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Nutritional status, food intake and quality of life of school cooks

Estado nutricional, consumo alimentar e qualidade de vida de merendeiras

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ABSTRACT

To relate the sociodemographic characteristics, nutritional status, food intake and quality of life of school cooks in Carapicuíba, state of São Paulo. Cross-sectional study, measuring weight, height and waist circumference and questionnaires on sociodemographic aspects, quality of life and food intake. The average age was 53.97 years, most with a partner and belonging to socioeconomic class C. The average Body Mass Index was 30.85 kg/m^2, with 82.4% overweight and 45.5% obesity. The average waist circumference was 94.5cm, indicating a substantially increased risk for metabolic disease. Food intake and other lifestyle habits were classified as "attention", 50.0% had good and very good overall quality of life, and 45.6% regular. School cooks have overweight, food intake and other lifestyle habits that require attention and overall quality of life ranging from regular, good and very good.

Keywords**:** Food habits. Health promotion. Nutritional status. Quality of life. School feeding.

RESUMO

O objetivo desse estudo foi relacionar as características sociodemográficas, o estado nutricional, o consumo alimentar e a qualidade de vida de merendeiras Carapicuíba (SP). Estudo transversal, com aferição de peso, estatura, circunferência da cintura e questionários sobre aspectos sociodemográficos, qualidade de vida e consumo alimentar. A idade média foi 53,97 anos, a maioria com companheiro e pertencente à classe socioeconômica C. O Índice de Massa Corporal médio foi de 30,85 kg/m^2, com 82,4% de excesso de peso e 45,5% de obesidade. A média da circunferência da cintura foi 94,5cm, indicando risco aumentado substancialmente para doença metabólica. O consumo alimentar e outros hábitos de vida da maioria classificou-se em "atenção", 50,0% apresentou qualidade de vida geral boa e muito boa e 45,6% regular. As merendeiras apresentam excesso de peso, consumo alimentar e outros hábitos de vida que requerem atenção e qualidade de vida geral variando entre regular, boa e muito boa.

Palavras-chave: Alimentação escolar. Estado nutricional. Hábitos alimentares. Promoção da saúde. Qualidade de vida.

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INTRODUCTION

Currently, promotion of adequate food in the school environment has, among other relevant social actors, school cooks as a central operational element, thus being considered health agents at school. School meals are prepared by these professionals who tend to indirectly pass on their eating habits to students, through the excessive use of salt, sugar and oil in the preparations[1,2].

Prevalence of overweight (overweight + obesity) among school cooks is well described in the literature, in which their profession is a risk factor for nutritional risk[2], as well as implying a diet with inadequate nutritional quality due to the excessive intake of sweets and fried foods, among other practices in their homes and repeated many times in the preparation of school meals[3].

School cooks suffer constant pressures in the work environment related to the assignment of a high responsibility for school meals[4] and which affects their quality of life[5]. It is a group of workers commonly socially and economically undervalued, mostly belonging to classes B2 and C1[6,7], making them more vulnerable to the development of chronic non-communicable diseases (NCD) and less autonomous to adopt strategies for the transformation of other social determinants of health[8].

Thus, this study aimed to relate the sociodemographic characteristics, nutritional status, food consumption and quality of life of the school cooks in Carapicuíba, state of São Paulo.

METHODOLOGY

Cross-sectional study carried out with school cooks from municipal schools in Carapicuíba, state of São Paulo.

The research was submitted and approved by the Research Ethics Committee, School of Pharmaceutical Sciences, University of São Paulo, under CAAE 69597617.0.0000.0067 and by the Municipal Education Secretariat of Carapicuíba. Ethical principles based on the National Health Council Resolution 466/2012 were respected.

In 2017, Carapicuíba had 44 municipal public schools, divided into the following modalities: 15 daycare centers (nursery and kindergarten), 23 centers for early childhood education and 6 elementary schools for early years.

School cooks working in 14 of the 44 schools listed refused to participate in the research. The 30 participating schools (68.18% total number of schools) had 94 cooks on their staff (64.82% total cooks), of which 28.72% worked in daycare centers, 54.26% in early childhood education and 17.02% in elementary school early years. Of these, 68 participated in the survey (72.34%), with 29.41% working in daycare centers, 50% in early childhood education, and 20.59% in the early years of elementary school.

The 68 school cooks (46.89%) who participate in, signed the Free and Informed Consent, in two copies. Data on sociodemographic, anthropometric, food consumption and quality of life characteristics of the participants were collected from January to March 2018.

The Brazilian Economic Classification Criterion, of the Brazilian Association of Research Companies[9] was used to obtain sociodemographic characteristics and consequent socioeconomic classification of the participants. The score is given based on information about items in the household, education level, as well as public services (piped water and paved street) and classified in socioeconomic levels: A, B1, B2, C1, C2, D-E[9], grouped in this study in class A, B, C, D-E.

Data collection was done individually, in duplicate, in a reserved place, delivering immediate feedback from the evaluation performed to the participant.

Body Mass Index (BMI) was classified according to the specifications of the World Health Organization (WHO) for the underweight adult population: BMI <18.5 kg/m^2; normal weight: BMI 18.5 to 24.9 kg/m^2; overweight: BMI 25 to 29.9 kg/m^2; obesity: $\geq$ 30 kg/m^2 [10]. Participants aged 60 or over were evaluated according to recommendations of the *The Nutrition Screening Initiative*, classified as underweight: BMI <22 kg/m^2; eutrophy: BMI 22 to 27 kg/m^2 and overweight: BMI$>$ 27 kg/m^2 [11].

For analysis and comparison of anthropometric data of adults and elderly women, the nomenclature "overweight" was adopted for classification of BMI above the cut-off points for eutrophy.

Risk for metabolic disease was assessed using waist circumference (WC) and classified according to WHO recommendations, considering an increased risk for metabolic disease, when WC ≥ 80 cm; and substantially increased risk for metabolic disease when WC ≥ 88 cm, cutoff points for women[12].

Food consumption was assessed using the questionnaire "How is your food?", from the Ministry of Health, composed of 18 multiple choice questions that contemplate aspects of food consumption, contained in the document Food Guide: How to have a healthy diet, formed by questionnaire and ten steps for healthy eating[13].

The questions have from two to four alternatives, with scores ranging from 0 to 4. Based on the recommendations contained in the document, food consumption of the cooks was classified as adequate and inadequate[13].

Responses with scores 0, 1 or 2 were classified as inappropriate behaviors and responses with scores 3 or 4 classified as appropriate behaviors, with the exception of questions 5, 15 and 18, referring to the daily consumption of meat and water and reading the labels of the food, in which responses with scores 0 or 1 were classified as inappropriate behaviors and responses with scores 2 or 3 classified as appropriate behaviors.

In question 4, regarding the daily consumption of rice, corn and other cereals, answers with scores 0, 1, 2, and 4 were classified as inappropriate behaviors and answers with score 3 were classified as appropriate behaviors[13].

The final score is the result of the sum of the scores, which can vary from 1 to 58, considering up to 28 points the individuals who need to make their food and life habits healthier; between 29 and 42 points those who should pay more attention to food and lifestyle, and those who get 43 points or more are on the way to a healthy way of life[13]. For the analysis of the three categories related to the quality of food consumption and other life habits, the following terminologies were adopted: "Need to improve", "Attention" and "Congratulations", respectively.

The perception of quality of life (QOL) was assessed using the WHOQOL-bref questionnaire (World Health Organization Quality on Life, brief version), an instrument used to quantitatively assess QOL and, in its brief version, contains 26 questions[14].

After applying the syntax, the domain scores are converted to a scale from zero to 100 that classifies QOL as very low: 20, low: 40, regular: 60, good: 80 and very good > 80[15]. For data analysis, peripheral categories were grouped in this study, forming three main categories: very low + low; regular and good + very good.

Data were organized and analyzed using Microsoft Office Excel and SPSS version 24.0, both for Windows. Data normality was tested using the D'Agostino-Pearson method. Descriptive analysis of continuous variables was expressed as mean and standard deviation, and categorical variables as simple and relative frequencies (%), which were analyzed using the chi-square test (χ^2) and for independent samples (marital status, grouped into with and without partner). Dichotomous associations were determined using Spearman's correlation coefficients.

In addition, the sample was divided by age group (adults and elderly) in order to detect possible differences between the classifications of food consumption issues in the two groups.

RESULTS

The mean age of the 68 cooks was 54 ± 7 years old, ranging from 36 to 65 years old, most living with a partner, and belonging to socioeconomic class C.

School cooks without a partner were older ($p = 0.030$), had lower values of WC ($p = 0.015$), weight ($p = 0.035$) and BMI ($p = 0.011$).

As for anthropometric data, the mean weight was 78.3 ± 15.7 kg and BMI was 30.9 ± 6.0 kg/m^2, indicating obesity. Overweight was present in 82.4%

participants (88.2% adults and 64.7% elderly women) and the waist circumference was 94.5±11.6 cm, indicating a substantially increased risk for disease in 72.1% sample (Table 1).

Tabela 1. Características das merendeiras de Carapicuíba, São Paulo, 2018

(Continua)

Variáveis	n	%
Estado civil		
Com companheiro	38	55,9
Sem companheiro	30	44,1
Classe socioeconômica		
B	20	29,4
C	45	66,2
D-E	03	4,4
IMC adultas (n=51)		
Eutrofia	6	11,8
Sobrepeso	20	39,2
Obesidade	25	49,0
IMC idosas (n=17)		
Eutrofia	6	35,3
Excesso de peso	11	64,7
CC		
Sem risco	06	8,8
Risco aumentado	13	19,1
Risco aumentado substancialmente	49	72,1
Consumo alimentar e outros hábitos de vida		
Precisa melhorar	05	7,4
Atenção	49	72,0
Parabéns	14	20,6
Qualidade de vida geral		
Muito baixa+Baixa	03	4,4
Regular	31	45,6
Boa+Muito boa	34	50,0
Domínio físico		
Muito baixa+Baixa	03	4,4
Regular	23	33,8
Boa+Muito boa	42	61,8
Domínio psicológico		
Muito baixa+Baixa	02	2,9
Regular	28	41,2
Variáveis	**n**	**%**
Boa+Muito boa	38	55,9
Domínio relações sociais		
Muito baixa+Baixa	04	5,8
Regular	22	32,4
Boa+Muito boa	42	61,8
Domínio meio ambiente		
Muito baixa+Baixa	15	22,1
Regular	44	64,7
Boa+Muito boa	09	13,2

(Conclusão)

Fonte: Dados da pesquisa.

As for the quality of food consumption and other life habits, most were classified as "in attention" and perception of overall QOL was Good+Very good (50.0%) and Regular (45.6%). Considering each QOL domain, the highest prevalence of Good+Very good classification was in the physical and social relations domains and the lowest in the environment domain (Table 1).

Table 2 lists that the consumption of fruits, greens and vegetables (FGV), fish, consumption and the type of milk and its derivatives, number of daily meals, water intake, regular physical activity and reading food labels was inadequate for more than half of the school cooks.

The consumption of meat and eggs was adequate for most cooks, and none reported not consuming red meat or chicken. There was a prevalence of healthy behaviors in relation to the consumption of legumes, rice, corn and other cereals, meats, removal of apparent fat from meats and use of vegetable oil for cooking (Table 2).

Regarding the type of fat used for cooking, elderly women used lard or butter, margarine or vegetable fat in relation to the adults ($p = 0.017$).

Table 3 shows a positive, very strong and significant correlation between BMI and WC, suggesting that excess weight is effectively related to metabolic disease. Age and overall QOL were positively correla-

ted, showing a more positive perception about quality of life the older the age; and a positive correlation between adequate food consumption and the overall QOL of the cooks.

Tabela 2. Consumo alimentar e hábitos de vida de merendeiras, Carapicuíba, 2018

Continua

Variáveis	n	(%)
Consumo de frutas/dia		
Adequado	18	26,5
Inadequado	50	73,5
Consumo de legumes e verduras/dia		
Adequado	10	14,7
Inadequado	58	85,3
Consumo de leguminosas/dia		
Adequado	40	58,8
Inadequado	28	41,2
Consumo de arroz, milho e outros cereais/dia		
Adequado	20	29,4
Inadequado	48	70,6
Variáveis	**n**	**(%)**
Consumo de carne (boi, aves, porco, peixes e outros)/dia		
Adequado	54	79,4
Inadequado	14	20,6
Retira gordura aparente das carnes		
Adequada	56	82,4
Inadequada	12	17,6
Frequência de consumo de peixes		
Adequada	12	17,6
Inadequada	56	82,4
Consumo de leite e derivados/dia		
Adequado	9	13,2
Inadequado	59	82,8
Tipo de leite consumido		
Adequado	12	17,6
Inadequado	56	82,4
Frequência de consumo de frituras, salgadinhos e embutidos		
Adequado	55	80,9
Inadequado	13	19,1
Frequência de consumo de doces, refrigerantes e sucos industrializados		
Adequada	56	82,4
Inadequada	12	17,6
Tipo de gordura usada para cozinhar		
Adequado	64	94,1
Inadequado	04	5,9
Acréscimo de sal aos alimentos prontos		
Adequado	65	95,6
Inadequado	03	4,4
Quantidade de refeições/dia		
Adequada	12	17,6
Inadequada	56	82,4
Quantidade de água/dia		
Adequada	30	44,1
Inadequada	38	55,9
Consumo de bebida alcoólica		
Adequado	46	67,4
Inadequado	22	32,6
Prática de atividade física regular		
Adequada	19	27,9
Inadequada	49	72,1
Leitura de rótulos dos alimentos		
Adequada	49	72,1
Inadequada	19	27,9

(Conclusão)

Fonte: Dados da pesquisa.

Tabela 3. Matriz de correlações entre as variáveis estudadas na amostra de merendeiras, Carapicuíba, 2018

	Idade	CC	IMC	QV geral
CC	,022 ,861			
IMC	-,121 ,324	**,844** **,000**		
QV geral	**,269** **,027**	,131 ,288	,047 ,704	
Consumo Alimentar	,050 ,684	-,059 ,633	-,041 ,738	**,336** **,005**

Fonte: Dados da pesquisa.

DISCUSSION

The sample studied is characterized by women, adults, with a partner, belonging to socioeconomic class C, overweight and substantially increased risk for metabolic disease. Some aspects of food consumption and other lifestyle habits require attention and the quality of life varies between regular and good and very good.

A study carried out with 16 school cooks from municipal schools in Santa Maria, state of Rio Grande do Sul, observed similar characteristics: average age of 50.94 years, 81.25% living with a partner and 56% belonging to class C[3,6]. Another study with 25 school cooks from state schools in Chapecó, state of Santa Catarina, found slightly lower values, 45.5 years old, 72% with a partner and 48% were from class C[7]. These results indicate that the studied group has sociodemographic characteristics similar to school cooks in south Brazil.

Xavier et al.[1] assessed the nutritional profile of 166 school cooks from state schools in six municipalities in Recife, sate of Pernambuco, in 2010, and found 76.41% overweight, with an average age of 44 years. In the present study, 82.4% of cooks are overweight according to the BMI, and exceed data from the aforementioned studies.

The mean WC obtained represents a substantially increased risk for metabolic diseases. Adiposity located in the abdominal region is the type of fat that offers the greatest risk to the health of individuals[16]. Data similar to the present study were reported by Xavier et al. (2011)[1] in 7.9% of the studied sample. The authors claimed that the school cook profession can be a risk factor for weight gain.

The high prevalence of overweight and obesity can classify school cook as a nutritional risk profession, as some of them argued that they started to gain weight after admission to the job.

The studied school cooks had an excellent perception of their overall QOL and in the physical and social relations domains. The physical domain refers to the perception of individuals regarding their pain, the need for medical treatment, disposition, capacity for work and adequate rest. The domain of social relations includes satisfaction with relationships, in addition to sexual life[15].

The psychological domain evaluates positive feelings, spirituality, self-esteem, appearance and ability to concentrate[15]. More than half of the school cooks showed excellent perception in this area. In the environmental domain, the perception of the majority of the cooks was regular considering the aspects of safety, climate, transport, opportunities to acquire new knowledge, leisure and financial resources[15].

According to data from the crime indicators of the state of São Paulo provided by the Public Security Secretariat of the state of São Paulo, Carapicuíba presented, in 2017, 11,865 cases of various types of violence (23 types, ranging from theft to robbery) recorded in all the police stations in the municipality[17], with higher proportions than the municipalities in the same Greater São Paulo Area, with similar population estimates, such as Barueri, Itapevi and Taboão da Serra[18]. Such a situation may be responsible for the results obtained for the environment domain.

The evaluation of food consumption is complex due to the existence of several instruments that measure their aspects in different ways and have limitations in their methods, which makes comparison difficult[19,20]. In addition, there is a scarcity of studies that assess the food consumption of school cooks in the world.

Although there are limitations, evaluating food consumption makes it possible to identify inadequacies to propose health promotion and protection actions, contributing to human development with quality of life[21].

Xavier et al.[2] evaluated the food consumption of 200 school cooks in state schools in Pernambuco, using a food frequency questionnaire, and found that 75% consumed vegetables, 88% fruits at least once a week. Although the instruments used are different, the result of inadequate consumption of FGV is similar to the present study.

This result for school cooks in Carapicuíba is surprising, since the municipality has a "gift card" program that guarantees the right to public employees

who earn up to R $ 3,000.00 (base salary of 2018) to buy 10 kg of these items, weekly, in a grocery, according to information provided by the Municipal Education Secretariat of Carapicuíba.

Low energy density foods, such as FGV, are considered essential for a healthy diet[22] and are associated with the reduction of risk factors for NCD, such as obesity[23]. The high proportion of school cooks with overweight (82.4%), obesity (47%) and inadequate consumption of FGV suggests the need for evaluation and monitoring of this program to identify causes of these divergences, between what is offered by the program and the that has truly been consumed.

Low consumption of fish, although the country has a vast coastline and hydrographic basins, is a result consistent with that observed at the population level, in the Family Budget Survey (FBS) 2017-2018[24].

Likewise, consumption of milk and derivatives by school cooks was inadequate and 19.1% reported not consuming these foods, data similar to those found in FBS 2017-2018, which translates into high prevalence of inadequate consumption of vitamins and calcium[24].

In addition, the type of milk consumed was also inadequate, with 82.4% school cooks opting for milk with full fat content, a proportion much higher than that observed by Vigitel (2016) for the female population (51.2%)[25].

The habit of reading food labels was verified by only 26.5% sample. A review by Pereira et al.[26] on food labels and the promotion of health and healthy and adequate food found that consumers read and recognize the importance of food labels, but do not understand the information that is disclosed. Among the main problems in understanding labeling, is the use of technical and unclear language.

It is important that the information conveyed on food labels is easy to understand, allowing to promote the democratization of nutritional information in search of changes in eating behaviors.[26]

Regarding the consumption of rice, corn and other cereals, the Food Guide for the Brazilian Population (2008) recommends a consumption of six servings (breads, pasta, tubers and roots) daily, with preference for wholegrains, because when added to the portions recommended for the consumption of fruits, vegetables, greens and legumes, the consumption of 25 g fibers necessary for good intestinal function would be achieved[27].

From the sample of school cooks, it was found that 44.1% reported consuming> 7.5 servings of cereals a day, of these 23.3% were underweight + normal weight, however, 76.7% were overweight.

The recommendation regarding the consumption of the rice, corn and other cereals group, preferably as whole grains and foods in their most natural form, the questionnaire in this document includes food options available for calculating the servings consumed without differentiating them in whole and non-whole foods[13].

With that, it is necessary to emphasize that the consumption of cereals above the recommended, combined with the low consumption of FGV (inadequate nutrition) and physical inactivity, may be contributing to the excess weight observed in the sample of the present study, being these, risk factors for NCD[8].

The questionnaire for assessing food consumption used in this study[13] assesses not only healthy eating behaviors, but also the frequency of unhealthy behaviors, such as the consumption of fried foods, snacks and sausages, consumption of sweets, addition of salt to ready foods and consumption of alcoholic beverage. The evaluation of these aspects deserves to be highlighted in this study due to the low frequency observed.

In the study already mentioned by Miron et al.[3], the consumption of sweets was reported by 75% sample, while the consumption of fried foods was reported by 63% individuals. The consumption of sweets, fried foods, snacks and sausages from the school cooks studied here was adequate, unlike the aforementioned study.

The adoption of healthy behaviors demonstrated by the cooks may, among other factors, have been influenced by the annual training promoted by the Municipal Education Secretariat of Carapicuíba, fulfilling the competencies described in item IV of art. 17 of Law 11,947, of June 16, 2009[28], which address

current issues each year, such as the full use of food, labeling, valorization of fresh and minimally processed foods and hygienic-sanitary control in the production of meals.

Currently, in addition to issues directly related to food, training has included separate moments for self-care and autonomy, since it is known that the appropriation of knowledge within the personal sphere of individuals facilitates the process of multiplying it, making them health promoting agents[29]. The question that arises is whether the cooks incorporated this idea only in their speech or in fact in their culinary practice and life habits.

As pointed out by Camozzi et al.[30], school is a privileged space for social development, acquisition of knowledge and values, and school meals can use these attributes by encouraging healthier eating, with health promotion actions that can contribute to meaningful learning that leads to autonomy through adequate food choices.

The eating behavior of school cooks can influence students' consumption. A good example should emerge from them, due to their intimate contact with children and adolescents and their prominent role and reference in food at school, however this theme should encompass all actors in the school community, and not only school cooks, as it has an interdisciplinary and intersectoral nature.

The involvement of everyone in the process of building healthy eating habits can modify the current scenario of health problems related to inadequate nutrition, positively interfering with students' eating practices[30].

Among the limitations of the study is the high number of schools that refused to participate in the research, which implied a small sample of school cooks.

CONCLUSION

School cooks are mostly adult women, with a partner and belong to socioeconomic class C. Excess weight exceeds the values presented in national studies, mainly in relation to obesity. The substantially increased risk for metabolic disease is present in almost two thirds.

Various aspects of food consumption and other lifestyle habits require attention, mainly due to insufficient consumption of fruits, greens, vegetables, fish, milk and dairy products, and water, excessive consumption of cereals, lack of regular physical activity, and lack of habit to read food labels.

The overall quality of life varied between regular, good and very good. The best perceptions (good and very good) were found in the physical, psychological and social relations domains, and the most unfavorable (regular) were in the environment domain.

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