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Dietary patterns of bank employees and their association with socioeconomic, behavioral and labor factors

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Abstract *This paper aimed to evaluate food consumption of bank employees and its association with socioeconomic, behavioral and labor factors. This is a cross-sectional study with 515 bank employees. To evaluate food consumption, a semi-quantitative food frequency questionnaire was used. The analysis of main components with Varimax rotation was used to determine the dietary patterns. Three dietary patterns were identified: "vegetables, fruits, cereals and tubers", "sweets and snacks" and "traditional and protein". We found that individuals who did not consume sweeteners were more likely to adhere to the "vegetables, fruits, cereals and tubers" pattern and were less likely to adhere to the "sweets and snacks" and "traditional and protein" patterns. Bank employees who rarely ate in restaurants were three times more likely to adhere to the "sweets and snacks" pattern. However, those who used to consume industrialized seasoning and those who reported receiving low social support were, respectively, 2.3 and 1.5 times more likely to adhere to the "traditional and protein" pattern. We can conclude that food consumption of bank employees is not related to the sociodemographic conditions of these individuals, and behavior and perception of social support received is associated with these dietary patterns.*

Key words *Dietary patterns, Food consumption, Workers*

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Introduction

The second half of the twentieth century marked some changes in the Brazilian dietary pattern, among which are high consumption of ultra-processed foods and reduced intake of fruits, vegetables and the traditional rice and beans[1,2], in addition to higher spending on food consumption away from home[3,4].

Parallel to changes in dietary patterns is the increased number of obese and overweight individuals and reduced low weight and some nutritional deficiencies[5]. It is important to highlight that changes in the Brazilian dietary pattern are closely linked to the nutritional transition, since decline of nutritional quality of foods, to the detriment of high-energy density products consumption led to body weight gain without adequate intake of nutrients[6].

This epidemiological and nutritional setting has witnessed structural and technological transformations in the productive process and in the work of different professional categories, among which bank employees stand out[7]. This profession is known for being highly affected by occupational diseases, since daily work is marked by high demand for services. In addition, activity-related anxiety and pressure can interfere in food choices and health pattern[8].

It is noteworthy that, according to Minayo[9], workers' health is a result of the combination of adequate housing, income, employment, transportation and food. However, studies that use specific methodologies to analyze food consumption in groups of workers are still scarce, especially in bank employees. This fact is of concern, considering that food changes that accompany the Brazilian nutritional transition culminate in increased prevalence of overweight and obesity and chronic noncommunicable diseases (CNCDs)[6]. This morbidity profile affects the working-age population, which may have an impact on the conditions of employment and wages, as well as the health of workers, resulting in expensive costs to public health, contracting companies and social security[10].

Thus, this study aimed to evaluate food consumption of bank employees through the Principal Components Analysis (PCA) and its association with socioeconomic and behavioral factors and labor characteristics, seeking to identify factors associated with food consumption of workers with intensive workdays and exorbitant workloads.

Methods

Study design and participants

This is a cross-sectional observational study, with data derived from a study on metabolic syndrome, insulin resistance and associated factors in bank employees[11]. The sample analyzed consisted of employees of a banking network in the state of Espírito Santo, aged between 20 and 64, of both genders, who worked in the region of Greater Vitória and were in full work activity during the collection period (August 2008 to August 2009).

Regarding sample size calculation, all 1,410 bankers of the institution studied were considered as study population, with an expected prevalence of inadequate nutritional consumption of approximately 50%, a significance level of 5%, a sampling error of 6% and a design effect equal to two (effect of agency conglomerates), with 450 employees as the minimum sample size.

Measures

Data were collected through a structured questionnaire applied by trained interviewers, whose independent variables are described below. The dependent variable was food consumption, represented by dietary patterns.

The sociodemographic variables used in this study were: gender; age group, categorized as "under 30 years", "between 30 and 50 years" and "50 years and over"; ethnicity/skin color, categorized as "white" and "non-white"; schooling, classified as "primary and secondary education" and "higher and postgraduate education"; marital status, categorized as "common-law marriage", "single" and "separated/divorced/widowed"; and socioeconomic class, established according to the criterion of Brazilian economic classification[12] and categorized in "A + B" and "C + D + E".

Bank employees are characterized by a generalist and multi-purpose education and by an intense work pace due to technological advances. Employees with a workday of up to 6 hours/day have less than one hour break for meals. In addition, part of bank employees performs direct customer service, which differs them from the positions in the administrative units. Because it is a banking network of the metropolitan region, there is also a need to commute between cities to get to the workplace. Thus, work characteristics were evaluated by investigating the lunchtime interval, living in the same city of the workplace,

occupational stress and social support received. In order to determine "occupational stress" and "social support", the abridged and adapted version of the Job Stress Scale[13] was used according to the demand-control model of Karasek and Theorell[14], classifying individuals as "stressed" (high wear and passive work) and "not stressed" (active work and low wear)[15]. For the definition of "social support", the median scores were obtained for this realm, categorizing high social support scores > 22 and low social support scores ≤ 22[15].

Behavioral variables include tobacco and alcohol use and physical activity, as well as eating habits such as replacing lunch with snacks, eating at restaurants, using sweeteners, using salt shakers at the table, consuming industrialized seasoning, and how many meals are prepared daily. Questions regarding dietary habits were adapted from the questionnaire on Surveillance of Chronic Diseases by Telephone Inquiry (Vigitel) and were categorized according to the self-reported frequency. Smokers were classified as individuals who use tobacco, regardless of the amount or frequency of consumption. The physical activity level was determined by the long version of the International Physical Activity Questionnaire (IPAQ) validated for the Brazilian population[16], considering as sufficiently active those who reported at least 150 minutes of activities with a frequency ≥ 5 days/week[17] in sessions related to leisure and transportation[18].

To evaluate food intake, we used the semi-quantitative food frequency questionnaire (FFQ), developed by Sichieri and Everhart[19] and validated for Brazilian adults.

Initially, FFQ values were transformed into daily frequencies according to Cade et al.[20]. After obtaining the daily values of each food, nutrients were measured using the nutrient assessment mask validated by Sichieri and Everhart[19]. When the nutrient values were obtained, participants with energy consumption ≤ 500 Kcal and > 6,000 Kcal were excluded from the evaluation, since these values do not indicate the regular consumption of individuals[21]. Then, energy fit was performed using the residual method, which adjusts nutrient estimates by total energy intake[22].

The determination of bank employees' dietary patterns was performed by Principal Component Analysis (PCA). Different methods can be applied to analyze food consumption. Among them is the quantitative analysis by dietary patterns. The World Health Organization (WHO)[23] recommends this procedure as it allows the presentation of food profiles rather than isolated nutrients, demonstrating the complex chemical combinations that may be adverse, competing or altering the bioavailability of other compounds or nutrients[23,24].

At first, sample size appropriateness was evaluated, considering the relationship individuals/food items, which should be five times larger than the total number of individuals in the sample[22].

In order to identify dietary patterns, 3 items (chicory, mate and alcoholic beverages, except beer and wine) were excluded because they had a consumption frequency of less than 10%[25], that is, because they were not part of the usual diet of this group of workers. Thus, the 77 variables were used to analyze the internal consistency of the FFQ realms, and a Cronbach's *alpha* index ≥ 0.50 was considered acceptable[26].

After validating FFQ internal consistency, the correlation matrix between the 77 variables was performed. These were grouped and classified into 39 groups (Table 1), according to their nutritional characteristics and Pearson's correlation between their food items[25].

Subsequently, the applicability of the PCA method was assessed using the Kaiser-Meyer-Olkin (KMO) and Bartlett's sphericity (BTS) tests. Both tests indicate the adequacy of data to the factorial analysis and verify the suitability of the model for the group studied, with the cut-off points of evaluation > 0.6 for KMO and $p < 0.001$ for BTS[22].

The number of factors to be extracted in the analysis was defined by the Lebart test, based on the Cattel graph test, which draws a line between the eigenvalues and factors in its extraction order[22,26]. The values located before the inflection point of the line indicated the number of factors to be retained. For the determination of dietary patterns, an analysis model was initially performed without setting the number of patterns. Then, after analysis of the Cattel plot, the second model was constructed by fixing the number of patterns to be retained.

In order to obtain uncorrelated factors, the factorial analysis was applied to the 39 food groups, selecting the orthogonal Varimax rotation for the extraction of factors, since this is a widely used technique to determine dietary patterns[22,26].

Foods or food groups whose factor saturation loads were above 0.3 were assessed as having a strong association with the component, providing better information for describing a dietary pattern[25]. The patterns were named based on the

Table 1. Food groups according to nutritional characteristics and Pearson Correlation of the semiquantitative Food Frequency Questionnaire, used for Principal Component Analysis.

Group	Foods
G1	Rice
G2	Beans
G3	Pasta
G4	Onion, garlic and peppers
G5	Pumpkin, zucchini, okra, chayote, cauliflower, beet and pod
G6	Cabbage, carrot and cucumber
G7	Lettuce
G8	Tomato
G9	Manioc, polenta, cooked potatoes and yams
G10	Banana
G11	Orange
G12	Papaya, apple, pear, watermelon, guava, mango, pineapple and grape
G13	Eggs
G14	Milk, cheese and curd
G15	Yogurt
G16	Coffee
G17	Sugar
G18	Cake, ice cream, chocolate, pudding, candy and chocolate powder
G19	Sweet bread and salt bread
G20	Butter/margarine
G21	Popcorn
G22	Salty cracker and sweet biscuit
G23	Potato chips, hamburgers, bacon and mayonnaise
G24	Soda
G25	Pizza
G26	Salty fish, canned fish and shrimp
G27	Pork, bone-in beef and beef steak
G28	Sausage
G29	Passion fruit and lemon
G30	Lentils
G31	Chicken
G32	Corn
G33	Flour
G34	Fried dough foods
G35	Avocado
G36	Viscera
G37	Beer
G38	Wine
G39	Juice

Aggregation by Pearson Correlation and nutritional characteristics.
Legend: G: Group.

interpretability and characteristics of the items retained in each pattern, and the items with the highest factor load were the ones that most influenced the interpretation and denomination of the factors[22].

Statistical analysis

To describe the study variables, we used measures of central tendency (mean and median), and dispersion measures (pattern deviations and interquartile range) for continuous variables. Percentages were used for categorical variables.

The analysis of the adherence of the distribution of the quantitative variables to the normal distribution was performed using the Kolmogorov-Smirnov statistical test.

For qualitative variables, the chi-square association test was used. Fisher's exact test was used when the expected values in the table cells were less than five or when the sum of the column value was less than twenty.

For a quantitative and a qualitative variable, due to abnormal variables, the Mann-Whitney U test was used. When the qualitative variable had three or more categories, a comparison between the means by the Kruskal-Wallis test (using the Mann-Whitney U test, two to two, to identify the differences) was performed.

The binary logistic regression model was used to test associations between dietary patterns and sociodemographic, behavioral and labor variables. Dietary patterns were classified according to the median factorial scores, using the group above the median as a reference. The variables with up to 10% significance in the univariate analysis were inserted in the logistic regression model.

For all analyses, the level of significance was $\alpha \leq 5\%$. These analyses were performed using the statistical software *IBM SPSS Statistics 22*.

Ethical issues

The Research Ethics Committee of the Health Sciences Center of the Universidade Federal do Espírito Santo (UFES) approved the study. All individuals authorized participation by signing the Informed Consent Form.

Results

As a way of compensating for possible losses, all 525 bank employees randomly drawn for the

original project were considered. Of the 525 individuals invited to participate in the study, 518 (98.6%) completed the whole questionnaire, three did not respond the FFQ and three evidenced a caloric intake higher than the plausible values of a usual diet, which ensued their exclusion from the analysis. Therefore, the final sample was 515 individuals.

Most individuals were in the 31-50 years age group (61.5%, n = 317), were of socioeconomic class A and B (55.5%, n = 286), whites (57.7%, n = 297), with a high educational level (higher and postgraduate education, 74%, n = 381) and lived in common-law marriage (64.4%, n = 331). The consumption of alcoholic beverages was reported by 62.5% (n = 322) of the sample. Tobacco use was found in 9.5% of workers (n = 49), and 23.8% (n = 122) reported being smokers and 65.8% (n = 339) were insufficiently active.

Sample adequacy for the application of PCA was 6.43 individuals/food items. QFF Cronbach's *alpha* index was 0.548. The KMO test result was 0.606 and BTS test p-value was < 0.001. These data indicated adequacy of data to the factorial analysis, recommending the application of the PCA[25-27].

Three factors were extracted in the analysis based on the line inflection point in the Cattel chart. After rotational factor analysis, three dietary patterns were generated, representing the study population's food consumption (Table 2). Foods or food groups whose saturation loads were above 0.3 were evaluated as strongly associated with the component. The total variance explained by the factors was 19.16%. They belonged to each identified dietary pattern:

Pattern 1: Vegetables, fruits, cereals and tubers: cabbage, carrot, cucumber, pumpkin, zucchini, okra, chayote, cauliflower, beet and pod, lettuce, tomato, papaya, apple, pear, watermelon, guava, mango, pineapple and grape, orange, manioc, polenta, cooked potatoes and yams, onion, garlic and peppers.

Pattern 2: Sweets and snacks: lentils, cake, ice cream, chocolate, pudding, chocolate powder, pizza, salty fish, canned fish and shrimp, wine, viscera and avocado.

Pattern 3: Traditional and protein: rice, beans, pork, bone-in beef and beef steak, sausage, eggs, potato chips, hamburger, bacon and mayonnaise, sweet bread and salt bread and butter/margarine.

The component "French fries, hamburger, bacon and mayonnaise" had a negative high factorial load in the group "vegetables, fruits, cereals and tubers", showing that individuals of this first dietary pattern have very low consumption of this type of food. Foods with a factorial load (food correlation with factor) ≤ 0.3 in one component were considered of low correlation, and did not participate in the composition of any dietary pattern, which makes it possible to consider them as foods of equal consumption among all the individuals. They are "pasta", "banana", "milk, cheese and curd", "coffee", "sugar", "salty cracker and sweet biscuit", "soda", "passion fruit and lemon", "corn", "flour", "beer" and "juice".

When evaluating the association between the median factorial scores of dietary patterns and variables studied (Table 3 and 4), statistical differences were identified in relation to schooling, the exchange of lunch for snacks, eating in a restaurant, the daily number of meals, the use of sweeteners, the use of the salt shakers, the use of industrialized seasoning and the level of support received. Regarding the "vegetables, fruits, cereals and tubers" pattern, statistical differences were identified in relation to the habit of replacing lunch with snacks, using sweeteners, consuming industrialized seasoning and the daily number of meals. In the pattern "sweets and snacks", factors were associated with the habit of replacing lunch with snacks, eating at restaurants, using sweeteners, using salt shakers, consuming industrialized seasoning and schooling. On the other hand, the "traditional and protein" dietary pattern was associated with daily meals, use of sweeteners, the consumption of industrialized seasoning and the level of social support.

After the logistic regression analysis, the association of the "vegetables, fruits, cereals and tubers" pattern with the use of sweeteners was maintained, and individuals who did not consume sweeteners were 1.83 times more likely to adhere to this dietary pattern (CI 1.247-2.591). Conversely, non-consumption of sweeteners was associated with a lower probability of adherence to the "sweets and snacks" pattern (OR 0.641, CI 0.44-0.934) and the "traditional and protein" pattern (OR 0.459, IC 0,317- 0.665).

Bank employees who rarely ate at restaurants were almost three times more likely to adhere to the "sweets and snacks" pattern (OR 2.9, IC 1.522-5.558). However, those who did not consume industrialized seasoning and those who reported receiving low social support were 2.3 and 1.5 times more likely to adhere to the "traditional and protein" pattern, respectively.

Table 2. Distribution of the factorial loads of the food/food groups of the three dietary patterns identified for bank employees.

Food groups	Vegetables, fruits, cereals and tubers	Sweets and snacks	Traditional and protein
Cabbage, carrot and cucumber	**0.671**	-0.120	0.073
Pumpkin, zucchini, okra, chayote, cauliflower, beet and pod	**0.614**	0.139	0.050
Lettuce	**0.542**	-0.173	0.024
Tomato	**0.365**	0.005	-0.013
Papaya, apple, pear, watermelon, guava, mango, pineapple and grape	**0.504**	0.096	-0.096
Orange	**0.360**	-0.008	0.037
Manioc, polenta, cooked potatoes and yams	**0.424**	0.205	0.152
Onion, garlic and peppers	**0.372**	-0.149	0.165
Lentils	0.401	**0.442**	-0.216
Cake, ice cream, chocolate, pudding, candy and chocolate powder	-0.221	**0.528**	0.039
Pizza	0.065	**0.528**	0.220
Fried dough foods	-0.195	**0.337**	0.091
Salty fish, canned fish and shrimp	0.180	**0.403**	0.037
Wine	0.232	**0.369**	0.034
Viscera	-0.042	**0.426**	-0.092
Avocado	0.207	**0.397**	-0.235
Rice	0.104	0.155	**0.419**
Bean	0.284	0.123	**0.445**
Pork, bone-in beef and beef steak	0.009	0.079	**0.443**
Sausage	-0.015	0.029	**0.483**
Eggs	0.098	-0.017	**0.361**
Potato chips, hamburgers, bacon and mayonnaise	***-0.316***	0.321	**0.350**
Sweet bread and salt bread	-0.020	0.299	**0.356**
Butter / margarine	-0.139	0.104	**0.405**
Sugar	-0.134	0.017	0.217
Banana	0.271	0.064	0.138
Salty cracker and sweet biscuit	-0.095	0.242	-0.067
Coffee	-0.065	0.170	0.041
Beer	0.060	-0.082	0.195
Flour	0.031	0.287	0.273
Chicken	0.148	0.015	0.259
Milk, cheese and curd	0.057	-0.049	0.213
Pasta	-0.025	0.264	0.212
Passion fruit and lemon	0.268	-0.051	0.042
Corn	0.104	0.192	-0.197
Popcorn	0.013	0.065	0.029
Soda	-0.249	0.202	0.209
Juice	0.127	0.056	0.202
Pattern variance (%)	7.33	6.08	5.75
Total variance explained (%)	7.33	13.41	19.16

Principal Component Analysis (PCA).

Food/food groups in bold saturate in factor, having a strong association with the corresponding food component. Food/food groups in bold and italic have high negative correlation in the highlighted dietary pattern.

Table 3. Association of the median factorial scores of eating patterns and sociodemographic characteristics of bank employees.

Variable	Vegetables, fruits, cereals and tubers		Sweets and snacks		Traditional and protein	
	Median (IIQ)	Median (IIQ)	Median (IIQ)	Median (IIQ)	Median (IIQ)	Median (IIQ)
Sex[1]		0,200		0,836		0,938
Female	-0,042 (1,212)		-0,163 (0,922)		-0,164 (1,298)	
Male	-0,12 (1,331)		-0,174 (0,952)		-0,142 (0,996)	
Age group[2]		0,647		0,081		0,844
Up to 30 years	-0,202 (1,016)		-0,068 (1,052)		-0,219 (1,17)	
41 to 50 years	-0,048 (1,382)		-0,132 (0,915)		-0,142 (1,156)	
More than 50 years	-0,142 (1,156)		-0,373 (0,808)		-0,086 (1,037)	
Socioeconomic Class[1]		0,879		0,834		0,467
Class C + D + E	-0,109 (1,207)		-0,165 (0,899)		-0,142 (1,011)	
Class A + B	-0,082 (1,276)		-0,198 (0,956)		-0,153 (1,237)	
Race/Color [1]		0,087		0,788		0,703
White	-0,124 (1,29)		-0,154 (0,842)		-0,159 (1,123)	
Not white	-0,016 (1,132)		-0,195 (1,076)		-0,081 (1,174)	
Education[1]		0,370		**0,044**		0,933
Elementary and high school	-0,21 (1,189		-0,292 (0,846)		-0,122 (0,962)	
Higher and post-graduate education	-0,042 (1,287		-0,132 (0,955)		-0,148 (1,243)	
Civil Status[2]		0,641		0,317		0,263
Common-law marriage	-0,116 (1,257)		-0,172 (0,913)		-0,067 (1,142)	
Single	-0,084 (1,26)		-0,086 (0,962)		-0,218 (1,142)	

Factors were presented to three decimal places for easy visualization.
[1] Mann-Whitney U-Test. [2] Kruskal-Wallis test. In bold: statistically significant values ($p < 0.05$). Pattern 1: Vegetables, fruits, cereals and tubers: cabbage, carrot, cucumber, pumpkin, zucchini, okra, chayote, cauliflower, beet and pod, lettuce, tomato, papaya, apple, pear, watermelon, guava, mango, pineapple and grape, orange, manioc, polenta, cooked potatoes and yams, onion, garlic and peppers. Pattern 2: Sweets and snacks: lentils, cake, ice cream, chocolate, pudding, chocolate powder, pizza, salty fish, canned fish and shrimp, wine, viscera and avocado. Pattern 3: Traditional and protein: rice, beans, pork, bone-in beef and beef steak, sausage, eggs, potato chips, hamburger, bacon and mayonnaise, sweet bread and salt bread and butter/margarine. Legend: IIQ: Interquartile Interval.

Discussion

The dietary patterns identified in this study are an interesting feature of the food consumption of bank employees, both for the variety of food consumed and for being in line with the food available in the urbanized regions in which these professionals are inserted[3,27]. The pattern "vegetables, fruits, cereals and tubers" may be considered the healthiest pattern among the working class investigated. The "sweets and snacks" pattern features employees who consume more snacks rather than large meals (lunch and dinner). Finally, the "traditional and protein" group encompasses individuals who consume common meals, with the intake of beans and rice, as well as fast food and meats and derivatives.

Feeding activity has changed over the last decades, mainly due to the little time allocated to the preparation, choice and consumption of foods[8]. This behavior can be observed in the daily life of many workers who have an overload of tasks, goals to be achieved and strenuous working hours, as in the case of bank employees[28]. In addition, most of the banking units are located in urban centers that function as gastronomic centers providing a large variety of foods, which can contribute to the intake of "take-out food" and bakery and confectionery[24].

It should be noted that, due to the large food supply, many foods showed equal consumption among bank employees, not saturating in any dietary pattern. These foods are available in different versions and nutritional contents, and can underpin mixed dietary patterns[19], besides having high consumption among the Brazilian population, as in the case of coffee and banana[25].

Alves et al.[29] analyzed women from 20 to 60 years of age, living in the urban area of São Leopoldo (RS), Brazil, and similarly identified that

Table 4. Association of the median factorial scores of dietary patterns and the behavioral and working characteristics of bank employees.

Variable	Vegetables, fruits, cereals and tubers		Sweets and snacks		Traditional and protein	
	Median (IIQ)	p value	Median (IIQ)	p value	Median (IIQ)	p value
Use of alcohol[2]		0.546		0.926		0.543
Yes	-0.115 (1.334)		-0.191 (0.952)		-0.158 (1.122)	
No	-0.111 (1.011)		-0.130 (0.862)		-0.026 (1.226)	
Ex-alcoholic	-0.014 (1.376)		-0.227 (0.889)		-0.344 (0.643)	
Smoking2		0.639		0.935		0.378
Smoker	0.057 (1.488)		-0.341 (0.978)		-0.279 (1.381)	
Non-smoking	-0.079 (1.244)		-0.171 (0.916)		-0.151 (1.134)	
Ex smoker	-0.123 (1.094)		-0.111 (0.954)		-0.077 (1.05)	
Physical activity level[1]		0.731		0.735		0.499
Active enough	-0.036 (1.251)		-0.184 (0.965)		-0.100 (1.192)	
Insufficiently active	-0.116 (1.243)		-0.169 (0.925)		-0.168 (1.127)	
Exchange lunch for snack[2]		**0.001**		**0.001**		0.109
5 to 7 x / week	-0.500 (1.286)		-0.165 (0.387)		-0.795 (0.92)	
1 to 4 x / week	-0.718 (1.308)		0.423 (1.253)		-0.002 (1.205)	
Rarely	-0.042 (1.218)		-0.206 (0.904)		-0.147 (1.121)	
Eat in restaurant[2]		0.323		**0.001**		0.890
1 to 3 x / day	-0.210 (1.758)		0.094 (0.918)		-0.082 (1.182)	
1 to 6 x / week	-0.084 (1.11)		-0.080 (0.941)		-0.211 (1.162)	
Rarely	0.003 (1.298)		-0.410 (0.9)		-0.110 (1.103)	
Number of meals per day[1]		**0.003**		0.578		**0.006**
4 or less	-0.171 (1.227)		-0.139 (0.935)		-0.096 (1.161)	
5 or more	0.039 (1.273)		-0.227 (0.871)		-0.296 (1.179)	
Use of sweetener[1]		**0.001**		**0.016**		**0.001**
Yes	0.067 (1.082)		-0.295 (0.909)		-0.349 (1.049)	
No	-0.321 (1.298)		-0.090 (0.954)		0.005 (1.289)	
Use of the salt shaker[1]		0.166		**0.003**		0.140
Yes	-0.113 (1.129)		0.037 (1.034)		-0.027 (1.203)	
No	-0.067 (1.29)		-0.215 (0.89)		-0.157 (1.087)	
Consumption of industrialized condiments[1]		**0.019**		**0.024**		**0.001**
Yes	-0.197 (1.278)		-0.106 (1.007)		0.005 (1.166)	
No	0.003 (1.193)		-0.285 (0.876)		-0.341 (0.942)	
Interval time for lunch[1]		0.633		0.479		0.707
1 hour or more	-0.061 (1.413)		-0.152 (0.929)		-0.097 (1.239)	
Less than 1 hour	-0.120 (1.114)		-0.197 (0.901)		-0.203 (1.069)	
Lives in the same working city[1]		0.617		0.878		0.706
Yes	-0.045 (1.283)		-0.173 (0.934)		-0.169 (1.17)	
No	-0.204 (1.209)		-0.165 (0.913)		-0.083 (1.09)	
Stress level[1]		0.677		0.352		0.738
Stressed	-0.120 (1.176)		-0.197 (0.928)		-0.168 (0.99)	
Not stressed	-0.032 (1.357)		-0.128 (0.925)		-0.123 (1.299)	
Level of support received[1]		0.998		0.252		**0.004**
High social support	-0.045 (1.256)		-0.118 (0.904)		-0.031 (1.201)	
Low social support	-0.119 (1.22)		-0.208 (0.960)		-0.231 (1.047)	

Factors were presented to three decimal places for easy visualization.
[1] Mann-Whitney U-Test. [2] Kruskal-Wallis test. In bold: statistically significant values ($p < 0.05$). Pattern 1: Vegetables, fruits, cereals and tubers: cabbage, carrot, cucumber, pumpkin, zucchini, okra, chayote, cauliflower, beet and pod, lettuce, tomato, papaya, apple, pear, watermelon, guava, mango, pineapple and grape, orange, manioc, polenta, cooked potatoes and yams, onion, garlic and peppers. Pattern 2: Sweets and snacks: lentils, cake, ice cream, chocolate, pudding, chocolate powder, pizza, salty fish, canned fish and shrimp, wine, viscera and avocado. Pattern 3: Traditional and protein: rice, beans, pork, bone-in beef and beef steak, sausage, eggs, potato chips, hamburger, bacon and mayonnaise, sweet bread and salt bread and butter/margarine. Legend: IIQ: Interquartile Interval.

Table 5. Binary logistic regression, considering the variables associated with the dietary patterns of bank employees.

Variable	Vegetables, fruits, cereals and tubers			
	p value	OR	IC	
			LL 95%	UL 95%
Race/Color				
White		1		
Not white	0.461	0.872	0.607	1.254
Exchange lunch for snack				
5 to 7 x / week		1		
1 to 4 x / week	0.228	2.387	0.580	9.830
Rarely	0.778	1.203	0.333	4.341
Meals made per day				
4 or less		1		
5 or more	0.107	0.722	0.486	1.073
Use of sweetener				
Yes		1		
No	**0.001**	**1.834**	**1.275**	**2.640**
Use of industrialized condiments				
Yes		1		
No	0.090	0.721	0.494	1.052
Variable	**Sweets and snacks**			
	p value	**OR**	**IC**	
			LL 95%	**UL 95%**
Age group				
Up to 30 years		1		
41 to 50 years	0.919	0.975	0.592	1.604
More than 50 years	0.129	1.609	0.871	2.972
Education				
Elementary and high school		1		
Higher and post-graduate education	0.410	0.833	0.539	1.287
Exchange lunch for snack				
5 to 7 x / week		1		
1 to 4 x / week	0.288	0.453	0.105	1.950
Rarely	0.734	1.255	0.338	4.657
Eating in restaurant				
1 to 3 x / day		1		
1 to 6 x / week	0.483	1.241	0.679	2.267
Rarely	**0.001**	**2.909**	**1.522**	**5.558**
Use of sweetener				
Yes		1		
No	**0.020**	**0.641**	**0.440**	**0.934**
Use of salt shaker				
Yes		1		
No	0.160	1.359	0.886	2.087
Use of industrialized condiments				
Yes		1		
No	0.150	1.332	0.902	1.968

it continues

Table 5. Binary logistic regression, considering the variables associated with the dietary patterns of bank employees.

Variable	Tradicional and protein			
	p value	OR	IC	
			LL 95%	UÇ 95%
Meals made per day				
4 or less		1		
5 or more	0.325	1.224	0.818	1.830
Use of sweetener				
Yes		1		
No	**0.000**	**0.459**	**0.317**	**0.665**
Use of industrialized condiments				
Yes		1		
No	**0.000**	**2.350**	**1.598**	**3.458**
Level of support received				
High social support		1		
Low social support	**0.029**	**1.500**	**1.043**	**2.157**

Binary logistic regression. In bold: statistically significant values ($p < 0.05$). Cases of statistical significance less than 10% in the univariate analysis were included in the analyzes. Pattern 1: Vegetables, fruits, cereals and tubers: cabbage, carrot, cucumber, pumpkin, zucchini, okra, chayote, cauliflower, beet and pod, lettuce, tomato, papaya, apple, pear, watermelon, guava, mango, pineapple and grape, orange, manioc, polenta, cooked potatoes and yams, onion, garlic and peppers. Pattern 2: Sweets and snacks: lentils, cake, ice cream, chocolate, pudding, chocolate powder, pizza, salty fish, canned fish and shrimp, wine, viscera and avocado. Pattern 3: Traditional and protein: rice, beans, pork, bone-in beef and beef steak, sausage, eggs, potato chips, hamburger, bacon and mayonnaise, sweet bread and salt bread and butter/margarine. Legend: LL: Lower limit; UL: Upper limit; OR: Odds ratio.

dietary patterns with typical foods, such as bread and beans, also did saturate with foods rich in cholesterol, saturated fat and simple carbohydrates. This fact can be justified by the consumption of foods that should be consumed moderately, such as frying, along with traditional foods[29]. In addition, intake of typical foods by bank employees did not saturate in the pattern of "vegetables, fruits, cereals and tubers", a fact that is in line with the current diet of the Brazilian population, characterized by low intake of fruits and vegetables, despite maintained consumption of rice and beans by a large part of the population.

When analyzing the compliance of bank employees' dietary patterns with the other researches that applied the methodology of ACP for the study of food consumption, similarities were identified in their results, since the appearance of groups with traditional foods, foods recognized as healthier snacks[24,29-36]. Teachers from the city of Tehran (Iranian capital)[31], employees of a Japanese factory and[33], recently, Brazilian civil servants had the food consumption assessed by the ACP[36], showing that there are few publications about food consumption of groups of workers in the form of dietary pattern. According to WHO guidelines, this fact must be modified, since it recognizes that, in epidemiology, the study of food consumption should be based on dietary profiles rather than isolated nutrients[23].

In addition to the determination of the dietary patterns of bank employees, it was also possible to observe associations of these patterns with behavioral and labor characteristics. The sociodemographic variables did not maintain association after the multiple analyzes, possibly due to the singular characteristics of the group, such as income, salary and schooling[37]. However, the behavior of these professionals was shown to be the main factor related to greater adherence to dietary patterns.

The habit of not consuming sweeteners was associated with a higher adherence to the "vegetables, fruits, cereals and tubers" pattern, possibly due to the adoption of healthier and natural eating habits by these workers, consuming less artificial products[4]. Differently, the association of sweeteners consumption with "sweet and snacks" and "traditional and protein" patterns should be interpreted with caution, since, in an attempt to improve their eating habits, individuals may adopt the use of sweeteners. However, the cross-sectional nature of the study does not allow the visualization of the time of permanence of this alimentary habit, with a possible reverse causality[38].

The consumption of industrialized seasoning was related to the "traditional and protein" pattern due to the types of foods that underpin this dietary pattern, characterized by ready-to-eat preparations, easily purchased in snack bars and restaurants[39], and it was inferred that individuals of this pattern did not have the habit of cooking frequently and, therefore, used less these types of seasoning.

The habit of rarely eating at restaurants was associated with higher adherence to the "sweet and snacks" pattern, resulting from the adoption of quick and simple snacks instead of full meals offered in this type of establishment. The availability of fast-snack outlets, such as bakeries, food stalls and bars are also frequent in urban centers where these banks are located[3,27], which can contribute to the purchase of food away from home. The 2008-2009 Household Budget Survey (POF)[40] shows that there was a significant increase in the percentage of expenses of Brazilian households with out-of-home food, a habit reported by 42.8% of Brazilians interviewed in the urban area. In addition, most of the intake of these foods occurs between 12h00 and 14h00 (40%), at lunchtime[40].

Increased away from home meals are a concern because of the inaccurate nutritional quality of the food available. Bezerra et al.[4] identified that eating out-of-home culminated in a lower intake of protein, rice, beans and milk, as well as increased consumption of total fats, saturated fats, monosaccharides, sweets, fried foods, salted foods, sodas and alcoholic beverages. Bandoni et al.[41], in 2013, found that employees of companies in the city of São Paulo who ate at the workplace (35.7%) consumed fewer calories and had less energy-dense meals, with more vegetables, fruits and legumes. Those who ate at restaurants (37.1%) consumed more meat, sugars and sweets. Those who ate at home (27.2%) consumed more cereals, roots and tubers and less oils, fats, sugars and sweets.

When evaluating labor data, there was an association between the "traditional and protein" pattern and the individual's perception of the social support received. In a study carried out in this same bank employees' population, high perceived social support was reported in 48% of these employees (n = 256), which is an important factor in attenuating the negative effects of work on workers' health[15]. Thus, individuals with greater social support are likely to identify more with their co-workers, having a more active social interaction that allows larger consumption of foods belonging to the "traditional and protein" pattern, both in the working period or even outside of it[42].

Ferrantini et al.[42] also showed that social support in Emory University (Georgia/USA) staff was positively associated with improved diet quality for all three of the diet quality indexes surveyed, namely: Alternate Healthy Eating Index (AHEI), Dietary Approaches to Stopping Hypertension (DASH diet) and Mediterranean diet score ($p < 0.01$).

Unlike social support, the stress level of bank employees was not associated with the identified dietary patterns, since this group had a greater intermediate risk of stress (34.4%, n = 179), with only 18.8% (n = 98) individuals classified as high risk of occupational stress[15], in addition to similar labor and socioeconomic characteristics throughout the group and some flexibility in the time available for the meals[37]. However, other studies have shown possible associations between food consumption and/or eating habits and stress level, such as the study with workers from a factory in Japan, in which it was identified that psychological stress and tension/anxiety were positively associated with eating behaviors similar to those of obese individuals[43]. Another study with Japanese civil servants followed for 5 years (1997-2002) identified that the dietary pattern interacted with mental stress, influencing weight gain and lower satiety regardless of energy intake or other lifestyle habits. These results indicate the presence of an interaction between the dietary pattern and long-term mental stress[44].

Although the population studied is made up of workers from a banking network, it is plausible to assume that the characteristics of this group are similar to the bank employees' characteristics of other networks or even other professions that have similar working conditions, with intense working hours and that spending most of the time in the workplace, having their food choices influenced by time and food availability[45]. It is also important to point out that data collection was completed in 2009 and some food data may not fully express the current reality of bank employees, due to intense changes in Brazilian food practices in recent years[1-4]. However, these data are in line with current studies on Brazilian food habits, which use data derived from the 2009/2010 POF[2,4]. Finally, there is a possible methodological limitation related to the use of factor analysis in the derivation of dietary patterns, considering that this method involves making some decisions subjectively. However, this is mi-

tigated by detailing all the decisions taken[30]. Similarly, despite the explained variance of dietary patterns standing at around 20%, other studies in the area use values close to this variation[29,31] and others do not question this situation[30,33,36]. Moreover, the detected dietary patterns were comparable with other studies, characterizing their external validity[24,29-36].

Thus, three food patterns were identified in this study, namely, the pattern "vegetables, fruits, cereals and tubers", the pattern "sweets and snacks" and the pattern "traditional and protein". From these data, we can conclude that, although food consumption of bank employees was unrelated to the sociodemographic conditions of these individuals, the behavior of such workers and the perception of social support received were associated with these dietary patterns.

Collaborations

M Cattafesta participated in the conception, analysis and interpretation of data, writing of the article, ensuring the accuracy and completeness of the work and final approval of the version to be published. And Zandonade participated in the analysis and interpretation of the data. NS Bissoli participated in the design of the project and in ensuring the accuracy and integrity of the work. LB Salaroli participated in the project design, ensuring the accuracy and completeness of the work and final approval of the version to be published.

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