Pattern of meals eaten by adolescents from technical schools of São Paulo, SP, Brazil

Padrão de refeições realizadas por adolescentes que frequentam escolas técnicas de São Paulo

Estándar de comidas realizadas por adolescentes que frecuentan escuelas técnicas de São Paulo

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ABSTRACT

Objective: To evaluate and characterize the meal consumption of adolescents.

Methods: This cross-sectional study enrolled 71 high school students from technical schools of São Paulo (SP), Brazil. A questionnaire to assess food attitudes of adolescents was applied to the students. The variables studied were: frequency, location, with whom they had meals and the replacement of lunch and/or dinner for snacks. Data were analyzed descriptively. The chi-square test was used to compare variables by gender, being significant $p<0.05$.

Results: Among 71 adolescents, 58% were female. The majority reported eating the main meals at home (88% breakfast, 91% lunch, 96% dinner). Regarding the frequency of meal consumption, 49% have breakfast, 65% lunch, and 51% have dinner every day. Adolescents not only eat breakfast (48%) but also lunch (39%) alone, while the dinner (77%) is a family meal. Eating meal with parents differed between genders ($p=0.022$). Snacks replaced lunch for 29% of the adolescents. Among these, 17% replace lunch once or twice a week. Snacks replace dinner for 62% of the studied population and 42% of them once or twice a week.

Conclusions: Although young people eat their meals at home, these meals are not taken daily or in the company of their parents.

Key-words: adolescent; food consumption; food preferences.

RESUMO

Objetivo: Avaliar e caracterizar o consumo de refeições realizadas por adolescentes.

Métodos: Estudo transversal com 71 adolescentes do ensino médio de escolas técnicas de São Paulo. Foi utilizado um questionário que avalia atitudes alimentares de adolescentes. As variáveis estudadas foram: frequência, local, com quem realiza as refeições e substituição de refeições por lanches. Os dados foram analisados descritivamente e o teste do qui-quadrado comparou as variáveis segundo gênero, considerando nível de significância de 5%.

Resultados: Do total, 58% eram do gênero feminino. A maioria relatou realizar as principais refeições em casa (88% café da manhã, 91% almoço e 96% jantar). Quanto à frequência do consumo, 49% realizavam todos os dias o café da manhã, 65% o almoço e 51% o jantar. Os adolescentes consumiam tanto o café da

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manhã (48%) quanto o almoço (39%) sozinhos, enquanto o jantar (77%) era realizado com os pais, havendo, para o jantar, diferença entre gêneros (p=0,022). Observou-se que 29% substituíam o almoço por lanches e, destes, 17% o faziam uma a duas vezes por semana. No jantar, uma porcentagem maior de adolescentes o substituía por lanche (62%), sendo a frequência de substituição de uma a duas vezes por semana para 42% deles.

Conclusões: Apesar de os adolescentes realizarem as refeições em casa, as mesmas não são feitas diariamente nem acompanhadas pelos pais.

Palavras-chave: adolescente; consumo de alimentos; preferências alimentares.

RESUMEN

Objetivo: Evaluar y caracterizar el consumo de comidas realizadas por adolescentes.

Métodos: Estudio transversal con 71 adolescentes de la secundaria de escuelas técnicas de São Paulo (Brasil), provenientes de un estudio transversal. Se utilizó un cuestionario que evalúa actitudes alimentares de adolescentes. Las variables estudiadas fueron: frecuencia, local, con quién realiza las comidas y la sustitución de comidas por meriendas. Los datos fueron analizados descriptivamente y se utilizó la prueba del Chi-Cuadrado para comparaciones de las variables según género, considerando un nivel de significancia de 5%.

Resultados: Del total, 58% eran del género femenino. La mayoría relató realizar las principales comidas en casa (88% desayuno, 91% almuerzo, 96% cena). Respecto a la frecuencia del consumo, 49% desayunaban, 65% almorzaban y 51% cenaban todos los días. Los adolescentes consumían tanto el desayuno (48%) como el almuerzo (39%) solos, mientras que la cena (77%) era realizada con los padres, siendo verificada, para esta última, diferencia entre géneros (p=0,022). Se observó que un 29% sustituía el almuerzo por meriendas, con diferencia entre géneros (p=0,057) y, de éstos, el 17,4% lo hacía de 1 a 2 veces por semana. En la cena, un porcentaje más grande de adolescentes la sustituía por merienda (62%), siendo para 42% de ellos la frecuencia de sustitución de 1 a 2 veces por semana.

Conclusiones: A pesar de que los adolescentes realizan las comidas en casa, éstas no eran realizadas diariamente y tampoco acompañadas por los padres.

Palabras clave: adolescentes; consumo de alimentos; preferencias alimentares.

Introduction

Adolescents have a fast rate of growth and development, thus requiring higher nutrient and energy intake. During this period, attitudes may affect food choice and the development of eating habits, which in turn may be associated with current and lifetime nutritional status and with energy imbalance[1-4].

Eating patterns of adolescents may be influenced by both internal and external factors. Internal factors include: self-image, physiological needs and individual health, values, preferences, and psychosocial development. External factors include: family habits, friends, social and cultural values and rules, media, trends, experiences, and the individual's knowledge[5].

The diet of adolescents is characterized by a preference for foods high in saturated fat, cholesterol, sodium, and refined carbohydrates, often represented by the consumption of pastries, salty snack foods, fried foods of animal origin, and sugar-sweetened drinks[6,7].

Adolescents also show irregular eating habits and tend to "skip meals", especially breakfast[8,9]. Gambardella *et al* (1999) [10] found that 56% of 153 adolescents skipping breakfast also skipped the morning and evening snack, with a long overnight fasting period, i.e., from dinner through lunch the next day. Evidence suggests that breakfast is important to overall dietary quality of students, because it improves cognitive functions, such as concentration, memory, and school attendance[11-13]. There is also evidence indicating that adolescents who reported eating breakfast regularly have superior nutritional profiles than their breakfast-skipping peers[14].

These eating behaviors, associated with a sedentary lifestyle, are consistent factors that contribute to the continuous increase in the prevalence of obesity[15-17]. Franko *et al*[18] showed an inverse relationship between meal frequency and prevalence of overweight and obesity. Studies show that adolescent lifestyles are highly influenced by family patterns, including food choice, indicating the important role of the family in weight gain[19].

Thus, it is necessary to understand adolescent eating habits (how adolescents consume their meals), since there is a positive correlation between diet and risk of morbidity and mortality, in order to provide support for the implementation of public policies and strategies to improve quality of life and lifestyle of adolescents. Therefore, the present study aimed to verify and characterize eating patterns of male and female adolescents enrolled in a public technical school located in the metropolitan area of São Paulo, southeastern Brazil.

Method

This cross-sectional study is part of a more extensive research project called "Eating attitudes and their determinants among adolescents in the city of São Paulo, Brazil". The primary objective of the matrix project is to evaluate dietary determinants, family meal frequency, risk behaviors for the development of eating disorders, and food intake among adolescents. For the matrix project, sample size was obtained by simple random sampling, considering a maximum ratio of 50% for the different hypotheses to be found, with a 3% margin of error, totaling 1,067 adolescents. Considering possible sample loss, 20% additional subjects were added to the sample.

The final sample should be composed of 1,280 adolescents, and data on these participants will be collected among high school students from technical schools that are part of the Paula Souza Center, in the city of São Paulo, state of São Paulo, Brazil. In May 2009, the Paula Souza Center consisted of 27 technical schools, 15 of which also include high school education. Of these 15 schools, one was used in this pilot study. Four groups were randomly selected in this school, totaling 71 male and female adolescents aged 14 to 17 years. Students were considered eligible for the study after the parents/legal guardians returned a signed written consent form.

The questionnaire used in the present study (Adolescent Eating Attitudes Questionnaire – AEAQ) was developed based on a U.S. questionnaire developed in Minnesota by Neumark-Sztainer, called Project EAT (Eating Among Teens). The original questionnaire, authorized by the author to be used in this study, was translated, adapted to the Brazilian context, back translated, and approved as a final version of 72 open- and closed-ended questions. This questionnaire has yet to be published. All adolescents completed the questionnaire in the classroom, with the help of team members in case of doubts.

Adolescents reported on the location, frequency, and with whom they had the following meals: breakfast, lunch, dinner, and between-meal snacks. The following question was also asked: "Do you ever have a snack instead of lunch or dinner?" Students answered "yes" or "no", including the frequency that they usually replace meals in a week ("1-2 days", "3-4 days", "5-6 days", and "every day"), and reported on "What foods do you eat for a snack that replaces lunch or dinner?"

All data were double entered and analyzed using the Statistical Package for the Social Sciences (SPSS) for Windows, version 13.0. A descriptive analysis of variables was performed based on frequency. The chi-square test was used for comparison of variables (location, frequency, companion, and meal replacement) according to sex, considering a significance level of 5%.

The research project was approved by the Research Ethics Committee of the School of Public Health, Universidade de São Paulo, Brazil, in accordance with resolution 196/96 of the Brazilian National Health Council, which regulates research involving human subjects.

Results

The study population comprised 71 adolescents, 30 (42.3%) boys and 41 (57.7%) girls. Table 1 shows that most adolescents reported having the main meals at home (breakfast, 88.1%; lunch, 91.2%; dinner, 95.6%). Regarding meal frequency, 49.3% of adolescents ate breakfast, 64.8% lunch, and 50.7% dinner every day. Nearly half of adolescents ate breakfast by themselves (47.8%) and just over a third had lunch by themselves (39.4%), whereas most adolescents had dinner with their mother and/or father (77.1%). Adolescents ate in-between meals mainly when they were at home (70.1%) and in school (24.9%).

When the same data were analyzed according to sex (Tables 2 and 3), 96.4% of boys and 87.5% of girls had lunch at home and 100% of boys and 92.1% of girls had dinner at home. Among adolescents who did not have lunch and/or dinner at home, no boys reported having these meals in the school, whereas girls reported a higher frequency of other places for meals (school, fast food restaurants, other restaurants, and someone else's house). A greater number of boys ate breakfast every day compared to girls (63.3% and 39.0%, respectively). There was a significant association between sex and type of companion during dinner (p=0.022): 26.7% of boys had dinner by themselves and 70.0% with their mother and/or father, whereas 5.0% of girls had dinner by themselves and 82.5% with their mother and/or father.

Our sample had a frequency of 29.0% of adolescents having a snack instead of lunch: 17.2% of boys and 37.5% of girls (p=0.057). Regarding dinner, no difference was observed between sexes. A greater percentage of 1-2 times/week meal replacement was observed for dinner (17.4% at lunch and 42.3% at dinner).

Lunch was often replaced with the following foods: ham and cheese sandwich, cheese bread, hamburgers, pastries, pizza, chocolate, peanuts, salty snack foods,

fruit, smoothie, soft drink, juice, and yoghurt. The most popular foods to replace dinner were: coffee, tea, chocolate milk, soft drinks, cookies, cake, sweets, cereal, bread and butter, ham and cheese sandwich, chicken and tomato on white bread, hamburgers, hot dogs, pizza, bread and egg, salad, and one adolescent reported "fruit or whatever food is available".

Discussion

Based on the present results, adolescents tend to have breakfast and lunch at home by themselves, allowing them to make their own food choices. It is well known that adolescents have a preference for foods high in saturated fat, cholesterol, sodium, and refined carbohydrates, often represented

Table 1 – Distribution of adolescents according to location, frequency, and with whom they have meals.

	Breakfast		Lunch		Dinner		Snacks	
	n	%	n	%	n	%	n	%
Location								
Home	59	88	61	91	65	96	47	70
School	6	9	1	2	2	3	18	25
Fast food restaurant	1	2	3	4	0	0	1	2
Other restaurants	0	0	1	2	1	2	0	0
Someone else's house	1	2	1	2	0	0	1	2
Frequency								
Never	3	4.2	0	0	3	4.2	1	1.4
1 – 2 days	9	12.7	6	6	9	13	13	18
3 – 4 days	9	12.7	8	11	10	14	20	28
5 – 6 days	15	21.1	11	16	13	18	10	14
Every day	35	49.3	46	65	36	51	27	38
With whom								
Alone	32	48	28	39	10	14	40	58
Father and/or mother	22	33	29	41	54	77	11	16
Other people	13	19	14	20	6	9	18	25

Table 2 – Association between sex, location, frequency, and with whom adolescents have meals according to breakfast and between-meal snacks.

	Breakfast			Between-meal snacks		
	Boys	Girls	*p*	Boys	Girls	*p*
	n (%)	n (%)		n (%)	n (%)	
Location						
Home	26 (93)	33 (85)	0.285	20 (77)	27 (66)	0.621
School	1 (4)	5 (13)		6 (23)	12 (29)	
Fast food restaurant	1 (4)	-		-	1 (2)	
Other restaurants	-	-		-	-	
Someone else's house	-	1 (3)		-	1 (2)	
Frequency						
Never	1 (3)	2 (5)	0.118	-	1 (2.4)	0.464
1 – 2 days	2 (7)	7 (17)		7 (23)	6 (15)	
3 – 4 days	1 (3)	8 (20)		9 (30)	11 (27)	
5 – 6 days	7 (23)	8 (20)		2 (7)	8 (20)	
Every day	19 (63)	16 (39)		12 (40)	15 (37)	
With whom						
Alone	16 (59)	16 (40)	0.224	19 (66)	21 (53)	0.129
Father and/or mother	8 (30)	14 (35)		6 (21)	5 (13)	
Other people	3 (11)	10 (25)		4 (14)	14 (35)	

Table 3 – Association between sex, location, frequency, and with whom adolescents have meals according to lunch and dinner.

	Lunch			Dinner		
	Boys	Girls	*p*	Boys	Girls	*p*
	n (%)	n (%)		n (%)	n (%)	
Location						
Home	27 (96)	35 (88)	0.677	30 (100)	35 (92)	0.290
School	-	1 (3)		-	2 (3)	
Fast food restaurant	1 (4)	2 (5)		-	-	
Other restaurants	-	1 (3)		-	1 (2.6)	
Someone else's house	-	1 (3)		-	-	
Frequency						
Never	-	-	0.262	-	3 (7)	0.565
1 – 2 days	2 (7)	4 (10)		4 (13)	5 (12)	
3 – 4 days	1 (3)	7 (17)		4 (13)	6 (15)	
5 – 6 days	6 (20)	5 (12)		7 (23)	6 (15)	
Every day	21 (70)	25 (61)		15 (50)	21 (51)	
With whom						
Alone	14 (46.7)	14 (34)	0.196	8 (27)	2 (5.0)	0.022
Father and/or mother	13 (43.3)	16 (39)		2 (70)	2 (83)	
Other people	1 (10)	11 (27)		1 (3.3)	5 (13)	

by the consumption of pastries, salty snack foods, fried foods of animal origin, and sugar-sweetened drinks[7,15,20].

Similarly to previous studies, approximately half of adolescents have meals regularly every day, especially lunch (breakfast, 49.3%; lunch, 64.8%; and dinner, 50.7%). Gambardella *et al*[10] observed that, among 153 adolescents living in the city of Santo André, state of São Paulo, southeastern Brazil, less than half (45%) had an adequate breakfast, about 75% had lunch, and 53% had dinner – a behavior that may influence overall dietary quality of adolescents. Berkey *et al*[21] showed that individuals with a higher frequency of meals tend to make healthier food choices.

In our study, a greater number of boys were found to eat breakfast every day (63.3%) compared to girls (39.0%). Skipping breakfast may be associated with the fact that girls are often concerned with loosing weight and, therefore, skip more meals. However, skipping breakfast is an ineffective way to control weight[22]. Other studies have also observed this tendency to skip breakfast among adolescents. Estima *et al*[23] evaluated 529 adolescents living in the city of Duque de Caxias, state of Rio Janeiro, southeastern Brazil, and found that 9% skipped breakfast. Leal[24], in a study involving 228 adolescents from Ilhabela, state of São Paulo, southeastern Brazil, found that 21% skipped breakfast. Dolabona[25] evaluated 759 adolescents (297 boys and 462 girls), aged ten to 19 years, from public and private schools in the West Region of the city of São Paulo, and found that 57.6% of boys and 61.3% of girls had the habit of skipping/replacing meals.

In the present study, 77.1% of adolescents had dinner with their mother and/or father regularly, and this habit was more common among female adolescents. According to Neumark-Sztainer *et al*[26], frequency of family meals is positively associated with intake of fruits, vegetables, grains, and calcium-rich foods and negatively associated with soft drink consumption. Curiously, although the adolescents analyzed in the present study reported that dinner was the meal in which the presence of their parents was more frequent, this was the meal more commonly replaced with snacks.

Meal replacements may be explained by schedule conflicts between adolescents and their parents, thus interfering with the opportunity to have family meals. Adolescents often report lack of time due to several activities, such as sports practicing and homework, in addition to a desire for autonomy, dissatisfaction with the family, and disapproval of foods served at home. Adolescents have also mentioned that parents are very busy, thus representing barriers to the performance of family meals[27,28]. Current trends toward "convenience and practicality" are motivated mainly by a way of life marked by a fast pace in urban centers and by changes in the traditional structure of households, factors that stimulate the demand for products that enable consumers to save time and effort. Therefore, there is an increasing

demand for ready- or semi-ready-to-eat meals, for foods that are easy to prepare, packages that are easy to open, close and dispose, especially microwavable products, as well as for delivery services[29].

Regarding meal replacements, 62.0% of adolescents reported replacing dinner and 29.0% replacing lunch with a snack. Reato *et al*[30] analyzed the eating habits of 174 adolescents and found that 40.2% of participants had a snack once or twice a week instead of lunch or dinner. In the present study, lunch was more frequently replaced with fatty foods and dinner with sweets and foods often consumed at breakfast, which in general are easily available and easy to prepare. Although adolescents were not directly asked about their reasons for meal replacement, it is known that this is a fairly common practice nowadays among adolescents, and one of the resulting problems is the increased intake of calories and fat[31].

Regarding between-meal snacks, 24.9% of adolescents eat snacks in the school, and the type of food consumed depends on the food served or sold in this place – in addition to the possibility of bringing food from home. A study by Ochsenhofer *et al*[20], involving 384 adolescents from public schools, aimed to identify whether adolescents preferred food sold in the cafeteria or food distributed through the Brazilian School Feeding Program and found a preference for foods purchased in the cafeteria, as follows: sweets (72.1%), pastries (54.2%), salty snack foods (28.4%), and soft drinks (22.1%). Students reported that they do not eat school meals mainly because they do not feel like eating or are not hungry (22.4%) and because they do not like the food served (15.6%).

The literature has explored food intake among adolescents, highlighting that there has been an intake below that recommended for fruit, vegetables, milk, cheese, and yoghurts and above that recommended for sweets, sugar, oil, and fat – in addition to the fact that adolescents often skip breakfast[21,22]. However, Brazilian studies assessing eating patterns are scarce. This study aimed to broaden the discussion on eating patterns of adolescents and found that, despite having meals at home, adolescents often do not have all daily meals and these meals do not count on the presence of their parents, except for dinner. Moreover, some adolescents replaced the main meals with snacks. This irregular eating pattern and the inadequate intake of all food groups may lead to an inadequate overall food intake and consequent overweight and obesity. Our results demonstrate the need for a better understanding of eating patterns of adolescents in order to improve their quality of life. Nutrition education programs should be designed to encourage family meals among adolescents.

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