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Dietary patterns among adolescent freshmen attending a public university

Padrões alimentares de adolescentes recém-ingressos em uma universidade pública

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ABSTRACT

Objective
To identify the association between dietary patterns and nutritional status in adolescent freshmen at a public university in Northeastern Brazil.

Methods
In this cross-sectional study anthropometric variables, body composition and food intake were collected and assessed using the food frequency questionnaire. Dietary patterns were evaluated through factor analysis using the principal component extraction method.

Results
Two dietary patterns were identified: "Western" pattern, consisting of foods with high energy density and low nutritional value, and the "traditional Brazilian" pattern, with foods from Brazilian cuisine such as rice, beans, corn, roots and tubers, fruits, greens and vegetables. The multiple regression analysis revealed a negative association between the "traditional Brazilian" pattern and both excess weight and body fat in females.

Conclusion
A healthy dietary pattern with typical local cuisine foods can offer protection to health and should be encouraged.

Keywords: Adolescent. Factor analysis. Feeding Behavior. Obesity. Universities.

RESUMO

Objetivo

Identificar a associação entre padrões alimentares e estado nutricional em adolescentes recém-ingressos em uma universidade pública do Nordeste brasileiro.

Métodos

Neste estudo transversal foram coletados dados antropométricos, composição corporal e consumo alimentar, verificado pelo questionário de frequência alimentar. Os padrões alimentares foram derivados através da análise fatorial pelo método de extração de componentes principais.

Resultados

Dois padrões alimentares foram identificados: o padrão "Ocidental", composto por alimentos de elevada densidade energética e de baixo valor nutricional, e o padrão "tradicional brasileiro", contendo alimentos da culinária brasileira como arroz, feijão, milho, raízes e tubérculos, frutas, verduras e legumes. A análise de regressão múltipla mostrou associação negativa entre o excesso de peso e de gordura corporal e o padrão alimentar "tradicional brasileiro" no sexo feminino.

Conclusão

Um padrão alimentar saudável e com alimentos típicos da culinária local pode conferir proteção à saúde, devendo ser incentivado.

Palavras-chave: *Adolescente. Análise Fatorial. Comportamento Alimentar. Obesidade. Universidades.*

INTRODUCTION

When entering college individuals are usually in a vulnerable phase; this is the transition phase from adolescence to adulthood, the time when they start to acquire more autonomy and independence [1]. Factors such as spending most of their time in college, performing academic activities and living away from home can lead students to have to buy and prepare their own food, which tends to be nutritionally unbalanced [1].

In this framework, the assessment of food consumption through dietary patterns is a valuable methodological strategy, since traditionally, studies in the area of nutrition assess the consumption of food and nutrients individually; however, individuals do not ingest nutrients separately, but normally in combination in their meals [2]. Thus, knowing the dietary pattern of the population studied can contribute to public health actions and nutritional interventions that focus on improving eating habits.

The identification of college students dietary patterns and associated factors has been revealed in the international scientific literature, with the exception of Brazil, where investigations on this topic are scarce [3-6]. Thus, the aim of this study was to identify the association between dietary patterns and nutritional status in adolescents newly registered in a public university in Northeastern Brazil.

METHODS

Cross-sectional study with college newly admitted adolescents of both genders (first and second semesters 2015 and first semester 2016) and registered in undergraduate health courses at *Universidade Federal de Pernambuco* (UFPE, Federal University of Pernambuco) on the Recife and Vitória de Santo Antão campuses.

The sample was estimated considering an adequate fruits and vegetables consumption frequency among students, established at 24.9% [7]. A maximum error of 5% was adopted, as well

as a confidence interval of 95% and an eligible population of around 456 students, resulting in a sample number of 174 participants. The selection was made by convenience, and the enrollment was by adhesion, with a wide publicity of the study among the health courses students.

Individuals aged >20 years, pregnant women, lactating women and students with physical limitations that would not allow anthropometry and body composition measurement were excluded from the study.

Demographic and socioeconomic variables, sedentary behavior, Physical Activity Level (PAL) and food consumption data were collected using an individual printed questionnaire filled out by the adolescents themselves.

Demographic variables were gender, age at the time of the interview (in years and months) and the undergraduate course they were taking (Physical Education, Nursing, Pharmacy, Nutrition, Dentistry or Occupational Therapy). For purposes of analysis, due to the small number of adolescents registered in Pharmacy and Occupational Therapy courses, those students were categorized under "other courses".

In assessing the socioeconomic level, the classification criteria of the *Associação Brasileira das Empresas de Pesquisa* (ABEP, Brazilian Association of Research Companies) were used. In this study, the following classification was adopted: upper class (A1 and A2), middle class (B1 and B2), lower class (C1 and C2) and poor class (D and E) [8]. Sedentary behavior was evaluated taking into account the screen time, such as watching television and using the computer, considering as excessive time the use for a period >2 hours/day for each activity [9].

The PAL was evaluated using the International Physical Activity Questionnaire (IPAQ) in its short version, which classifies the individual as inactive, insufficiently active, active and very active [10]. In the present study, participants were categorized as inactive/insufficiently active and active/very active.

Weight, height and Waist Circumference (WC) were measured twice by the same evaluator and repeated when the measurement error between them was greater than 100g for weight, 0.5cm for height and 0.1cm for WC. In these cases, the value used was the mean between the two closest measurements. Weight and height were measured according to the techniques proposed by Lohman [11], while WC was measured according to the techniques standardized by the Food and Nutrition Surveillance System [12].

For the determination of body weight, an electronic digital scale was used (PP180 balance Mars®, São Paulo, Brazil), with a capacity of 180kg and 100g accuracy. Height was measured using a portable stadiometer (Ghrum Polar Manufacture, Switzerland) with 1mm precision. The Body Mass Index (BMI) was classified according to age and gender and expressed as a Z-Score of the World Health Organization reference curve, considering for analysis the categories underweight, normal weight and excess weight (overweight and obesity) [13]. The analysis was performed using the WHO AnthroPlus software version 3.2.2 [14]. WC was measured with a non-extendable tape (Sanny® - São Bernardo do Campo, SP, Brazil), with 1mm accuracy, positioning it at the midpoint between the last rib and the upper edge of the iliac crest [12]. The cutoff points adopted for abdominal obesity were those proposed by Taylor et al. [15], according to age and gender. The Waist-Height Ratio (WHtR) was defined by dividing WC by height (both in cm), considering abdominal obesity when WHtR ≥0.50 for both genders [16].

Body composition was assessed with the Maltron BF-906 bioelectrical impedance device (Rayleigh, Essex, UK), with a frequency of 50 Hz in alternating current of four electrodes. The

measurement of body composition followed the protocols established by Heyward; Stolarczyk [17]. Body Fat (BF) levels above the mean were determined by adopting values ≥16% for men and ≥24% for women, while BF levels in the obesity range comprised values ≥25% and ≥32% for men and women, respectively [18]. In the analysis of associations, BF was considered a continuous variable. The specific cutoff points for children and adolescents were not used because the values that define the risk are much higher and the population of our study consisted mostly of students in the final phase of adolescence, that is, closer to young adult age [19].

Habitual food consumption data were obtained using a Food Frequency Questionnaire (FFQ) developed and validated with the objective of verifying the relationship between diet and chronic Non-communicable Diseases (NCDs). The questionnaire deploys 98 food items and is validated for adults; it was considered the most adequate, being able to detect all the nuances of this transition phase that corresponds to the end of adolescence [20]. Even so, it was adapted with the inclusion of foods representative of the Northeastern cuisine and of habitual consumption among adolescents. In its final version, it consisted of 90 items and 11 food groups: dairy products (six items); meat and fish (12 items); legumes (two items); greens and vegetables (eight items); fruits (28 items); cereals and derivatives (eight items); roots and tubers (five items); fats (six items); sugars/ treats (four items); drinks (seven items); and miscellaneous (four items). Representative foods of Northeastern cuisine and habitually consumed by adolescents were included.

Data were double entered to use the VALIDATE module of the Epi-info Program, version 6.0 (WHO/CDC, Atlanta, GE) that verifies the data, checks their consistency and validate them. Statistical analyses were performed using the Stata Program, version 13.0 (StataCorp LP, College Station, United States).

Factor analysis was used to identify the dietary patterns. The principal components extraction method was used based on the division of foods in the FFQ into 17 groups according to nutritional similarities and correlation. In the correlation matrix, foods that may or may not be grouped for factor analysis are evaluated. For example, soybeans in the Northeast region, is consumed as a substitute for beans and, according to the correlation matrix, it was possible to group these two staples together. In addition, the frequency of consumption of soy beans was very low, but not so low (<5%) so as to be excluded. In addition in relation to the consumption of roots and tubers, the FFQ questions did not take into account whether the foods were cooked or fried.

To verify the adequacy of the factor analysis data, the sphericity tests of Bartllett and Kayser-Meyer-Olkin (KMO) [21] were applied. In order to identify the number of patterns to be retained, the criterion of eigenvalue >1, the graph of the eigenvalues (Scree plot) and the interpretability of the patterns were used. The factors obtained underwent Varimax orthogonal rotation, facilitating interpretation of the data. Factor loadings above 0.40 were considered to label the dietary patterns.

Linear regression analysis was used to assess the association between dietary patterns and adolescents' characteristics. In the adjusted model, the variables were selected by the stepwise method. The model's suitability was verified through residual analysis. A significance level of 5% was adopted for all tests.

This investigation was approved by the Human Research Ethics Committee of the *Universidade Federal de Pernambuco* Medical Sciences Center, under number 29472320.0.0000.5208 5208, opinion nº 3.950.095.

RESULTS

Two dietary patterns were identified: "Western" pattern and "traditional Brazilian" pattern, with a total variance of 36%. The "Western" dietary pattern was represented by positive factor

loadings for the food groups pasta, processed meats, oils and sauces, butter and margarine, bread, sweets and desserts, sugary drinks and snacks, while the "traditional Brazilian" pattern was composed by positive factor loadings for the food groups rice, beans, cereals, roots and tubers, fruits and fresh juices, vegetables, meats, oils and sauces, dairy products and cheeses (Table 1).

Table 1 – Dietary patterns of newly admitted adolescents at the Federal University of Pernambuco, Recife, Brazil, 2015-2016.

Dietary patterns	Variance (%)		
Western	22		
Brazilian traditional	14		
Food groups	Food	Factorial load	
		Western	Brazilian traditional
Rice	Rice	0.2126	0.4587
Beans	Mulatto beans, green beans, soy	0.2577	0.4339
Pasta	Pasta	0.5913	0.1871
Cereals	Oats, corn	-0.2994	0.5688
Roots and tubers	Sweet potato, potato, yam, cassava	0.1399	0.4675
Fruits, fresh fruit juices and coconut water	Avocado, pineapple, acerola, banana, *cajá*, cashew, carambola, guava, soursop, orange, lemon, apple, papaya, mango, passion fruit, watermelon, melon, strawberry, pear, pinecone, grape, kiwi, fruit juice and coconut water	-0.0316	0.5829
Greens and vegetables	Carrots, chayote, cabbage (leaf and flower), pumpkin, okra / gherkin, cooked salad, raw salad, green beans	0.0362	0.5853
Meats	Beef (cooked; roasted), beef (fried), pork, beef jerky, liver, skinless or fried chicken, skinless chicken (cooked; roasted), chicken or beef offal	0.1109	0.4170
Processed meats	Sausage, sausage, bologna, ham	0.4201	-0.0173
Olive oil, oils and sauces	Olive oil, oil, mayonnaise, light mayonnaise	0.4027	0.5022
Butters and Margarines	Butters and margarines	0.6869	0.2678
Dairy	Whole/light yogurt, skimmed milk, whole milk	-0.0595	0.4895
Cheeses	Yellow and white cheeses	0.0972	0.4918
Bread	White bread and wholemeal bread	0.7604	0.0588
Sweets and desserts	Sugar, candies and sweets, cakes, honey / brown sugar, pudding / delicacy / sweets / ice cream	0.4669	0.3789
Sugary drinks	Soda, light soda, artificial juice	0.7156	-0.2461
Snacks	*Coxinha*/pie, ketchup/mustard, pizza/sandwich/fast food, bar snacks	0.732	-0.0422

Note: Kayser-Meyer-Olkin: 0.75; Explained variance: 0.36.

A total of 206 adolescents were evaluated, 71.4% of which were female and with a median age of 18 years (IQR=18-19). Most students were registered in the Nutrition course (40.8%) and belonged to the socioeconomic middle class (52.9%). More than a third of students (34.5%) were considered inactive/insufficiently active and 84.5% were classified as having a sedentary behavior >2 hours.

The prevalence of underweight and overweight according to BMI was 10.7% and 19.9%, respectively. WC and WHtR were within the normal range in more than 80% of the sample. Regarding body composition, 40.3% of the students had a high percentage of BF (35.6% for males and 42.0% for females), in which 29.1% had a percentage of BF above average and 11.2% had values consistent with the obesity diagnosis.

Table 2 shows adherence to dietary patterns identified according to the adolescents' demographic, socioeconomic, anthropometric and lifestyle variables. The "Western" dietary pattern had greater adherence by female students (p<0.001) who belonged to the middle socioeconomic class (p=0.012), classified as inactive/insufficiently active (p<0.001) and attending the Nursing, Dentistry and other courses (p<0.001). The "traditional Brazilian" dietary pattern was more adhered to by students in the Nutrition and Physical Education courses (p=0.014).

Table 2 – Dietary patterns and demographic, socioeconomic, lifestyle and anthropometric characteristics of adolescents recently enrolled at the Federal University of Pernambuco, Recife, 2015-2016.

Variables	n	%	Western Standard Average (SD)	p^{***}	Brazilian Traditional Standard Average (SD)	p^{***}
Gender						
Male	59	28.6	-0.4128 (1.21)	<0.001	0.2120 (1.19)	0.053
Female	147	71.4	0.1679 (0.85)		-0.0862 (0.90)	
Age						
≤17	43	20.9	-0.1608 (0.93)	0.243	-0.1758 (0.78)	0.202
18 to 19	163	79.1	0.0417 (1.01)		0.0455 (1.04)	
Course						
Nutrition	84	40.8	-0.3687 (0.92)		0.2053 (0.92)	
Nursing	52	25.3	0.5301 (0.76)		-0.1920 (0.77)	
Physical Education	31	15.0	-0.2673 (1.33)	<0.001	0.0767 (1.31)	0.014
Dentistry	31	15.0	0.2562 (0.70)		-0.0775 (0.98)	
Other courses[a]	8	3.9	0.4881 (0.69)		-0.9029 (1.23)	
Socioeconomic Level						
High (A1+A2+B1)	56	27.2	-0.1796 (1.02)		0.1104 (0.93)	
Middle (B2+C1)	109	52.9	0.1941 (0.96)	0.012	-0.0165 (0.91)	0.585
Low (C2+D+E)	41	19.9	-0.2747 (0.99)		-0.0974 (1.30)	
Physical Activity						
Active/Very active	135	65.5	-0.1721 (1.05)	<0.001	0.0564 (0.98)	0.271
Inactive/Insufficiently active	71	34.5	0.3223 (0.80)		-0.1057 (1.03)	
Sedentary behavior						
≤2 hours/day	32	15.5	-0.0415 (0.85)	0.798	-0.2091 (0.97)	0.198
>2 hours/day	174	84.5	0.0077 (1.02)		0.0389 (1.00)	
Body Mass Index[*]						
Eutrophic	143	69.4	0.0073 (1.06)	0.834	0.0428 (0.98)	0.223
Overweight	41	19.9	-0.0292 (0.70)		-0.1702 (1.07)	
WHtR[**]						
Below average	168	81.6	-0.0753 (1.11)	0.212	0.0648 (0.98)	0.289
Above average	38	18.4	0.1013 (0.80)		-0.0861 (1.02)	

Note: [***]p= Student's t test and ANOVA; [**]WHtR: Waist-Height Ratio [16]; [*]Body Mass Index [13] (those with thinness were excluded); [a]Pharmacy and Occupational Therapy; SD: Standard Deviation; Physical activity level [10]; Sedentary behavior [9]; Socioeconomic level [8].

In the association analysis, the "Western" dietary pattern was positively associated with the female gender (β=0.37; p=0.027), Nursing students (β=0.78; p<0.001) and Dentistry students (β=0.53; p=0.008) and inactive/insufficiently active adolescents (β=0.30; p=0.034), while the "traditional Brazilian" pattern was negatively associated with students of the Nursing course (β= -0.38; p=0.037) and other courses (β= -1.05; p=0.005) (Table 3).

Table 3 – Association between dietary patterns and demographic, socioeconomic, lifestyle and anthropometric characteristics of adolescents recently enrolled at the Federal University of Pernambuco, Recife, Brazil, 2015-2016.

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Variables	Western Standard β	p^{***}	Brazilian Traditional Standard β	p^{***}
Gender				
Male	Reference	-	Reference	-
Female	0.37	0.027	-0.31	0.082
Age				
≤ 17	Reference	-	Reference	-
18 to 19	0.09	0.568	0.26	0.127
Socioeconomic Level				
High (A1+A2+B1)	Reference		Reference	-
Middle (B2+C1)	0.30	0.056	-0.02	0.885
Low (C2+ D + E)	-0.01	0.951	-0.22	0.304

Table 3 – Association between dietary patterns and demographic, socioeconomic, lifestyle and anthropometric characteristics of adolescents recently enrolled at the Federal University of Pernambuco, Recife, Brazil, 2015-2016.

Variables	Western Standard β	*p****	Brazilian Traditional Standard β	*p****
Course				
Nutrition	Reference		Reference	-
Nursing	0.78	<0.001	-0.38	0.037
Physical Education	0.32	0.142	-0.24	0.301
Dentistry	0.53	0.008	-0.33	0.137
Other courses[a]	0.53	0.128	-1.05	0.005
Physical Activity				
Active/Very active	Reference	-		
Inactive/Insufficiently active	0.30	0.034	*	*
Body Mass Index**	*	*	*	*
Eutrophic			Reference	-
Overweight	*	*	-0.10	0.579

Note: Brazilian Traditional Pattern: model adjusted for gender, age, economic level, course and BMI; Western pattern: model adjusted for gender, age, economic level, course and physical activity; *Variable not entered in model adjustment; **Body Mass Index[13]; ***p=linear regression; aPharmacy and Occupational Therapy; Physical activity level [10]; Socioeconomic level [8].

Linear regression analysis revealed a negative association between greater adherence to the "traditional Brazilian" dietary pattern and the percentage of BF (β= -1.315; p=0.047) and BMI (β= -0.757; p=0.038) among adolescents of the female gender (Table 4).

Table 4 – Association between dietary patterns, body fat percentage and Body Mass Index in adolescents newly admitted to the Federal University of Pernambuco, Recife, 2015-2016.

Variables	Male		Female	
	β	*p****	β	*p****
Percentage of Body Fat*				
Western Standard	-0.235	0.72	0.305	0.666
Brazilian Traditional Standard	-0.010	0.99	-1.315	0.047
Body Mass Index**				
Western Standard	-0.390	0.226	0.151	0.696
Brazilian Traditional Standard	0.198	0.535	-0.757	0.038

Note: *Bioimpedance [18]; **Body Mass Index [13]; ***Linear regression model adjusted for age and physical activity level.

DISCUSSION

This study identified two dietary patterns among adolescents who had just entered university: "Western" and "traditional Brazilian" dietary patterns. The "Western" pattern was characterized by a predominant high energy density and low nutritional value food intake, while the "traditional Brazilian" pattern was a diet composed of foods rich in fiber and micronutrients and typical of Brazilian and Northeastern Brazil cuisine.

International investigations with college students also identified dietary patterns similar to those of our investigation [3,4]. In Brazil, there are few studies on food consumption from the perspective of dietary patterns in higher education students using the same methodology adopted in our study. Similar to the present investigation, Pereira-Santos et al. [5] identified four dietary patterns among students from a public university in the Bahia State, labeled dietary "traditional" pattern,

"exam days" pattern, "end of semester" pattern and "anxiety" pattern. Recently, an investigation with students from a public university in Mato Grosso State identified dietary patterns in each of the three main meals consumed by the youngsters assessed [6]. The authors found three dietary patterns at breakfast ("White bread with butter/margarine", "Coffee and tea" and "Sausages, wholemeal bread with cheese), three patterns for lunch ("Traditional", "Western" and "Vegetarian") and three at dinner ("Beans, rice and processed juice", "White bread with butter/margarine" and "White meat, eggs and natural juice") [6].

The "Western" dietary pattern was the most adhered to pattern among female students. Some studies found that this pattern was more adhered to by females, while others studies found that it was more adopted by males [4,22-24]. This finding can be justified by the fact that females are more physically inactive compared, which can lead to greater consumption of low nutritional value foods such as those included in the "Western" dietary pattern [25,26].

Just like in our study, adherence to an unhealthy foods dietary pattern in individuals of higher socioeconomic status was observed in other studies [23,24]. Higher socioeconomic status is not necessarily associated with a diet of better nutritional quality, as factors such as individual food preferences and regional eating habits can influence food intake [26].

The high rate of sedentary behavior individuals (>2 hours) is in line with other studies [27,28]. Regarding Physical Activity Level, it was observed that students classified as inactive/insufficiently active adhered to the "Western" standard. Adherence to a "westernized" pattern in physically less active students has been reported in other investigations [4,24]. Considering that spending too much time in sedentary behavior represents a health risk factor even with regular moderate to vigorous physical activity, these findings deserve attention because these are individuals who are in transition from adolescence to adult life, in which the excessive consumption of "Western" pattern foods can lead to the appearance of overweight, obesity and NCDs [29,30].

Adherence to a "Western" dietary pattern was also observed in Nursing, Dentistry and other courses students. Similar to the present survey, an investigation with Australian nursing students found that the majority followed a "Western" (31%) or "unbalanced" (48%) dietary pattern, and among students aged 18 to 24 years, 25.4 % followed the "Western" pattern and 59% followed the "unbalanced" pattern [31].

Corroborating with other studies with university students or not these findings demonstrate the changes that have occurred in the population's dietary pattern, with the excessive consumption of foods rich in sugars, saturated and trans fats and sodium, in addition to the obstacles experienced by newcomers in the college setting, such as stress and academic demands, or even the practicality and food preferences of adolescents [5,23,32-35]. These results are worrisome because it is a pattern composed mostly of foods with high energy density and low nutritional value that when consumed in excess, can lead to an increase in anthropometric parameters and body adiposity [36].

The participation of foods rich in complex carbohydrates, proteins, fibers and micronutrients present in the "traditional Brazilian" dietary pattern, identified in this study, is a positive factor because there was the consumption of typical foods from Brazilian and Northeastern Brazil cuisine, manifesting the preservation of dietary practices and the intake of foods that are markers of a healthy diet, such as beans, fruits and vegetables [37]. This finding corroborates the *Estudo de Riscos Cardiovasculares em Adolescentes* (ERICA, Study of Cardiovascular Risks in Adolescents), a nationwide survey carried out in the five Brazilian regions, and with other studies carried out in Brazil northeastern region, in which a traditional dietary pattern was detected among adolescents and university students [5,38,39].

In our study, the "traditional Brazilian" dietary pattern was adhered to by the Nutrition and Physical Education students. An investigation with nutrition students from a university in northeastern Brazil found a food pattern labeled "traditional", which was composed of foods similar to the traditional Brazilian pattern described here [5]. The adherence of a dietary pattern composed of healthy foods by the students of the aforementioned courses can be explained by the fact that these students will be future health professionals who seek and promote a healthy lifestyle, which includes a balanced diet and physical exercises [40].

In the present study, a high prevalence of thinness was observed, which is higher than the rates found in national surveys, which show a reduction in malnutrition in Brazil [41]. This can be justified by the concern with the body image commonly observed among adolescents, as they experience several body changes and place a high value on physical appearance, as well as by professions possibly under pressure to constitute an ideal aesthetic standard [42,43]. A high prevalence of excess BF was also observed, which is a factor of concern due to the risk of cardiovascular and metabolic diseases [34].

The "traditional Brazilian" pattern was negatively associated with excess weight and BF in females, after adjustments for age and PAL. This result is contrary to that of investigations that addressed similar characteristics in the sample and the way of extracting the dietary patterns, in which higher chances of obesity and a high percentage of BF were found in individuals who followed a westernized pattern [34,44]. Brazilian studies conducted with adolescents not registered in colleges also showed an association between traditional and/or healthy dietary patterns with lower chances of obesity [39,45]. The findings in our study can be explained by the protective effect of the aforementioned dietary pattern, since it is characterized by foods that have a protective effect against chronic diseases and overweight [45,46]. Another justification may be reverse causality, commonly found in cross-sectional studies [47]. In this connection, adolescents could be in the process of changing their eating habits and actually ingesting more healthy foods. Underreporting of food consumption would also be another explanation, a fact commonly observed in females and in overweight individuals [48].

This study has limitations. The cross-sectional design does not allow the assessment of cause and effect relationships between variables. The analysis of food consumption using the FFQ is subject to biases such as the interviewee's memory and sub-reports. In addition, there is no validated FFQ for late adolescence and early adulthood transition phase. Factor analysis is a technique widely used in the scientific literature, but the investigator's decisions to derive dietary patterns are subjective and, in most cases, it is not possible to extrapolate the results to another population, which makes it difficult to compare investigations. The lack of investigations assessing food consumption through dietary patterns in university students, especially among students in the health courses, makes it difficult to compare investigations.

On the other hand, the present study was innovative for identifying and associating dietary patterns with sociodemographic, lifestyle and nutritional status characteristics in a sample composed exclusively of adolescents registered in a Brazilian public university, helping to understand how this population eats and suggesting the role that the university can play as a promoter of a healthy lifestyle among future health professionals.

CONCLUSION

This study identified two dietary patterns among adolescents recently enrolled in a public university in Northeastern Brazil: the "Western" pattern and the "traditional Brazilian" pattern. The latter was negatively associated with excess weight and body fat in females, possibly conferring health

protection. On the other hand, greater adherence to the "Western" dietary pattern highlights the importance of the university as a promoter of a healthy lifestyle, such as encouraging the adoption of balanced eating habits and the practice of physical exercises, especially among adolescents who have recently entered the university and who are future health professionals.

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