as papaya, cooking banana, cashew, pumpkin, *maxixe*, string bean and sesame, they were offered during lunch at RUC, and could be accompanied by acerola cherry, soursop, passion fruit, water leaf, hibiscus leaf, pigeon pea, sorghum, among others, in order to offer a diversified menu.[10] In the study of Souza et al.,[18] in the menu offered by the restaurant of a Northeast university acerola cherry, passion fruit and sesame could be identified, thus ensuring the representation of the region.

Among the foods from the Southeast region, chickpea, white bean, orange, mango, green bean, spinach and okra were found in the menu, but other foods such as persimmon, guava, purslane (beldroega), nasturtium, ora-pro-nobis, edible taioba, among others, could be added. [15] Representing the South region,

lentils, sweet potato, apple, beet, tomato and cabbage were identified, but other foods could be added such as sorrel (acedera), bamboo shoots, chicory, among others.[15] Despite the low variability of regional foods, the study that assessed the offer of regional fruits at diverse federal universities in Brazil found that those located in the Southeast offered only orange, guava and mango, and the restaurants in the South region offered banana, apple and peach.[6] The study also emphasized the need for more regional foods, local and from other regions, in order to broaden the offer of this group of food.

Despite these findings, it is worth mentioning that the low offer of regional foods does not depend only on the choice of foods when planning the menu, but also the food seasonality, the price charged by suppliers, diners' acceptability, availability of food storage facilities, among other factors. Furthermore, it is worth noting, as a criticism, the high use of soybean in the menu of RUC/UFRJ, since it has been considered an emblematic crop in Brazilian agribusiness that degrades biodiversity due to an abusive use of glyphosate and genetically modified seeds, indicating that it is in the opposite direction of what is considered a healthy and sustainable food.[31]

In addition, promoting healthy eating requires more than simply choosing adequate foods, but also a special care with the species biodiversity, respect of cultural heritage and the historical value of the food, in addition to encouraging typical regional cuisine, thus contributing to rescue and keep traditions and ensure the pleasure of eating.[15] Understanding the importance of the food origin is fundamental to improve diet quality. Consumers' approach and support to local foods is beneficial and is associated with a differential pattern in the perception of healthy eating, extending the concept to cultural and sustainable issues.[25]

CONCLUSION

The assessed menu showed that the students had a high frequency of access to meals containing fruits and vegetables. However, even though this finding is positive, there is still little diversity of foods of this group, when regional foods, nonconventional fruits and vegetables could be used to avoid food monotony. Furthermore, by also using such nonconventional foods, it is possible to increase the intake of nutrients and bioactive compounds, and impart new flavors and aromas to the menu preparations.

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