http://dx.doi.org/10.1590/1415-52732015000100003

School canteens in the Federal District, Brazil and the promotion of healthy eating

As cantinas escolares do Distrito Federal, Brasil e a promoção da alimentação saudável

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ABSTRACT

Objective

To characterize the school cafeterias in the Federal District of Brazil with respect to the promotion of healthy eating in schools.

Methods

This is a descriptive, analytical, cross-sectional study, with a representative sample of schools with cafeterias in the Federal District, Brazil (n=202). The data were collected from April to November 2010 by means of on-site interviews and a structured questionnaire. The Pearson's chi-squared and Student's t tests were used.

Results

A higher prevalence of outsourcing, and few employees and dieticians were observed. The prevailing foods were baked sausage, cheese, or chicken rolls or pastries. It was also found that 42.2% of the schools influence the menu of the cafeterias, and 58.6% of the representatives believe in the possibility of influencing the students' eating habits. However, 68.0% of the respondents do not believe in the economic feasibility of completely healthful school cafeterias. Approximately 30.0% of the respondents carry out activities to promote healthy eating.

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Artigo elaborado a partir da dissertação de EBS PORTO, intitulada "Perfil das cantinas escolares do Distrito Federal, Brasil". Universidade de Brasília; 2011.

 http://dx.doi.org/10.1590/1415-52732015000100003

Conclusion

Most of the school cafeterias in the Federal District do not encourage healthful eating. The high prevalence of outsourced services with little interference from the school community gives high autonomy to the cafeteria's owner, whose priority is the pursuit of profit at the expense of the students' nutritional education. Improving the nutritional quality of school foods should be a continuous interactive effort of the food suppliers, principals, students, parents, and government authorities.

Keywords: Feeding. Food and nutrition education. School feeding.

RESUMO

Objetivo

Caracterizar as cantinas escolares do Distrito Federal em relação à promoção da alimentação saudável no ambiente escolar.

Métodos

Estudo descritivo, analítico, transversal, com amostra representativa de escolas com cantinas do Distrito Federal (n=202). Nesse distrito, localiza-se Brasília, a capital do País. Coletaram-se os dados de abril a novembro de 2010, por meio de entrevista in loco com questionário estruturado. Utilizaram-se os testes Qui-quadrado de Person e t de student para comparar os resultados das cantinas de escolas públicas e privadas, considerando o resultado significante quando p<0,05.

Resultados

Verificou-se maior prevalência de gestão terceirizada, poucos funcionários e nutricionistas, além de maior oferta de salgados assados com embutidos, queijo ou frango. Observou-se que 42,2% das escolas interferem na oferta das cantinas, e 58,6% dos representantes acreditam na possibilidade de influenciar os hábitos alimentares dos alunos. Entretanto, 68,0% não acreditam na viabilidade econômica de cantinas totalmente saudáveis. Cerca de um terço desses representantes realizam atividades de promoção da alimentação saudável.

Conclusão

A maioria das cantinas escolares do Distrito Federal não é espaço facilitador da alimentação saudável. A alta prevalência de gestão terceirizada, com pouca interferência da comunidade escolar, dá ao proprietário da cantina grande autonomia e possibilita a priorização da busca pelo lucro em detrimento da educação alimentar dos escolares. Melhorar a qualidade nutricional da alimentação escolar deve ser um esforço contínuo de interação entre fornecedores, diretores, alunos, pais e governantes.

Palavras-chave: *Alimentação. Educação alimentar e nutricional. Alimentação escolar.*

INTRODUCTION

Over the past decades, the prevalence of childhood obesity has increased dramatically worldwide[1] and has become a public health problem[2]. In childhood, this condition is an important predictor of obesity in adulthood[3], and can trigger complications, increase the risk of diseases, and cause early death in adulthood[2]. In Brazil, the prevalence of childhood obesity has grown at an alarming rate in recent years. Between 1989 and 2009, for example, in 5-19-year-old children, this prevalence almost quadrupled. This scenario indicates the need for strategies to control this nutritional problem and its consequences[4].

The promotion of healthy eating has been referred to as a priority action in various official public documents, such as the National Food and Nutrition Policy[5], the National Policy of Health Promotion[6], and the inter-ministry Act nº 1010[7] of the Ministries of Health and Education. The guidelines contained in this act seek to promote healthy food in public and private preschools and elementary, middle, and high schools nationwide. Among the top 10 priority actions are the definition of strategies to encourage healthful choices; awareness and training of the school food staff;

limited offer and sale of foods considered nutritionally inappropriate; and the encouragement and support of the school food services in the dissemination of healthful food options and in developing strategies to ensure these choices.

In this context, the school cafeterias are an important environment for promoting healthy eating and are the target of specific legislation in various Brazilian locations[8]. In this sense, the required characterization of such establishments is justified so that one could check whether this social function has been accomplished or not.

This study had the objective of characterizing the school cafeterias in the Brazilian Federal District and of examining variables that might facilitate or hinder the promotion of healthy foods in the school environments.

METHODS

This is a descriptive, analytical, and cross-sectional study conducted in 2010 in public and private school cafeterias in the Brazilian Federal District (FD), which is where the capital of Brazil is located.

The sample was defined from the 2007 School Census in the Federal District, consolidated in 2008, which counted a total of 1,077 public and private schools[9]. We contacted the institutions by phone to identify the number of schools with cafeterias. We contacted 1,036 schools, and 41 (3.8%) calls were missed because the phone numbers indicated in the directory were nonexistent or wrong. Of the total of schools contacted, 405 had cafeterias, 207 of them being public and 198 private schools.

Of the 405 schools with cafeterias, a representative sample of the school cafeterias in the FD in 2007 was calculated. We established a maximum error of 5%, assuming a conservative prevalence of 50%, and the final sample corresponded to 202 establishments.

The sample was increased by 10% due to possible loss of data, totaling 223 cafeterias. And, finally, we used randomly selected samples, resulting in 114 cafeterias of public schools and 109 of private schools.

The survey was conducted *in loco* from April through November 2010 by means of structured interviews with the cafeterias' representatives, who were defined as: *owners* when the cafeterias were outsourced or *managers* when they were operated by the school staff. The interview was organized to address the following topics: characterization of the school, cafeteria, and cafeteria's representatives; list of the foods offered and their respective visual advertisements; perception of the cafeteria's representative about "healthful foods at school"; actions to promote healthy eating developed in the cafeteria; and influence of the school community (principals and parents) on the sale of food products.

Two canteens received team training and a pilot test in order to improve the data collection instrument. The research was approved by the Ethics Committee of the Health Sciences College of the *Universidade de Brasília* (UnB) (FD), FR 175757, Project 10/2008 of 29/02/2008 and the respondents signed the Term of Informed and Voluntary Consent.

For the calculation, exploratory analysis of data, and statistical tests, we used the Statistical Package for Social Science (SPSS) Statistics software (version 17.0.1) and Microsoft Excel.

Initially, we performed a descriptive statistical analysis of the data (mean, standard deviation, and frequency analysis) to define the interest crossings. Once defined, comparisons between the public and private school cafeterias were made by using the Pearson's Chi-squared test and likelihood *ratio*, and a *p*-value of <0.05 was established.

The socioeconomic status of the owners was classified by the "Brazilian Economic Classification Criteria"[10].

RESULTS

Of the total sample of 223 cafeterias, we visited 182, being 102 in public schools and 80 in

 http://dx.doi.org/10.1590/1415-52732015000100003

private schools. The losses were due to the nonexistence of cafeterias in the sample schools at the time of data collection, the closing of some selected schools, and the participants' refusal. Such a loss changed the sampling error to 5.5%.

The sample consisted of schools that provide preschool education, 2-to-6-year-olds (40.7%), elementary/middle schools, 7-to-14-year-olds (81.9%), and high schools, 15-to-17-year-olds (40.7%). The schools had an average of 1,040 students, 61.9% of them with 400 to 1,200 students.

Most of the school cafeterias were outsourced, had one or two employees, and mainly sold snacks. We also observed that a dietician was not available to manage food preparation, organic foods were not used, and special foods for the students were not offered (Table 1).

The most common foods sold in the cafeterias were: baked sausage, cheese, or chicken pastries or rolls, sugary soft drinks, chocolate, packaged fruit juices, drink mixes, *pizzas*, and candies, lollipops, and chewing gum. The presence of only two items that may be considered healthy, namely, fruit salad and fruit pulp juice or natural juice, is noteworthy (Table 2).

Other natural foods were identified, but in a small number of cafeterias, among them fruit juice (30.4%), fresh fruits (29.7%), and coconut water (5.5%).

Regarding food advertising, 39.3% of the cafeterias had food ads or posters exposed in the establishments. The most advertised foods were: artificial juices (12.1%), sodas (8.2%), frozen yogurt (7.1%), milk chocolate ice cream (6.6%), fruit pulp juices (5.5%), prepackaged fruit juices (4.9%), and fruit popsicles (4.9%).

Regarding the intervention of the school management on students' eating habits (Table 3), although the sale of outside foods in the school was prohibited, less than half of them interfered

Table 1. Characterization of school cafeterias in the Federal District, Brazil, 2010.

Variables	Total		Public		Private		*p*
	n	%	n	%	n	%	
Management							*p*<0.001
Outsourced	157	86.3	102	100.0	55	68.8	
School staff	25	13.7	0	0	25	31.3	
Number of employees							*p*<0.001
None	16	8.9	14	14.0	2	2.5	
1 or 2	111	62.0	69	69.0	42	53.2	
≥3	52	29.1	17	17.0	35	44.3	
Kind of meals							*p*<0.001
Snacks	151	83.4	94	93.1	57	71.3	
Snacks and lunch	28	15.5	5	5.0	23	28.8	
Other meals	2	1.1	2	2.0	0	0	
Presence of a dietician in the cafeteria							*p*<0.01
Yes	34	19.1	10	10.1	24	30.4	
No	144	80.9	89	89.9	55	69.6	
Use of organic foods							*p*<0.001
Yes	20	11.1	3	3.0	17	21.3	
No	153	85.0	95	95.0	58	72.5	
Sometimes	7	3.9	2	2.0	5	6.3	
Foods for special purposes							*p*<0.05
Yes	44	24.2	10	9.8	34	42.5	
No	138	75.8	92	90.2	46	57.2	

Table 2. Foods more frequently offered in school cafeterias in the Federal District, Brazil, 2010.

Variables	Total		Public		Private		*p*
	n	%	n	%	n	%	
Baked goods*	179	98.4	102	100.0	77	96.3	*p*<0.05
Sodas (diet, light, zero)	163	89.6	102	100.0	61	76.3	*p*<0.001
Chocolates	163	89.6	98	96.1	65	81.3	*p*<0.01
Candies, lollipops, chewing gum	163	89.6	102	100.0	61	76.3	*p*<0.001
Commercial fruit juice	152	83.5	84	82.4	68	85.0	
Milk, chocolate beverage	137	75.3	77	75.5	60	75.0	
Pizzas	136	74.7	67	65.7	69	86.3	*p*<0.01
Sodas	134	73.6	87	85.3	47	58.8	*p*<0.001
Drink mix	128	70.3	78	76.5	50	62.5	
Ketchup	125	68.7	74	72.5	51	63.8	
Cakes	120	65.9	64	62.7	56	70.0	
Peanut candy	120	65.9	80	78.4	40	50.0	*p*<0.001
Cereal bar	118	64.8	64	62.7	54	67.5	
Packaged snacks	118	64.8	82	80.4	36	45.0	*p*<0.001
Fruit salads	113	62.1	54	52.9	59	73.8	*p*<0.05
Cheese and ham sandwich	109	59.9	56	54.9	53	66.3	
Coffee	107	58.8	63	61.8	44	55.0	
Mayonnaise	103	56.6	61	59.8	42	52.5	
Packaged popcorn	94	51.6	65	63.0	29	36.3	*p*<0.01
Pulp or natural juice	91	50.3	48	47.1	43	54.4	

Note: *Baked pastries or rolls with sausages, cheese, or chicken.

Table 3. Influence of the school community on the foods offered by school cafeterias in the Federal District, Brazil, 2010.

Variables	Total		Public		Private		*p*
	n	%	n	%	n	%	
Prohibited sale of off-campus foods	123	67.6	71	69.6	52	65.0	
Prohibited sale of some foods in the school	76	42.2	27	26.5	49	62.8	*p*<0.001
Suggested sale of some foods in the school	60	33.3	24	23.8	36	45.6	*p*<0.01
Parents suggest changes in the sale of some foods	40	22.5	6	5.9	34	44.2	*p*<0.001

in the foods offered in the cafeterias, either prohibiting the sale of unhealthy foods or suggesting others. Among those that did not allow certain foods in the school, the most common forbidden foods were fried snacks. Among those that suggested items for sale, the most common suggestion was natural juice.

In addition, the parents' participation in suggesting foods to be sold in the cafeterias was small and contradictory with respect to the aspect of healthful food. Even though the most frequent suggestion was to include more natural foods (8.8%), the second most recurrent suggestion was to include fried foods and sodas (5.0%).

The characterization of those responsible for the cafeterias (owners and managers) indicated that most of them had run the business for 5 years or more (56.7%), worked in the same way on a daily basis (89.5%), and attended development trainings (54.7%). Most of them were women aged 35 to 54 years (on average 42 years), and had 12 years or more years of formal education (Table 4).

Regarding the profile of the owners of the contracted (outsourced) cafeterias, most of them had one store only (88.4%), but not as the only source of income (61.0%). The socioeconomic classification of this segment is stratified in Table

 http://dx.doi.org/10.1590/1415-52732015000100003

Table 4. Characterization of school cafeteria owners in the Federal District, Brazil, 2010.

Variables	Total		Public		Private		*p*
	n	%	n	%	n	%	
Gender							
Male	73	40.3	43	42.6	30	37.5	
Female	108	59.7	58	57.4	50	62.5	
Age							
<25 years	15	8.4	7	7.0	8	10.1	
25-34 years	37	20.7	22	22.0	15	19.0	
35-44 years	53	29.6	25	25.0	28	35.4	
45-54 years	40	22.3	24	24.0	16	20.3	
≥55 years	34	19.0	22	22.0	12	15.2	
Education							*p*<0.001
Elementary/middle (incomplete)	12	6.6	12	12.0	0	0	
Elementary/middle (complete)	25	13.9	17	17.0	8	10.0	
High school (complete)	103	57.2	61	61.0	42	52.5	
Undergraduate (complete)	34	18.9	9	9.0	25	31.3	
Graduate	6	3.3	1	1.0	5	6.3	
Socioeconomic Class[*]							*p*<0.01
A1 ($7,175 USD)	4	2.2	2	2.0	2	2.5	
A2 ($5,184 USD)	8	4.4	2	2.0	6	7.5	
B1 ($2,971 USD)	26	14.3	13	12.7	13	16.3	
B2 ($1,660 USD)	51	28.0	31	30.4	20	25.0	
C1 ($912 USD)	36	19.8	25	24.5	11	13.8	
C2 ($601 USD)	28	15.4	23	22.5	5	6.3	
D ($425 USD)	5	2.7	5	4.9	0	0	

Note: [*]Average family income according to the *Avaliação Brasileira de Empresas de Pesquisa*[10]: data refer to the cafeteria owners only.

Table 5. Attitudes of those responsible for the school cafeterias toward promoting healthy eating in schools in the Federal District, Brazil, 2010.

Variables	Total		Public		Private		*p*
	n	%	n	%	n	%	
Meetings with the school board to discuss the subject	67	37.4	26	25.5	41	53.2	*p*<0.001
Offering hygiene training courses to employees	62	34.8	22	22.2	40	50.6	*p*<0.001
Reducing the supply of low-nutrient snacks	54	29.7	22	21.6	32	40.0	
Discussion with students about healthy eating	49	27.5	15	14.9	34	44.2	*p*<0.001
Participation in health activities organized by the school	47	26.6	11	10.9	36	47.4	*p*<0.001
Displaying the healthiest snacks before the less healthy	36	19.8	14	13.7	22	27.5	
Attending courses on healthy cafeterias	35	19.4	8	0.1	27	34.2	*p*<0.001
Discussing the subject with the parents	30	16.9	2	2.0	28	36.8	*p*<0.001
Availability of posters on healthy eating	27	14.8	7	6.9	20	25.0	

4, and most of them were in the range of C2 and B2 (monthly income between $601 and $1,660 USD).

Regarding the perception of the owners or managers of the cafeterias about "healthy eating", most of them believe that the cafeteria can influence the students' eating habits (58.6%), rate their services as "healthful" or "very healthful" (50.0%), would like to attend courses on this subject (62.4%), and also would like to work in a *totally healthful* school cafeteria (53.3%). Such a cafeteria was defined as a place

where unhealthy foods or foods with high sugar, fat, and sodium contents would not be sold. However, there is skepticism as to the economic feasibility of this kind of store (68.0%): 82.1% claim that the "students' resistance" is the main barrier to the implementation of completely healthful cafeterias. The actions relating to the promotion of healthy eating are presented in Table 5.

This study demonstrated that, in more than half of the variables studied, there was a significant difference between the data collected in the cafeterias of public and private schools, and the better profile of those promoting healthy food in cafeterias was found in private schools (Tables 1-5); e.g. presence of greater number of employees, including nutrition professionals (Table 1), smaller supply of soft drinks, higher supply of fruit salad (Table 2), presence of greater bans on the marketing of foods by the school management, greater parental suggestion of snacks to be offered (Table 3), owners with higher levels of education and socioeconomic class (Table 4), and owners participating in more healthy eating courses, in meetings with the school board, in health-related activities conducted by school employees to refer more hygiene courses and more dialogue with students about healthy eating (Table 5).

In contrast, the canteens of public schools had significantly higher prevalences of outsourcing (Table 1), and of offering savory baked goods, soft drinks, chocolates, candies, lollipops, chewing gum, peanut candy, industrialized snacks, and packaged popcorn (Table 2).

DISCUSSION

This study contributed to a better understanding and characterization of the school cafeterias in the FD, which had not occurred before with this scope or representativeness for the FD. This region stands out as the one where Brasilia, as the capital of Brazil, is located, wherefrom the laws and policies concerning the promotion of healthy eating for the Brazilian people are emanated.

Previously, only individual investigation actions had been carried out as a result of the activities of the UnB project "School Promotion of Healthy Eating Habits", of this same research group[11].

It can be seen that the high prevalence of outsourced service in the school cafeterias in the FD, without the effective participation of the school management in the selection of the foods offered and in the actions to promote healthy eating, gives the owners of the cafeterias the power to decide what will be served to the students. In a study to examine the prevalence of profit from and commercial involvement with vending machine food sales, and associations between such measures and food availability, "Profits" for the school and use of company suppliers were associated with the availability of more low-nutrient, energy-dense foods, and "company suppliers" also were associated with lower fruit/vegetable availability[12].

Traditionally, the school management implements actions that prioritize the academic performance of the students[13]. However, schools are also recognized as an adequate place for the promotion of healthy eating behaviors[7] and, thus, the involvement of the school board in controlling the foods offered and the development of actions to promote adequate eating habits may be a decisive factor to enhance the children's nutritional profile.

The main food offered by the cafeterias was "snacks". The main reason is that the compulsory time that the students must stay at school is frequently one period of the day only, allowing them thereby to have lunch elsewhere. However, this reality has been changing, and lunch has been offered by nearly one third of the private schools (28.8%), because some complementary activities, such as sports, culture, and foreign languages are conducted in the extracurricular period. This encourages the

http://dx.doi.org/10.1590/1415-52732015000100003

student to stay at school all day long, and strengthens the importance of promoting healthy eating.

Most cafeterias have few workers when compared to the number of students per school, which can represent a strategy for cost reduction and a justification for the high percentage of commercially processed foods. Winson[14], in a study to determine the key factors of the food environment in high schools in Canada, concluded that insufficient staff in the kitchen to meet the demand would encourage a greater use of commercially processed foods - made with saturated fat and trans fat - restraining the offer of healthier snack options. It is worth noting that there is no specific regulation in Brazil with respect to the minimum number of employees for this kind of service.

Less than half of the cafeterias offer some kind of food for special purposes - which, according to the Brazilian regulation[15], have different nutrient contents to meet the needs of people with specific metabolic and physiological conditions. Briefel *et al.*[16] believe that the change in the school environment is crucial to improve children's nutrition and reduce obesity. Thus, appropriate provision of foods for children with special conditions, such as dyslipidemia, and lactose and gluten intolerance, may also improve adherence to the dietary treatment and reduce the harmful effects on health.

In Brazil, recently the Law nº 11.947, of June 16, 2009, was changed to determine the correct provision of school meals to students with state or specific health condition in the National School Food Program[17]. However, particularly regarding the school cafeteria environment, we noticed that this subject has not been investigated.

As for the food supply, Federal District cafeterias do not provide healthy food to schoolchildren. The high prevalence of prepackaged or commercially processed foods - usually with high calorie density and low nutritional value -, found among the main items offered in the FD's cafeterias - is an issue of concern, because food available for sale at school may affect the type and quality of the foods consumed[18]. According to Letona *et al.*[19], these types of foods, especially if they come with licensed characters on labels, can contribute to excessive consumption, and aside from parental admonishment, there are practically no limits on a child's choices. This is a particular concern for children whose choices may contribute to poor health outcomes, most notably, overweight and obesity[20].

In the United States (US), a study based on the data from a School Nutrition and Dietary Assessment Study - III showed that the foods sold at school and competing with those funded by school dietary programs - competitive foods - are widely spread in school environments and are consumed by 40% of the students, who prefer low-nutrient and high-calorie foods[21], which are harmful to the diet quality[22].

In the Federal District, sugary beverages were present in more than 70% of the surveyed cafeterias, suggesting a high consumption of the same by the students. An Australian longitudinal study from 2004 to 2010, found that higher BMI Z-scores were strongly associated with a daily consumption of sugar sweetened beverages and high fat foods[23].

In addiction, a review assessing 122 studies published in the United State (US) and developed countries between 1970 and 2010, showed that the consumption of sweetened beverages has contributed to the obesity epidemic and concluded that successful actions in reducing their consumption tend to have a measurable impact on obesity[24].

One of the first population-level studies that assessed the influence of policies oriented to the sale of competitive foods and beverages in schools that had implemented stricter standards for the sale of some foods and beverages to the students showed that the growth rate of overweight children has decreased significantly among the fifth-grade students in Los Angeles

and those in the fifth and seventh grades in the rest of California[25].

Even though Brazil lacks a mechanism that regulates the sale of foods at schools nationwide, some states in the South and Southeast regions have adopted regulatory measures for the sale of foods in school cafeterias and ruled the operations of these services to prevent and control child and adolescent obesity[8].

Recently a law was passed establishing guidelines for promoting healthy eating in schools of the FD, which prohibits the sale of some foodstuffs, demanding the offering of at least one variety of fresh fruit of the season - whole, in pieces, or in juice form - on a daily basis. However, the law is still awaiting regulations[26]. In the State of *Santa Catarina*, Brazil, where there is already a state law prohibiting the sale of some foods in schools, Gabriel *et al.*[27] observed that more fried and packaged snacks, sodas and packaged popcorn were no longer available, although a high prevalence of likely harmful items to children's health, if consumed regularly, was found, such as cakes, pies, and hot dogs.

However, we could see that regulation for the foods sale in Brazilian school cafeterias still needs to advance and contribute more significantly to the promotion of healthy eating. It is necessary to expand the existing initiatives by involving new actors and a monitoring and assessment process to indicate future benefits or difficulties[8].

Therefore, to improve children's eating and contribute to decreased obesity, diversified and continued changes are required in the environment and in food practices[16]. For this purpose, the World Health Organization (WHO)[28] recommends the development of policies to support healthy eating and restrict the availability of products with high content of sugars, sodium, and fats.

Most of those responsible for the cafeterias showed antagonistic perceptions regarding the role of their business in promoting healthy eating habits. Even though they see themselves as healthy eating promoting agents, and rate their establishments as "healthful" or "very healthful," a large number does not believe that the students will be able to change their eating behaviors.

This may be reflected in the majority's belief that "completely healthful" cafeterias are not profitable and that explains the low participation in developing activities to promote healthy eating, including guidance on the students' choice for healthier foods.

However, a simple verbal warning seems to have a significant impact on the decision that the children will likely make with respect to the foods they will consume. In a study carried out in two elementary schools in the New England region of the US, the cafeteria's workers asked: *"Would you like fruit or juice with your lunch?"* The result was a prevalence of 70.0% of fruit consumption at the intervention school, and fewer than 40.0% did so in the control school[29]. Another study conducted in the US inquired the food service staff of 16 middle schools and brought the following perceptions: 99.1% believe that the school has the responsibility to promote healthful food to the students, 50.2 believe that influencing the students on their choices is part of their job, and 79.6% are comfortable in advising the students on what to buy[30].

These findings suggest that the professional qualification of the cafeteria's staff to support food and nutrition education may be a feasible strategy to promote healthy eating in school environments. Schmitz *et al.*[11] conducted a training course for educators and cafeteria owners and reported that the methodology used enhanced the knowledge of the majority of the participants, who seemed to be aware of their role as multipliers of the information obtained. Among the school cafeteria owners, more obstacles and difficulties to implement a healthy cafeteria were observed, although they have shown interest and motivation on the proposal[11]. Attention to the need for assistance to this public,

http://dx.doi.org/10.1590/1415-52732015000100003

the Brazil's Health Ministry launched the Healthy School Canteen Handbook of which must be repeatedly circulated among owners of these canteens[31] and made available on its virtual network, the online course "Healthy School Canteens: Promoting healthy eating" that aims to encourage users of this network, canteen owners, and other members of the school community to reflect on the role that the canteen has of promoting adequate and healthy foods at school[32]. However, Amorim *et al.*[33] emphasize that for effective implementation and maintenance of healthy school canteen, it is essential to systematically monitor this process, and support the involvement of the school community in a specific legislation for school canteens.

Food choices are often multifaceted, situational, dynamic, and complex[34]. Similarly as in adults, children's eating behaviors may suffer influences, among others, of the environment. Patrick & Nicklas[18] detailed the influencing aspects of the physical environment as being: availability, easy access to foods and the tendency of consuming large amounts when large servings are offered. In the Brazilian Federal District, besides these factors, it was observed that most of the foods offered also have sensory appeal, which can also favor consumption.

A Brazilian study conducted in the FD, which used the "problematization" methodology with 25 adolescents, indicated the following main barriers for healthy eating: temptation, food taste, parental influence, lack of time, and few choices for healthful snacks at school[35].

Given this context, the challenge to be inserted is to motivate individuals to adopt healthier eating[35], and the school, social networks, socioeconomic and cultural conditions are potentially changeable and capable of influencing the process of building healthy behaviors in children and, consequently, in adults[36]. Therefore, we suggest the introduction transversely theme of healthy eating in the political pedagogical project schools with theoretical and practical activities and which also consider actions with school canteens.

Although this study did not seek to characterize separately the conditions of the school cafeterias located in private and public schools, statistical analyses of the collected data suggest that the private school cafeterias have more positive results regarding healthy eating.

Among the various data observed, we found that the private school cafeterias had the most positive aspects regarding quality of service, fewer industrialized foods offered, more actions oriented toward the promotion of healthy eating, and more influence received from the school board and students' parents.

Such findings indicate the need for further in-depth analysis to observe whether there is a relation between the seemingly higher quality of the cafeterias of private schools and stricter demands from the school community. A study conducted in school cafeterias in the state of *Santa Catarina*, Brazil, showed that the private schools had 3.22 more chances of interfering on the foods offered by the cafeterias than the public schools[27]. On the other hand, a reflection arises here on the actual need of maintenance of canteens in public schools, given the fact that all these are already assisted by the oldest and largest school meal program in the world, with universal, free, and offering meals, the National School Food Program[17].

Due to the scope limitation of this study, which focused on the descriptive aspects of the cafeteria conditions, we did not examine more specific issues, such as production flow or foods sales, or even the students' consumption frequency. Other points not observed and that can be targeted in future studies are those relating to the nutritional aspects of the foods offered, students with nutritional disorders, and the availability of specific foods for them, and detailing the actions and role of the diverse members of the school community in promoting healthy eating.

CONCLUSION

Given the increased overweight and obesity among elementary, middle, and high school students and the harmful effects of this epidemic on health, we emphasize the importance of identifying risk factors for this condition. In this context, the characterization of the school cafeterias in the Brazilian Federal District showed that they are not environments that promote healthy eating.

The large percentage of outsourced services with little intervention of the school community in the choice of the foods available for purchase at the cafeterias is noteworthy. This favors the cafeterias' owners to seek alternatives to increase their profit at the expense of more alternative healthy choices.

We understand that the improvement of the nutritional quality of school foods should be a continuous joint effort of the cafeterias' owners or managers, school management, teachers, students, parents, and governments. The latter are responsible for the implementation, improvement, and assessment of public strategies to foster the participation of the school community in the school food services, such as to create a law regulating the sale of snacks in the school environment and the inclusion of the theme of healthy eating in the political-pedagogical project schools. These are far-reaching actions with likely beneficial impacts on the health and welfare of the children of a nation.

CONTRIBUTORS

EBS PORTO and BAS SCHMTIZ contributed substantially to the study concept, and planning, and data analysis and interpretation. E PORTO contributed significantly to the draft. BAS SCHMTIZ and E RECINE contributed significantly to the manuscript review. BAS SCHMTIZ, E RECINE, and MLCF RODRIGUES approved the final version of the manuscript.

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Received: June 27, 2014
Final version: September 9, 2014
Approved: October 29, 2014