FOOD AND NUTRITION IN COLLECTIVE HEALTH

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Food consumption and behavior of university employees: a cross-sectional study

Consumo e comportamento alimentar de trabalhadores de uma universidade: um estudo transversal

Abstract

Objective: To evaluate the consumption and eating habits of university employees. ***Methods:*** A cross-sectional study was carried out with a representative sample of workers at the University of Criciúma-SC. The frequency of consumption of vegetables, fruits, meats, soda, artificial juice and sweets was evaluated, according to the following response options: "never", "almost never", "1 to 2 days", "3 to 4 days", "5 to 6 days" or "daily". Regular consumption was defined by consumption of five days or more. Number and location of meals, eating in front of the television, consumption of meat fat and salt addition in the preparations was also assessed. Analyzes were performed using Stata version 12.1. ***Results:*** 214 employees were studied. A half of them consumed regularly fruits and vegetables. About 20% of the workers referred regular consumption of sweets, soda and artificial. Also, approximately 50% of the sample studied performed at least five meals a day and had eaten watching television. ***Conclusion:*** Employees showed low frequency of consumption of foods con-

sidered markers of healthy eating, such as fruits, vegetables and beans. Moreover, many of them reported having inappropriate eating behavior. Thus, it is necessary to implement nutrition promotion and prevention actions at the University focused on nutrition.

Keywords: Food Consumption. Food Behavior. Workers. Cross-Sectional Study.

Resumo

Objetivo: Avaliar o consumo e o comportamento alimentar de trabalhadores. *Métodos:* Estudo transversal realizado com uma amostra representativa dos funcionários de universidade da cidade de Criciúma-SC. Avaliou-se, por entrevistadores treinados, a frequência de consumo de verduras/legumes, frutas, leguminosas, carnes, refrigerante, suco artificial e doces, conforme as seguintes opções de resposta: "nunca", "quase nunca", "1 a 2 dias", "3 a 4 dias", "5 a 6 dias" ou "diariamente". O consumo regular dsses alimentos foi definido pelo consumo de, pelo menos, cinco dias na semana. Número e local das refeições, alimentar-se em frente à televisão, hábito de consumir a gordura da carne e de adicionar sal nas preparações também foram estudados. As análises foram realizadas utilizando o Stata versão 12.1. *Resultados:* Foram estudados 214 funcionários, metade dos quais consumia regularmente frutas, verduras e legumes. O consumo regular de doces, refrigerante e suco artificial foi referido por aproximadamente 20% dos indivíduos. Além disso, metade da amostra realizava, pelo menos, cinco refeições ao dia e tinha o hábito de comer assistindo televisão. *Conclusões:* Os funcionários apresentaram baixa frequência de consumo de alimentos considerados marcadores de uma alimentação saudável, como frutas, verduras, legumes e leguminosas. Ademais, grande parte deles referiu ter comportamento alimentar inadequado. Dessa forma, faz-se necessária a implementação de ações de promoção e prevenção da saúde nessa universidade voltadas à nutrição.

Palavras-chave: Consumo Alimentar. Comportamento Alimentar. Trabalhadores. Estudos Transversais.

INTRODUCTION

Eating habits are formed early in childhood but are influenced throughout life[1] by socio-economic, demographic, cultural and environmental factors.[2] Furthermore, traditional family habits can be perpetuated over generations, leading either to healthy or unhealthy diets.[3]

All over the world, dietary patterns have changed from diets rich in foods *in natura* or minimally processed, considered the basis for good nutrition, to diets rich in ultra-processed foods, containing excessive amounts of sugar, fat and sodium and small amounts of dietary fibers.[3] Evidences have also shown that low consumption of fruits and vegetables prevails all over the world, especially in developing countries.[4]

One of the concerns about this dietary transition is that the consumption of foods rich in sugar and/or fat can lead to non-consumption of foods considered healthy.[5] Today, recommended daily intake of fruits and vegetables is around 400g, which is equivalent to about five portions. However, in Brazil, less than 10% of the population eats according to recommendations and, as a consequence, 68% of the individuals have an inadequate consumption of fibers.[6] In addition, daily sodium intake is 2300mg, but among Brazilians such intake exceeds 3200mg.[5] The dietary pattern comprised of high-energy and nutritionally poor foods that is commonly found in Brazilian homes increases the risk for nutritional deficiencies and various diseases, such as obesity,[5] which has already reached about 20% of Brazilian adults[6] and may cause other noncommunicable chronic diseases (NCDs) such as diabetes, high blood pressure, cardiovascular diseases and cancer.[3]

In addition to factors such as sex, age and education,[7] the individuals' occupation has also been studied as a possible variable associated with eating habits. Workers usually choose to buy foods available near or at the workplace, skip meals, such as breakfast, and have carbohydrates with little nutritional value as the meals' main component, associating them as a source of energy. People that work in night shifts have a higher tendency to choose poor diets and eat more foods and snacks during the day; also, they usually skip breakfast.[8]

It is known that an unhealthy lifestyle is considered a risk factor that can be changed, especially regarding diets, which may lead to a decreased rate of NCDs occurrences and mortality.[9] Thus, the present work aimed to assess the consumption and eating habits of university employees.

METHODS

A cross-sectional study was carried out with a representative sample of university employees in the city of Criciúma, state of Santa Catarina, between December 2016 and January 2017.

To calculate the sampling size, the total number of employees of the university, prevalence of outcome and 95% confidence level were considered, totalizing 232 individuals. After adding 15% for losses and refusals, the sample consisted of 267 employees. Proportional sampling was considered per work sector of the institution (n=19) and, afterwards, within each sector, the workers to be interviewed were selected randomly.

For data collection, trained interviewers administered a questionnaire containing demographic, socioeconomic and diet-related questions. The demographic and socioeconomic variables included in the analysis were sex (male, female), age (18-27, 28-37, 38-47, 48-60 years), marital status (single, married, separated/divorced, widow/widower) and education (0-4, 5-8, 9-11, 12 years of study or over).

In respect to food consumption, we used the questionnaire adopted by VIGITEL, a telephone survey system for monitoring risk factors and protection against chronic diseases. Information on the frequency of consumption of some foods, considering the last week before the interview, was collected. The studied foods were: leafy greens/vegetables, fruits, legumes, meats, sodas, artificial juice and sweets, according to the following response options: "never", "almost never", "1-2 days", "3-4 days", "5-6 days" or "every day".[6] With the purpose of assessing regular foods consumption, the consumption frequency was dichotomized as "less than 5 days" and "5 days or more".

With respect to the eating habits, information on the number of meals that the employees had per day, place of the meals, habit of eating in front of the television, habit of eating the visible fat of beef and chicken meat, and the habit of adding extra salt to food after served. After data collection, in order to ensure the quality control of data, double input of data into the Excel program, version Excel 2010, was performed. Afterwards, data was checked for consistency and, when necessary, the questionnaire was verified so as to have correct information.

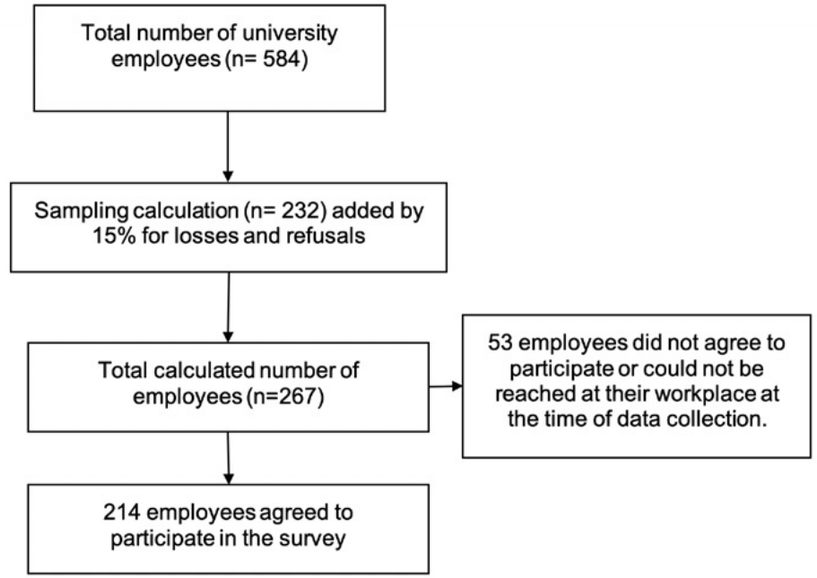
Descriptive analyses of the variables studied were carried out, showing absolute and relative frequencies of the qualitative variables, in addition to the confidence intervals of 95%. For data analysis, the Stata software program, version 12.1. was used.

This study was approved by the Research Ethics Committee of the ***Universidade do Extremo Sul Catarinense***, protocol number 59682816.3.0000.0119. All individuals who agreed to participate in the study signed the Free and Informed Consent Form.

RESULTS

Of a total of 584 employees of the university, 214 were interviewed. Fifty-three (19.9%) individuals did not agree to participate or could not be reached at their workplace at the time of data collection. A flowchart of the participants is illustrated in Fig. 1.

Figure 1. Flowchart of the participants of the study.



The demographic and socioeconomic characteristics of the individuals are described in Table 1. It can be seen that the majority of the participants was female (65.3%; 95% CI 58.8-71.7) and aged between 18 and 37 years (66.3%, 95% CI 60.0-72.7). Regarding their marital status, nearly one-half of the sample was married (46.2%, 95% CI 39.5-53.0). In addition, the minority of the employees had less than nine years of formal education (11.5%, 95% CI 7.1-15.8).

Table 1. Demographic and socioeconomic characteristics of the university workers. Criciúma, SC, 2016/2017. (n=214)

Variables	n	% (95% CI)
Sex		
Male	74	34.7 (28.3-41.2)
Female	139	65.3 (58.8-71.7)
Age (years)		
18-27	70	32.7 (26.4-39.0)
28-37	72	33.6 (27.3-40.0)
38-47	39	18.2 (13.0-23.4)
48-60	33	15.5 (10.5-20.3)
Marital status		
Single	95	44.4 (37.7-51.1)
Married	99	46.2 (39.5-53.0)
Separated/divorced	16	7.5 (3.9-11.0)
Widow/Widower	4	1.9 (0.04-3.7)
Education (complete school years)		
0-4	10	4.8 (1.9-7.7)
5-8	14	6.7 (3.3-10.1)
9-11	86	41.0 (34.2-47.7)
12 or over	100	47.5 (40.8-54.4)

Table 2 shows the frequencies of food consumption of the workers studied. It can be seen that about two-thirds of the sample did not eat legumes regularly (62.6%, 95% CI 56.1-69.2). With respect to the intake of greens/vegetables and fruits, nearly one-half of the interviewees reported that they eat these foods less than five times a week (44.4%, 95% CI 37.7-51.1 and 51.9%, 95% CI 45.1-58.6, respectively). About meats intake, about one-fifth of the workers responded that they consumed red meat or chicken regularly (20.1%, 95% CI 14.7-25.5 and 19.6%, 95% CI 14.3-25.0, respectively). In addition, about one-fifth of the individuals consumed sweets and sodas/artificial juice regularly.

Table 2. Weekly frequency of foods intake by university workers. Criciúma, SC, 2016/2017. (n=214)

	n	% (95% CI)
Legumes		
<5 days	134	62.6 (56.1-69.2)
5 days or more	80	37.4 (30.8-43.9)
Leafy greens /vegetables		
<5 days	95	44.4 (37.7-51.1)
5 days or more	119	55.6 (48.9-62.3)
Fruits		
<5 days	111	51.9 (45.1-58.6)
5 days or more	103	48.1 (41.4-54.9)
Red meat		
<5 days	171	79.9 (74.5-85.3)
5 days or more	43	20.1 (14.7-25.5)
Chicken		
<5 days	172	80.4 (75.0-85.7)
5 days or more	42	19.6 (14.3-25.0)
Soda/artificial juice		
<5 days	101	84.6 (79.7-89.5)
5 days or more	33	15.4 (10.5-20.3)
Sweets		
<5 days	165	77.1 (71.4-82.8)
5 days or more	49	22.9 (17.2-28.6)

The dietary behavior of the individuals studied is described in Table 3. It can be seen that one-half of them, at least, have five meals a day (43.1%, 95% CI 36.5-49.9) and have the habit of eating in front of the television (47.1%, 95% CI 40.3-53.9). Furthermore, the minority of the employees said that they usually had their meals in restaurants (6.6%, 95% CI 3.2-10.0) and added more salt to the food after it was served (9.4%, 95% CI 5.4-13.3). It could also be seen that about one-fourth of the individuals have the habit of eating the visible fat of beef (25.6%, 95% CI 19.5-31.8) and chicken skin (25.5%, 95% CI 19.5-31.5).

Table 3. Eating habits of university workers.
Criciúma, SC, 2016/2017. (n=214)

	n	% (95% CI)
Number of meals		
≤3	44	20.7 (15.2-26.1)
4	77	36.2 (29.6-42.7)
≥5	92	43.1 (36.5-49.9)
Place where meals are eaten		
Home	95	45.0 (38.3-51.8)
Work	102	48.4 (41.5-55.1)
Restaurant	14	6.6 (3.2-10.0)
Eat while watching TV		
No	111	52.9 (46.1-59.7)
Yes	99	47.1 (40.3-53.9)
Eat visible beef fat		
No	145	74.4 (68.2-80.5)
Yes	50	25.6 (19.5-31.8)
Eat chicken skin		
No	155	74.5 (68.5-80.5)
Yes	53	25.5 (19.5-31.5)
Add more salt to foods		
No	194	90.6 (86.7-94.6)
Yes	20	9.4 (5.4-13.3)

DISCUSSION

An important finding of the study refers to the low frequency of consumption of foods considered markers of a healthy diet. Most of the employees consumed legumes less than five times a week (62.2%), and one-half of them reported the same frequency of consumption for greens/vegetables and fruits (44.4% and 51.9%, respectively). The ***Guia Alimentar da População Brasileira*** (Dietary Guidelines for the Brazilian Population) recommends that foods ***in natura*** or minimally processed, such as fruits, vegetables, grains and legumes, are the basis

for a healthy diet.[3] A regular consumption of these diverse food groups and their varieties ensures a balanced and varied nutrition.[3]

The VIGITEL survey of 2016, carried out in 27 Brazilian capitals and in the Federal District, identified that only 35.2% (95% CI 34.4-36.1) of the adult population consumed regularly fruits and vegetables. On the other hand, it identified that 61.3% (95% CI 60.4% -62.1%) of the population studied consumed beans regularly. Similar results were found by other authors.[10,11] On the other hand, a greater prevalence was found in a study with university teachers, in which 95.1% of them consumed fruits, vegetables and legumes regularly.[12]

Studies that evaluated the quantity of daily portions of fruits and vegetables consumed by workers found distinct results. Florindo et al.[13] reported that one-third of the individuals ate five daily portions of these foods, while Anthony et al.[14] found a prevalence of 14% when they surveyed employees in the area of health, industry, and education.

As a result of the change in the dietary habits of the Brazilian population, the consumption of traditional foods, which always were found on the table of Brazilian homes, has decreased significantly,[15] being replaced by processed foods, which require less cooking time and have been increasingly appreciated by people.[15] However, the nutrients contained in fruits and vegetables protect our body against diseases through their antioxidants, micronutrients and fibers.[3] Legumes are considered sources of complex B vitamins, protein, iron, calcium and zinc, and a considerable amount of dietary fibers, which are responsible for satiety.[3]

When foods considered markers of unhealthy diet were assessed, the minority of the workers reported that they consumed sodas/artificial juices and sweets regularly (15.4% and 22.9%, respectively). These findings corroborate the results found in the VIGITEL study of 2016, which identified that 16.5% (95% CI 15.7-17.3) of the Brazilian population consumed sodas regularly[6] and that 18% (95% CI 17.3-18.7) of Brazilians consumed sweets regularly.[6]

Santana and Peixoto[12] conducted a study with teachers and found that only 11% of them drank sodas regularly. Other studies reported higher prevalences.[16,17] A study by Vinholes et al.[18] found that the prevalence of daily consumption of sodas by women has higher than by men (23.6% ***vs*** 16.2%).

The availability of sodas and sweets has increased significantly both in urban and rural areas.[19] These foods are considered ultra-processed and usually are more attractive because of their presentation, favoring excessive consumption.[3] Along with sweets, sodas and juices are part of a food group that has a large quantity of calories and are considered high-risk foods for obesity.[3] This is even more worrisome considering that in survey studies individuals would likely underestimate the intake of these foods.[10]

With respect to the consumption of meats, about one-fifth of the employees of the present study reported to eat beef or chicken regularly. Other studies reported an even higher consumption of these foods.[16,20] According to the study conducted by Vinholes et al.,[18] the regular consumption of these foods was higher among men than women (24.5% *vs* 16.7%).

Another finding that is worth mentioning is that about 25.0% of the respondents said that they usually ate the visible fat of beef and chicken. According to the VIGITEL survey of 2016, one-third (32.0%; 95% CI 31.1-32.9) of Brazilian adults reported that they had the habit of consuming fatty meats.6 Similarly, Freitas and collaborators 10 found that 36.7% of the employees of their sample ate the visible fat of red meat and chicken skin. A greater prevalence was shown in other study, in which this consumption was reported by 58.9% of the workers.[12]

Both red meat and chicken meat contain large amounts of proteins, minerals and vitamins, such as B12. However, they are also rich in saturated fatty acids,[3] and an excessive intake of these foods leads to the development of systemic subclinical inflammation, a factor that contributes to the development of chronic diseases such as insulin resistance and dyslipidemias, increasing the risk of emergence of cardiovascular diseases.[21] However, evidences showing an association of saturated fat and insulin resistance, type 2 diabetes mellitus, vascular disorders and stroke are still controversial and inconclusive.[22]

Regarding the eating habits of the employees, it was found that about one-half of them (43.1%) had five or more meals a day and almost one-half of the respondents said that they had meals at work, while the minority had it in restaurants. Studies that assessed the number of meals of employees found very different results.[8,10,23] A study conducted by Bandoni et al.[24] showed that 35.7% of the workers had meals at work and 37.1% in restaurants.

In addition to the main meals (breakfast, lunch and dinner), individuals should eat small snacks during the day, choosing carefully the foods to be eaten.[3] Having their meals at regular times during the day, eating with full attention to the foods and not too fast are all important factors that can aid in digestion and satiety and also to avoid eating more foods than necessary.[3] In addition, meals eaten at the workplace have more fibers, vegetables and fruits, but are less dense energetically.[24] On the other hand, meals in restaurants have more sugars and fats and favor their consumption.[24]

Restaurants in general offer a large variety of foods, which may induce people to eat more than necessary.[3] So, preparing one's own food and taking it to work is considered a healthy alternative and a way of controlling the portions consumed daily.[25]

With regard to the addition of extra salt to food, the minority of the employees of this study reported that they had this habit. Similar results were found in other studies.[10,12] It is

known that a high consumption of sodium (present in salt) and of animal fats are responsible for favoring the onset of cardiovascular diseases. For this reason, they should be consumed in small amounts.[3] The Brazilian population has recently adapted to the so-called western diet, according to which high salt intake is frequent.[26] It should be emphasized that the habit of having a salt shaker on the table during the meals is a factor that may increase the practice of adding more salt to the food after it is ready.[27]

It is important to emphasize that the food consumption assessed in this study referred to one week before the interview, which may not represent the employees' usual consumption.

As a strength of this study, it is a pioneering study conducted with university employees, and the university is the only one existing in the city of Criciúma. Furthermore, the study was conducted with strict quality control, which included standardization and training of the interviewers and double input of data with checks to detect inconsistencies.

CONCLUSIONS

Considering the results of the study, it was possible to assess for the first time the consumption and eating habits of university employees and concluded that these individuals presented a low frequency of consumption of foods considered markers of a healthy diet, such as fruits, vegetables and legumes. In addition, most of them showed to have an inadequate eating behavior, such as the habit of eating in front of the television.

Thus, it is necessary to implement health promotion and prevention actions oriented to nutrition at this university.

Furthermore, studies with a focus on occupational health, although scarce, are of great importance. So, research efforts aimed at this target audience should be encouraged.

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Contributors

Schafer AA and Meller FO conducted all steps of the survey, from design, data analysis, interpretation of results and final writing of the article; Grande AJ participated in the design of the study, data collection and revision of the final version of the manuscript; Quadra MR participated in data collection, data typing and in writing the article.

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