

Hábitos alimentares de adolescentes estudantes de um instituto federal do Estado do Rio Grande do Sul, Brasil

Food habits of adolescent students of a federal institute in Rio Grande do Sul State, Brazil

Habitos alimentarios de estudiantes adolescentes de un instituto federal en el Estado de Rio Grande do Sul, Brasil

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Resumo

Objetivo: Analisar o padrão de consumo alimentar de adolescentes estudantes de um Instituto Federal Farroupilha – do Rio Grande do Sul. Metodologia: Participaram 29 alunos do primeiro ano do ensino médio integrado do sexo feminino e masculino e faixa etária média entre 15 e 17 anos. O consumo alimentar foi obtido através de um questionário de frequência alimentar quantitativo, auto aplicado e em versão eletrônica. Resultados: Observou-se que o padrão alimentar dos adolescentes estudados foi satisfatório. A ingestão energética diária dos macronutrientes encontra-se dentro das recomendações nutricionais. E o consumo dos alimentos de acordo com o grau de processamento, também apresentou resultados relevantes, pois teve uma ingestão baixa de alimentos processados e um aumento do consumo de alimentos in natura e minimamente processados. Conclusão: Dessa forma, o ambiente escolar é um importante local para a formação de hábitos alimentares, visto que é nesse ambiente que os

adolescentes permanecem por expressivo período de tempo, muitas vezes, turno integral. Por isso, destaca-se a importância de ter práticas educativas integradas que abordem sobre alimentação saudável como instrumentos para promover a saúde e qualidade de vida desses alunos.

Palavras-chave: Adolescentes; Estudantes; Consumo alimentar; Ensino.

Abstract

Objective: To analyze the pattern of food consumption among adolescent students at a Federal Institute - in Rio Grande do Sul, Brazil. **Methodology:** 29 students from the first year of integrated high school of male and female and average age between 15 and 17 years participated. Food consumption was obtained through a self-administered quantitative food frequency questionnaire and in an electronic version. **Results:** It was observed that the dietary pattern of the adolescents studied was satisfactory. The daily energy intake of macronutrients is within the nutritional recommendations. And the consumption of food according to the degree of processing, also showed relevant results, as it had a low intake of processed foods and an increase in the consumption of fresh and minimally processed foods. **Conclusion:** Thus, the school environment is an important place for the formation of eating habits, since it is in this environment that adolescents remain for an expressive period of time, often full-time. Therefore, the importance of having integrated educational practices that address healthy eating as instruments to promote the health and quality of life of these students is highlighted.

Keywords: Adolescents; Students; Food consumption.

Resumen

Objetivo: Analizar el patrón de consumo de alimentos entre los estudiantes adolescentes en un Instituto Federal Farroupilha - en Rio Grande do Sul. **Metodología:** Participaron 29 estudiantes del primer año de secundaria integrada del sexo femenino y masculino, y una edad promedio entre 15 y 17 años. El consumo de alimentos se obtuvo mediante un cuestionario cuantitativo de frecuencia alimentaria autoadministrado y en una versión electrónica. **Resultados:** Se observó que el patrón dietético de los adolescentes estudiados fue satisfactorio. La ingesta diaria de energía de los macronutrientes está dentro de las recomendaciones nutricionales. Y el consumo de alimentos según el grado de procesamiento, también mostró resultados relevantes, ya que tenía una baja ingesta de alimentos procesados y un aumento en el consumo de alimentos frescos y mínimamente procesados. **Conclusión:** Por lo tanto, el entorno escolar es un lugar importante para la formación de hábitos alimenticios, ya que es en este entorno donde los

adolescentes permanecen durante un período expresivo de tiempo, a menudo a tiempo completo. Por lo tanto, se destaca la importancia de tener prácticas educativas integradas que aborden la alimentación saludable como instrumentos para promover la salud y la calidad de vida de estos estudiantes.

Palabras clave: Adolescentes; Estudiantes; Consumo de alimentos; Enseñanza.

1. Introduction

According to the World Health Organization (WHO), adolescence is a period of several changes that happens between 10 and 19 years of age and is characterized by physical, psychological and behavioral changes. Students in the adolescent age group need special attention, due to these changes that are influenced by society and the environment in which they find themselves (WHO, 2005; Levy et al., 2010). These changes can influence the habits, preferences, choices and behaviors for the future life (Pereira, Pereira, & Angelis-Pereira, 2017).

Among the behavioral changes, there is the eating habit that in adolescence is characterized by the excessive consumption of soft drinks, sugars and fast-prepared foods and reduced intake of vegetables and fruits. Various eating practices adopted in adolescence have corresponded to diets rich in fats, sugars and sodium, with little participation of fresh foods, increasing the prevalence of overweight, obesity and the early incidence of Chronic Non-Communicable Diseases (NCDs) (Milanski, Silva, & Aquino, 2017).

In this context, overweight and obesity present in this age group can progress to adulthood, triggering risk factors for various NCDs such as: type II diabetes, arterial hypertension, coronary heart disease, stroke, dyslipidemia, osteoarthritis, some types of cancer and social problems (An, Yan, Shi, & Yang, 2017; Bhaskaran et al., 2014; Hruby et al., 2016). It should be noted that NCDs are a public health problem in the country, which results in high costs due to their morbidity and mortality, which is why prevention and control actions at school are fundamental.

Epidemiological data corroborate that there was an increase of 54% in the prevalence of obesity among children and adolescents in the last 20 years (Moraes, Rosas, Mondini, & Freitas, 2006). For the Pan American Health Organization (PAHO, 2016) about 20 to 25% of children and adolescents were overweight or obese, which emphasizes the need to protect and promote the consumption of fresh or minimally processed foods and culinary preparations, to discourage consumption of processed and ultra-processed foods.

Nutritional problems such as overweight and obesity develop due to the consumption of foods with a high energy density coupled with reduced physical activity and the frequent adoption of sedentary behaviors, such as being entertained in front of television and electronic games for long periods (Wendpap et al., 2014).

Therefore in adolescence, a healthy diet is essential to assist in growth, meet physiological functions and prevent nutritional deficiencies. The lack of a nutritional balance can lead to nutritional deficiencies that will negatively influence mental, intellectual and physical development. Thus, the diet must be varied and balanced in quantities and qualities of nutrients through energetic foods, regulators and builders.

Besides that eating habit acquired during childhood and adolescence is important for the formation of the individual's eating behavior. Thus, the school is an essential place that allows contact and formation of healthy eating habits, and may include promotions of healthy and health practices that influence the control of nutritional deficiencies and the reduction of malnutrition and the prevention of overweight and obesity (Issa et al., 2014).

In addition, there are few studies on the eating habits of students on Technical Courses, specifically from Federal Institutes. In these institutions, students stay full-time and eat at school. Also, the technical course that will be investigated is in the area of food. These factors increase the interest and relevance of investigating the eating habits of this specific group of adolescents who are students of an Integrated Technical Course in Food at the federal institute located in the State of Rio Grande do Sul.

In this context, we intend to investigate the eating habits of adolescent students at a federal institute of technological education located in the State of Rio Grande do Sul. The present study search innovate trying to demonstrate that the alimentary habits presented by the students can be related to some aspects such as: taking the Integrated Technical Course in Food, which generates greater concern and care with healthy food and having their meals at the institution, which it is assisted by the National School Meals Program and by nutrition professionals.

2. Methodology

A cross-sectional study was conducted, through a field research of a quantitative nature (Pereira, Shitsuka, Parreira, & Shitsuka, 2018). The subjects were 29 students from the first year of the Integrated Food Technical Course, enrolled in 2019, at the Instituto Federal

Farroupilha Campus São Vicente do Sul (IFF-SVS) who voluntarily agreed to participate on this research through the delivery Free and Informed Consent Form (TCLE).

The Integrated Food Technical course comprises a total of 35 students, but twenty-nine (29) students can be part of the sample, because when data were collected only those are present. The students are female and male, and the average age range is between 15 and 17 years.

To assess food consumption was used the semi-quantitative food frequency questionnaire (QFA), self-applied in a electronic version (Schneider et al., 2016), composed of 88 food items with eight answer options corresponding to the frequency of daily, weekly, monthly consumption (never or <1x / month, 1-3x / month, 1x / week, 2-4x / week, 5-6x / week, 1x / day, 2-4x / day and $\geq 5x$ / day) and one-year reminder period. The questionnaire was filled out by each student, in a period during the morning shift, in the class of discipline of Physical Education, with the researcher's accompaniment to clarify doubts.

The consumption frequencies related to each item of the QFA, they were transformed into annual consumption and then daily consumption. Afterwards, an amount in grams of each food was calculated, based on the daily frequency of consumption and the average amount. An energy composition was estimated using data from the Brazilian Food Composition Table (TACO) (UNICAMP, 2006), complemented by the American table (USDA, 2011). The energy value, in kilocalories, of each food item was used from the multiplication of grams of carbohydrates and proteins by four kilocalories and lipids by nine kilocalories.

The nutritional recommendations for macronutrients, according to Dietary Reference Intakes (DRIs), in the adolescent age group, can be seen in the table below (Table 1):

Table 1. Nutritional recommendations for macronutrients, in the adolescent age group.

MACRONUTRIENTS	NUTRITIONAL RECOMENDATIONS
CARBOHYDRATE	55% a 60%
PROTEIN	12% a 15%
LIPIDS	30%

Source: Dietary Reference Intakes (DRIs).

To characterize foods according to the degree of processing, the items contained in the QFA were divided into four groups proposed by the NOVA classification (Monteiro et al., 2018) after which the proportion of calories for each group were calculated in relation to the total energy consumed.

The first group consists of fresh or minimally processed foods (example: fruits, vegetables, meat and eggs, roots and tubers).

The second is culinary ingredients (example: sugar and animal fat).

The third consists of food products with the addition of salt, sugar or another component of culinary use to natural foods to turn them durable and more pleasant to the taste (example: cheeses, pickled products, bacon, dried meat).

The fourth group consists of ultra-processed food products (example: cookies, sausages, soft drinks, fats) vegetables, yogurt, curd, fast food, candies, ice cream and chocolates, among others).

For the present study, 55 food items were classified as fresh and minimally processed in the following groups: fruits and natural juice; meats (not fish); vegetables; homemade breads and cakes; roots and tubers; rice; flour and pasta; milk; vegetables; homemade candy; eggs; coffee and tea; popcorn; kebab, pastel and patty; fish; oilseeds. Two items classified as industrial food ingredients: sugar (sucrose) and animal fat.

Nine food items were classified as processed food: processed breads; cheeses; alcoholic beverages; bacon; canned fish; dried meat; pickled products and canned goods. Twenty-one food items were classified as ultra-processed: sweets; soft drinks and sweetened drinks; Cookies; snacks and fast foods; snack type chips, mayonnaise and margarine; yogurt and curd; embedded.

The data were analyzed using the Stata 12.1® program. Initially, was calculated a daily energy intake and a contribution percentage from each macro nutrient, in addition to the total daily energy intake, for the entire sample and stratified by sex. The Wilcoxon test was performed to assess the difference in the average consumption of carbohydrates, proteins, lipids and calories according to the sex.

Then, was calculated a daily energy intake for each food/group of QFA and the percentages of daily caloric contribution attributed to each food/group. Finally, was made the food intake of the four groups classified through the degree of processing and the percentage contribution of each group, which was calculated by the sum of the foods that made up each group.

The research project was submitted to and approved by the Human Research Ethics Committee of the Farroupilha Federal Institute under registration number CAAE 91035118.8.0000.5574. Only after this, the research was executed.

3. Results

The present study investigated a sample of 29 students, of which 19 (65.50%) were female. The average age was 15.3 years (standard deviation = 1.0 year), with 14 years old as minimum age and 19 years old as maximum age. Of the total sample, 26 (89.65%) reported no associated pathology, while 1 (3.45%) reported diabetes mellitus and the same proportion reported having obesity and another clinical condition.

Table 2 describes the mean of calories consumed in each group of macronutrients (carbohydrate, lipid and protein), as well as the total calories consumed by the adolescents. In addition, it shows how much each macronutrient represents in total energy consumption. The means and percentages are described for the entire sample and stratified by sex. It is possible to observe that the adolescents reported an average total consumption of 2,903.74 daily calories and this diet was mainly constituted by carbohydrates (61.45%), followed by lipids (22.64%) and proteins (15.91%). The boys had higher total caloric intake and the three macronutrients, however, a statistical difference was observed only for protein consumption, where the boys reported an average of 551.31 calories (representing 17.53% of the total energy consumption) compared to girls, whose average was 349.23 calories (representing 15.06%), $p=0.019$.

Table 2. Daily energy intake and the contribution of each macronutrient and total daily energy intake for the entire sample and stratified by sex.

Macronutrient	Total		Female		Male		P-Value
	Average (95% CI)	% (95% CI)	Average (95% CI)	% (95% CI)	Average (95% CI)	% (95% CI)	
Carbohydrate	1791,64 (1222,15; 2361,13)	61,45 (58,50; 64,41)	1596,29 (886,76; 2305,82)	63,33 (60,02; 66,64)	2162,81 (1053,26; 3272,36)	57,89 (51,86; 63,93)	0,183
Lipid	693,19 (473,30; 913,08)	22,64 (20,54; 24,74)	618,19 (307,74; 928,64)	21,61 (18,68; 24,55)	835,69 (536,02; 1135,37)	24,58 (21,87; 27,29)	0,060
Protein	418,91 (302,43; 535,39)	15,91 (13,83; 17,99)	349,23 (204,42; 494,03)	15,06 (12,80; 17,32)	551,31 (347,09; 755,53)	17,53 (12,76; 22,29)	0,019
Total calories	2903,74 (2024,04; 3783,44)	100,00	2563,70 (1413,24; 3714,17)	100,00	3549,82 (2026,09; 5073,54)	100,00	0,067

Source: From the authors.

Table 3 presents the caloric consumption and the percentage representation of each food or food group that constituted the research instrument. These foods or groups were classified according to the degree of processing into four large groups (fresh food, culinary ingredients, processed foods and ultra-processed foods). The group with the highest consumption among

adolescents was fresh food, with 1,968.27 calories and a total of 68.67% of the total calories ingested. Within this group, the most consumed foods were fruits and natural juice, meat, vegetables and homemade breads and cakes. The second most consumed group was ultra-processed foods, with a total of 670.71 calories (representing 21.52% of total energy consumption). In this group, the most consumed foods were sweets, soda and sweetened drinks and cookies. Processed foods formed the third contribution group (totaling 195.26 calories and representing 7.32% of total consumption), with the highest consumption of bread and cheese, while culinary ingredients was the least consumed food group, with just a 69.50 calories, representing 2.49% of the total.

Table 3. Daily energy intake and the percentage of contribution of fresh or minimally processed foods, culinary ingredients, processed and ultra-processed, for the entire sample and stratified by sex.

Group	Kcal/day		Food contribution percentage					
	Average (IC95%)	%	Total IC95%	%	Male IC95%	%	Feminine IC95%	
Fresh food								
Fruits and natural juice	381,09 (142,23; 619,98)	9,72	5,81; 13,63	9,29	1,88; 16,70	9,95	4,89; 15,02	
Meat (not fish)	258,73 (147,36; 370,10)	10,18	6,77; 13,59	13,98	5,44; 22,52	8,18	5,08; 11,29	
Legumes	218,47 (146,09; 290,85)	10,54	6,76; 14,32	8,20	1,67; 14,73	11,77	6,78; 16,77	
Homemade breads and cakes	203,03 (29,81; 376,24)	5,32	2,55; 8,08	5,91	1,44; 10,39	5,00	1,20; 8,80	
Rice	178,61 (126,73; 230,48)	9,55	5,50; 13,61	6,99	3,80; 10,17	10,91	4,78; 17,03	
Flour and pasta, ...	173,20 (65,07; 281,32)	4,81	2,99; 6,62	5,81	1,24; 10,38	4,28	2,47; 6,09	
Milk	143,37 (58,48; 228,27)	5,11	2,69; 7,52	7,53	1,40; 13,67	3,83	1,63; 6,02	
Vegetables	138,41 (42,64; 234,18)	3,65	2,04; 5,26	3,06	0,04; 6,07	3,97	1,88; 6,05	
Roots and tubercles	112,05 (51,31; 172,79)	3,86	1,98; 5,74	3,94	1,48; 6,40	3,82	1,09; 6,55	
Homemade Candy	69,00 (25,28; 112,73)	2,09	0,96; 3,22	2,72	0,01; 5,52	1,76	0,61; 2,92	
Eggs	41,42 (18,24; 64,60)	1,40	0,63; 2,18	0,64	0,24; 1,04	1,81	0,64; 2,97	
Coffee and tea	21,93 (11,14; 32,72)	1,18	0,54; 1,81	1,11	0,01; 2,74	1,21	0,57; 1,85	
Popcorn	12,66 (5,26; 20,06)	0,55	0,22; 0,87	0,36	0,01; 0,80	0,65	0,18; 1,12	
Kibbeh, pastel or patty	10,82 (5,22; 16,43)	0,41	0,20; 0,63	0,37	0,03; 0,71	0,44	0,13; 0,74	
Fish	5,06 (0,01; 10,25)	0,28	0,01; 0,59	0,33	0,01; 0,79	0,26	0,01; 0,69	
Oilseeds	0,41 (0,01; 1,00)	0,01	0,01; 0,03	0,02	0,01; 0,06	0,01	0,01; 0,03	
Group total	1968,27 (1326,07; 2610,49)	68,67	63,87; 73,47	70,25	62,21; 78,29	67,84	61,33; 74,34	
Culinary ingredients								
Sugar (sucrose)	58,51 (25,31; 91,71)	2,20	1,36; 3,03	1,61	0,34; 2,88	2,50	1,36; 3,64	
Animal fat	10,99 (1,12; 20,86)	0,29	0,13; 0,46	0,21	0,01; 0,46	0,34	0,11; 0,57	
Group total	69,50 (28,35; 110,65)	2,49	1,64; 3,34	1,82	0,58; 3,07	2,84	1,67; 4,02	
Processed foods								
Processed breads	146,49 (91,99; 200,97)	5,71	4,05; 7,36	5,40	1,81; 8,99	5,87	3,90; 7,84	
Cheese	27,62 (14,62; 40,62)	1,07	0,54; 1,59	1,05	0,01; 2,16	1,08	0,44; 1,71	
Alcoholic beverages	14,77 (0,01; 30,32)	0,29	0,01; 0,57	0,39	0,01; 0,99	0,24	0,01; 0,58	
Bacon	3,54 (0,17; 6,91)	0,15	0,01; 0,32	0,06	0,01; 0,14	0,20	0,01; 0,45	
Canned fish	1,65 (0,01; 3,85)	0,06	0,01; 0,14	0,03	0,01; 0,11	0,08	0,01; 0,20	
Dried meat	0,97 (0,01; 2,51)	0,03	0,01; 0,09	0,01	0,01; 0,01	0,05	0,01; 0,13	
Canned and canned goods	0,21 (0,06; 0,36)	0,01	0,01; 0,03	0,02	0,01; 0,04	0,01	0,01; 0,02	
Group total	195,26 (133,28; 257,23)	7,32	5,52; 9,13	6,95	2,99; 10,91	7,52	5,39; 9,65	
Ultra-processed foods								
Sweets	179,51 (91,75; 267,26)	5,19	3,33; 7,05	4,30	1,78; 6,82	5,65	3,00; 8,31	
Soda and sweetened drinks	161,34 (85,96; 236,72)	5,75	2,87; 8,63	5,26	2,05; 8,46	6,01	1,73; 10,30	
Cookie	151,52 (56,88; 246,16)	4,34	2,63; 6,05	5,52	1,06; 9,98	3,72	2,13; 5,30	
Snack type <i>chips</i>	46,40 (6,13; 86,66)	1,48	0,52; 2,44	1,08	0,18; 1,99	1,69	0,24; 3,13	
Snacks <i>e fast foods</i>	43,96 (23,36; 64,57)	1,87	1,00; 2,75	2,70	0,57; 4,82	1,44	0,57; 2,31	
Mayonnaise and margarine	42,21 (17,96; 66,47)	1,31	0,73; 1,90	0,80	0,43; 1,18	1,58	0,70; 2,46	
Yogurt and curd	32,52 (15,70; 49,34)	1,08	0,44; 1,71	0,98	0,09; 1,87	1,13	0,22; 2,04	
Embedded	13,24 (6,38; 20,10)	0,51	0,31; 0,70	0,34	0,03; 0,65	0,59	0,33; 0,86	
Group total	670,71 (445,99; 895,42)	21,52	17,07; 25,97	20,98	15,19; 26,77	21,80	15,34; 28,26	
All foods		100,0		100,0		100,0		

Source: From the authors.

4. Discussion

In this study, it sought to analyze the food consumption pattern of students entering the first year of high school at a Food Technical Course in a Federal Institute of south of Brazil. It was found that the energy intake of carbohydrates reached 1791.64 kcal, representing 61.45%. The recommendation for carbohydrate intake in this age group is 55% to 60% of the total energy of the diet, giving preference to complex carbohydrates which are the main sources of energy for adolescents (IOM, 2002).

Regarding protein, consumption reached 418.91, representing 15.91% of total consumption. The protein requirements of adolescents can be estimated at around 12% to 15% of the total caloric intake (IOM, 2002). Among the lipids, the mean caloric intake was 693.19 with a representation percentage of 22.64%. The American Academy of Pediatrics (AAP) Nutrition Committee recommends that in the first two decades of life, fats should provide up to 30% of the calories in the diet. The Food Guide for the Brazilian Population establishes a distribution of 55% to 75% for carbohydrates, 15% to 30% for lipids and 10% to 15% for proteins. Thus, the observed averages of the students are within the recommendations.

The study showed a higher consumption of fresh and minimally processed foods in the students' diet. The greater participation of these foods in the schoolchildren's diet is important, since fresh fruits and vegetables have fiber, antioxidants and low caloric density, while cereals contribute to the adequate content of calories and complex carbohydrates in the diet (Brasil, 2014). In this context, our study is in agree with other studies in the same region of Brazil, because it shows us that the non-consumption of fruits and vegetables was one of the risk factors that had the lowest prevalence in adolescents, being below 6% (Coutinho, Santos, Folmer, & Puntel, 2013).

Consuming fresh foods is essential, since adolescence is the stage in which growth and rapid physical development occur (Alvarenga, Antonaccio, Timerman, & Figueiredo, 2015), and these foods are fundamental for a greater supply of vitamins and minerals, thus preventing nutritional deficiencies. In addition, they are excellent sources of fiber, antioxidants and have low energy value, which contributes to the prevention of cardiovascular diseases, diabetes, various types of cancer, overweight, obesity and metabolic syndrome (Brasil, 2014).

The results found related to the group of fresh and minimally processed foods may be related to students belonging to the technical course integrated in foods, or that generates greater concern and care with their food, after all they will be a professionals in this area in the future. Other studies (Busat, Pedrolo, Gallina, & Rosa, 2015; Munhoz et al., 2017) contribute in this

sense, because pointed that students of the Nutrition course have a consumption of 90% of fruits and vegetables, with a consumption of 34.5% of healthy foods and only 3% opted for unhealthy foods.

Another aspect that may be associated with these satisfactory data is that students have their meals at the institution because it was a full-time course. Another research (Bento, Moreira, Carmo, Santos, & Horta, 2018) shows children who consume two or three daily school meals, respectively, 7.3% and 10.5% higher in nature and minimally processed food intake when compared with children who not consuming meals on the menu school.

In this context, the school become a space for health promotion, as it can contribute students to have healthy attitudes and habits (Iervolino, 2000). The Federal Farroupilha Institute provides students with access to food and works with the school community to provide guidance on healthy eating and food security. The institution's rules on food and nutritional security are available in the Institutional Program for Food and Nutritional Security. Among its purposes, the following stand out: guaranteeing students access to refectories and adequate food during the period they are in the institution, in order to contribute to their biopsychosocial development, learning and school performance, besides that contribute to the formation of healthy eating practices for students, through actions of food and nutrition education.

A study (Dutra & Coutinho, 2020) shows that students are aware of the importance of adopting good health-related habits, but end up not doing it. Thus, healthy educational practices in schools serve as a foundation for constructing healthy eating practices in students as alternatives to expand the power of choice and decision about their own food habits.

In the school context, as a way of promoting health and preventing childhood overweight and obesity, a greater supply of fresh and minimally processed foods must be prioritized (Carvalho, Fonsêca, Priore, Franceschini, & Novaes, 2015). So the National School Food Program (PNAE) (Brasil, 2013) is an example of obesity prevention strategies. This program advocates the promotion of food and nutritional security and advocates the development of children, adolescents and the improvement of their school performance through the provision of healthy food.

In the current legislation of the program, fresh and minimally processed foods are privileged, in which fruits and vegetables must be in school meals in at least three portions (or 200 g) per student per week and that 30% of all resources destined for PNAE must be used in the acquisition of products of family agriculture. Ultra-processed products, such as drinks with low nutritional value, canned foods, sausages and sweets, have a prohibited or restricted participation in the school menu (Brasil, 2013).

However, the results take a concerning in relation to the second largest food group consumed by students, it was ultra-processed products, as these foods have less nutritional density and are hyper-palatable, which can contribute to nutritional deficiencies (Monteiro et al., 2016). Ultra-processed foods should be avoided, as they have high amounts of sodium, sugars, fats and additives (Brasil, 2014). Food allergies and intolerances are common effects, due to chemical additives, which can present a degree of toxicity if not used within the recommended limits, thus being able to offer risks to adolescents (Barbosa, 2016).

Thus, the excessive intake of ultra-processed products has been associated with the occurrence of dyslipidemia in children, metabolic syndrome in adolescents and obesity in all age groups (Rauber, Campagnolo, Hoffman, & Vitolo, 2015). A research (Prevedello et al., 2015) outlined the anthropometric, cardiorespiratory and biochemical profile of students entering the first year of high school in the same federal institute, where were found an important percentage of students with overweight, excess fat and cholesterol values was verified above the recommended for this population.

Finally, processed foods which formed the third alimentary contribution group, with the highest consumption of bread and cheese, while culinary ingredients was the least consumed food group. Processed foods are produced by industries from fresh foods, with the addition of salt, sugar or other culinary substance, such as pickled vegetables, cheeses, breads, sardines and canned tuna, which adversely modify the composition nutritional value of the foods from which they are derived (Brasil, 2014).

As limitations of the study, it is worth mentioning the non-analysis of some factors such as: socioeconomic, family habits (family culture) and anthropometric assessment, which could corroborate the results found.

5. Final Considerations

Through the results found, it can be seen that the dietary pattern of the adolescents studied was satisfactory. The daily caloric food intake of macronutrients is within the nutritional recommendations. And the consumption of food according to the degree of processing, also showed relevant results, as it had a low intake of processed foods and an increase in the consumption of fresh and minimally processed foods.

Besides that, from the initial proposal to assess the relationship between eating habits and the full-time food technical course, it was observed that students in this course have healthy

eating habits. In addition, educational policies such as the National School Feeding Program (PNAE) have a fundamental role in providing healthy food in schools.

In view of this, it is essential to continue food and nutrition education programs that encourage healthy eating habits among adolescents, aiming at promoting health and encouraging healthy eating behavior, increasing the quality of life of adolescents.

Lastly, it is important to emphasize the relevance of having educational practices on healthy eating for this age group, which goes through phases of biopsychosocial growth and development, which should be developed at school as this is the institution responsible for formal education and the propagation of behaviors and healthy habits.

Finally, the development of this research has contributed to elucidated professional concerns, which go through questions about diet and nutrition, such as those related to students eating habits, especially in integrated high school, since this has an integrated curriculum proposal. Thus, it is believed that this study is motivating to promote new research aimed at developing contextualized and integrated practices in the Integrated High School of the Federal Institutes, on nutritional education and healthy eating, with the adolescent age group.

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