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NUTRITIONAL PROFILE AND FOOD CHARACTERISTICS SERVED TO ADOLESCENTS IN COMPLIANCE WITH SOCIO-EDUCATIONAL MEASURE

Perfil nutricional e características da alimentação servida aos adolescentes em cumprimento de medida socioeducativa

Perfil nutricional y características alimentarias atendidas a adolescentes en cumplimiento de la medida socioeducativa

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RESUMO

Objetivo: avaliar o perfil nutricional e as características da alimentação servida aos adolescentes em cumprimento de medida socioeducativa. **Método:** pesquisa quantitativa, transversal e descritiva. Foram pesquisados adolescentes com idades entre 13 a 19 anos e 11 meses. **Resultados:** observou-se que 48,3% dos adolescentes estavam na faixa dos 16 a 17 anos e eram procedentes de Teresina, Piauí. A maioria foi classificada como eutrófica, de acordo com índice de massa corpórea (74,6%), circunferência do braço (83%) e estatura/idade (91,5%). A avaliação da qualidade da dieta mostrou que energia (107,5%) e lipídios (101,9%) estavam dentro do preconizado, mas a dieta estava inadequada em relação a todos os micronutrientes. A densidade energética (1,7 kcal/g) e o NDpCal% (8,11%) estavam adequados. **Conclusão:** a avaliação da dieta dos adolescentes em cumprimento de medida socioeducativa mostrou inadequações em relação aos micronutrientes. Assim, maiores cuidados devem ser tomados no planejamento da alimentação servida aos adolescentes.

DESCRITORES: Adolescentes; Estado nutricional; Alimentação.

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ABSTRACT

Objective: to evaluate the nutritional profile and characteristics of food served to adolescents in compliance with socio-educational measures. **Method:** quantitative, cross-sectional and descriptive research. Adolescents aged 13 to 19 years and 11 months were surveyed. **Results:** it was observed that 48.3% of the adolescents were in the range of 16 to 17 years and came from Teresina, Piauí. The majority were classified as eutrophic according to body mass index (74.6%), arm circumference (83%) and height / age (91.5%). The evaluation of the quality of the diet showed that energy (107.5%) and lipids (101.9%) were within the recommended range, but the diet was inadequate for all micronutrients. The energy density (1.7 kcal / g) and NDpCal% (8.11%) were adequate. Thus, the study shows that greater care should be taken with the diet served to adolescents, since it presented many inadequacies. **Conclusion:** the evaluation of food served to adolescents in compliance with socio-educational measures showed inadequacies in relation to micronutrients. Thus, greater care should be taken in planning the food served to adolescents.

DESCRIPTORS: Adolescent; Nutritional status; Feeding.

RESUMEN

Objetivo: evaluar el perfil nutricional y las características de la alimentación de los adolescentes en el cumplimiento de la medida socioeducativa. **Método:** estúdio cuantitativo, transversal y descriptivo. Se incluyeron adolescentes de 13 a 19 años y 11 meses. **Resultados:** se observó que el 48,3% de los adolescentes tenían entre 16 y 17 años y procedían de Teresina, Piauí. La mayoría fue clasificada como eutrófica, según índice de masa corporal (74,6%), perímetro braquial (83%) y talla/edad (91,5%). La evaluación de la calidad de la dieta mostró que la energía (107,5%) y los lípidos (101,9%) estaban dentro del rango recomendado, pero la dieta era inadecuada en relación con todos los micronutrientes. La densidad energética (1,7 kcal/g) y el NDpCal% (8,11%) fueron adecuados. A densidade energética (1,7 kcal/g) e o NDpCal% (8,11%) estavam adequados. **Conclusión:** la evaluación de la alimentación de los adolescentes y el cumplimiento de la medida socioeducativa mostraron insuficiencias en relación a los micronutrientes. Por lo tanto, se debe tener mayor cuidado en la planificación de los alimentos que se sirven a los adolescentes.

DESCRIPTORES: Adolescentes; Estado nutricional; Alimentación.

INTRODUCTION

According to the World Health Organization, which defines adolescence as the period between the ages of ten and nineteen, in the year 2012 there were 1.2 billion adolescents in the world. Most adolescents (90%) live in low- and middle-income countries. Among these, in some countries half of all adolescents do not grow satisfactorily, a fact that is directly linked to dietary intake and the influence of drugs.[1–2]

During adolescence, an individual undergoes changes of various kinds, such as biological, psychological, and social, that will be remarkable and, many of them, decisive for their future health status and well-being. As far as changes of a social nature are concerned, these are linked to the fact that the adolescent goes through this critical stage for the construction of his personality and identity, as well as his insertion in society at levels radically different from those experienced in childhood. It is a fundamental phase for the formation of inadequate habits and attitudes, including eating habits, sedentary behavior, and the consumption of licit and illicit drugs. Thus, actions that promote healthy behaviors among these individuals must be sought.[3]

The National Health Survey[4] and the National School Health Survey [5], when analyzing food consumption and socioeconomic data, especially related to children and adolescents, verified a national pattern in the diet of young Brazilians that shows a reduction in the consumption of natural or minimally processed foods and, on the other hand, an increase in the consumption of processed foods, which have high amounts of fats, carbohydrates, and sodium.

However, there is a particular group of adolescents, who are under socio-educational measure, where besides the various services to which they are entitled, one of the essential ones is the provision of food. The food served is the target of several criticisms, because although food is a right for all, and access to safe food in quality and quantity is assured by the National Policy for Food and Nutrition Security, many times this food is used as a way to express the daily life of this population, without taking into consideration whether it is nutritionally adequate.[6]

The implementation of the Estatuto da Criança e do Adolescente – ECA[7] and, subsequently, the Law of the National System of Socio-Educational Assistance[8] increased the responsibility of the State and society for effective solutions capable of ensuring that adolescents, particularly those who have committed infractional acts, have the opportunity to develop and rebuild their life projects. Thus, when these adolescents are deprived of their liberty, they need to receive a good quality diet adequate to their age group.[9]

When choosing food, the lay population, in general, is guided by the influence of factors that permeate aspects of more general living conditions, such as income level, local urbanization,

and access to food variability, including also the individualized characteristics of educational level, age group, and family food culture.[10] However, adolescents who are serving a socio-educational measure are under another regime which specifies that they will have the right to a balanced diet accompanied by nutritionists.[11]

The interest in investigating the food intake of adolescents in juvenile detention is based on the possibility of increasing the effectiveness of nutritional interventions. It is believed that the better we know the determinants of food intake, the greater the chances of success and impact of actions to promote healthy eating practices. Thus, this study may become a source of data, both on the nutritional status of institutionalized adolescents, as well as qualitative data on the food consumed, since the objective of this study is to assess the nutritional profile and characteristics of the food served to adolescents serving a juvenile detention program.

METHODS

This is a cross-sectional, descriptive research, with quantitative approach, carried out with adolescents serving a socio-educational measure in closed regime, located in the city of Teresina-PI.

The study setting was an Educational Center for fulfillment of socio-educational measure for male adolescents in closed regime. The institution serves an average of 150 adolescents aged 13 to 21 years who have committed serious and/or repeated infractions. We studied 118 adolescents aged 13 to 19 years and 11 months.

The eligible population to participate in the study was represented by 119 male adolescents, aged 13 to 19 years and 11 months, who had been in the institution for more than one month, and were lucid and oriented in time and space during the period of data collection.

To obtain data on nutritional status, anthropometric measurements were taken throughout the month of November 2017. Anthropometric measurements were obtained in triplicate, by measuring the weight (kg) and height (cm), in addition to the muscular circumference of the adolescents' arms, and recorded on forms, to later calculate the mean.

To evaluate the characteristics of the food offered, the menus were analyzed for one week, from December 15 to 22, 2017.To determine the daily amount of energy and nutrients in the meals served to the adolescents, the average values obtained for food/preparation were analyzed using the traditional Brazilian Table of Food Composition.[12]

To evaluate the adequacy of energy, protein, vitamin C, vitamin A, sodium and iron intakes we used as references the nutritional recommendations recommended by the Food and Nutrition Board of the National Academy of Sciences and the RecommendedDietaryAllowances – RDA (1989). With regard to the adequacy of calcium, copper, zinc, and magnesium, the NationalAcademyofSciences values for DietaryReferenceIntakes were used.[13]

The data collected were arranged in tables and described by means of numerical and percentage proportions. For statistical analysis, the software Stata®, v.12 (Statacorp, CollegeStation, Texas, USA) was used for data organization and analysis. The variables were presented using descriptive statistics: number and proportions. The association between variables was tested by Fisher's exact test when appropriate (frequency less than 5). Tests with a p value < 0.05 were accepted as statistically significant.

The study complied with all ethical and scientific requirements, and was approved by the Research Ethics Committee of the UNINOVAFAPI University Center, under Opinion CAAE No. 68136217.1.0000.5210, in May 2017.

RESULTS

Among the adolescents serving socio-educational measures who participated in the study, 48.3% were between 16 and 17 years old, and 40.7% were between 18 and 19 years old. Almost half (48.3%) were from the capital of Piauí State, Teresina (48.3%) (Table 1).

Table 1 – Distribution of adolescents serving a socio-educational measure, according to age range, birthplace and nutritional status indicators (n=118). Teresina-PI.

Variable	Nº	%
Age Group (years)		
13 to 15	13	11,0
16 to 17	57	48,3
18 to 19	48	40,7
Birthplace		
Teresina	57	48,3
Other cities in Piaui	49	41,5
Northeast	8	6,8
Midwest	4	3,4
Nutritional status (BMI)		
Low weight	3	2,5
Eutrophy	88	74,6
Overweight	27	22,9
Arm circumference		
Below	19	16,1
Eutrophic	98	83,0
Above	1	0,9
Height/age		
Low	10	8,5
Eutrophic	108	91,5
TOTAL	118	100,0

Source: Research data.

Regarding the body mass index (BMI), used to assess the overall nutritional status, it was observed that 22.9% adolescents were overweight. When considering other indexes such as arm circumference (83%) and height/age (91.5%), there was a predominance of eutrophy.

When analyzing BMI/age, it was observed that more than a third of the adolescents in the 13 to 15 age group were overweight (38.5%). For the arm circumference showed us 21% of those in the age group 16 to 17 years were underweight. As for the indicator Height/age almost all adolescents aged 18 to 19 years were classified as eutrophic (Table 2).

The comparison of the amounts of energy, carbohydrate, protein and lipid present in the meals served in relation to the standard of the studied community according to age, weight and height showed that only the energy and lipid presented an adequacy index within the expected range, which varies between 90 and 110%. On the other hand, carbohydrate and protein presented an adequacy index above the acceptable percentages. Among the micronutrients studied, only sodium (Na) was adequate. Among those that were inadequate, the excessive amounts of Vitamin C (1,543%) and Iron (565%), in relation to the recommendations, stand out (Table 3).

The average energy density found in the meals served was 1.7 kcal/g, which shows that the menus are within the recommended for the age group, which can vary from 1.4 to 2.5 kcal/g. The average NDpCal% of the menus was 8.11%, which was also within the recommended 6 to 10%.

Table 2 – Distribution of adolescents serving a socio-educational measure, according to anthropometric characteristics and age range (n=118). Teresina-PI.

Variables	13 to 15 years old		16 to 17 years old		18 to 19 years old		p-value
	Nº	%	Nº	%	Nº	%	
Nutritional status (BMI)							
Low weight	–	–	1	1,7	2	4,1	
Eutrophy	8	61,5	42	73,7	38	79,2	0,453*
Overweight	5	38,5	14	24,6	8	16,7	
Arm circumference							
Below	1	7,7	12	21,0	6	12,5	
Eutrophic	12	92,3	44	77,2	42	87,5	0,493*
Above	–	–	1	1,8	–	–	
Height/age							
Low	1	7,7	7	12,3	2	4,2	0,267*
Eutrophic	12	92,3	50	87,7	46	95,8	
TOTAL	13	100,0	57,0	100,0	48,0	100,0	

*Fisher's exact test
Source: Research data.

Table 3 – Average amount of macro and micronutrients analyzed through the menus of the institution. Teresina-PI.

Item	Energy (kcal)	CHO (kcal)	PTN (kcal)	LIP (kcal)	Cu (mg)	Zn (mg)	Fe (mg)	Ca (mg)	Mg (mg)	Na (mg)	Vit.A (µg)	Vit. C (mg)
Average	3.133	2.414	423	683	3,64	14,9	43,5	594	515	1.656	196	972
Pattern	2.914	1.894	350	670	685	8,5	7,7	1.100	340	1.500	630	63
%IA	107,5	127,4	121	101,9	0,53	175	565	54	151,4	110	31	1.543

Source: Research Data

DISCUSSION

The number of adolescents (12 to 18 incomplete years) in Brazil according to the IPEA study[14] totaled 21.1 million (11% of the Brazilian population) in 2013. Of these, 51.19% were male and most lived in urban areas (82.16%).

The Annual Survey of the National System of Socio-Educational Care[15], released the information for the year 2016, and presented a population of around 26,450 adolescents served, most of whom were internment measures. In 2016, in Brazil 47% (12,960) of the total number of infractional acts were classified as analogous to robbery (plus 1% of attempted robbery) and 22% (6,254) were registered as analogous to drug trafficking. In the state of Piauí the increase was 269 young people. About the acts committed, 127 (47%) of the infractional acts were analogous to robbery, followed by infractional acts analogous to homicide that corresponded to 44 (16.35%) of the offenders.[15] The age bracket with the highest number of adolescents under socio-educational measures is 16 to 17 years old, with 57% (15,119), followed by 18 to 21 years old, with 23% (6,728). With this data we can confirm the increase in the number of adolescents under a socio-educational measure, especially in internment, as well as ratify the numbers found in Table 1.

This increase probably occurred due to the absence of public policies for adolescents on the part of the government, and especially due to the dismantling of Brazilian families. After the enactment of the ECA in 1990, many parents saw their authority taken away by the State. The spread of drugs in poorer neighborhoods and the abandonment of school life are important factors that have led to an increase in the number of transgressive acts committed by adolescents.

Even with the growing increase in the population of young people under socio-educational measures, it is the State's duty to care for the good quality of life of these individuals in several aspects. Among the segments that we can highlight in the lives of young people restricted to freedom are: the practice of educational activities, physical activities, along with an adequate diet, which contribute to maintaining the physical and mental quality of the adolescent,[16] the verification of anthropometric and nutritional profile of young people contributes to the understanding of their condition.

In the present study, BMI, arm circumference, and height/age classification were used. According to the data obtained with the BMI in the population in question, we can see that most of them were eutrophic, but a significant number of adolescents were overweight (22.7%). It is observed that this data is important since they are hospitalized in a Unit of Socio-Educational Measure, where it is recommended a healthy and balanced diet for this population. In contrast, some studies have observed a high prevalence of overweight in adolescence. One of the limitations of this study was the lack of a reference for a discussion using the same population.

Although the study showed a significant number of eutrophic adolescents, according to the various indexes and indicators used, one cannot fail to observe the data referring to overweight, because these are institutionalized adolescents serving a socio-educational measure and there is a specific legislation that determines the amount of meals they should receive, but the specification for the amount of calories follows that presented by the National School Meals Program and the Ministry of Health.

Thus, if some adolescents were overweight, it can be assumed that they already entered the system with this excess weight, or that they may have been feeding themselves with food that is destined for other inmates. As the food containers are quantified, but not individually labeled, and as the adolescents eat directly in their living quarters, there is no way to determine the real quantity that each adolescent consumes in each meal. Besides this factor, there is also the fact that some adolescents do not practice any kind of physical activity during the internment period. Although it is offered, they are not obliged to do so. This can lead to excess weight on the part of these adolescents.

However, when comparing the data with studies carried out with adolescents who were not institutionalized, it was found in a study of 822 adolescents who attended public schools, that 69.3% had eutrophic BMI, showing that the study population has adequate growth, regardless of socioeconomic variables and whether they were institutionalized or not.[17]

Data found on obesity and overweight in adolescents were 22.9%, while in other studies the prevalence of overweight ranged from 14 to 38% [18–19], and the prevalence in most studies indicate that obesity affects boys and girls equally.[20]

The worldwide number of overweight and obese children and adolescents grew by 10 million between 1990 and 2013, and it is estimated that it will increase in the next years.[21] This is important because obesity is directly related to cardiovascular diseases, sleep apnea, kidney and liver failure, diabetes, and several types of cancer. [22]

As previously mentioned, obesity has many physical, psychological, and social health consequences, where weight gain is not only due to the food factor, but to the association of this factor with others, such as genetic, endocrine, and the lack of physical activity.[23] Physical activity is positively related to quality of life in adolescents; therefore, being physically active, seeking satisfaction with life, and a balanced diet favor quality of life.[24]

This study found a reduced percentage of adolescents with height/age deficits (8.5%) compared to the findings in the literature. Among adolescents from public schools in the municipality of Teixeira de Freitas, Bahia, a prevalence of 25.0% of growth deficit was identified.[25] Similarly, according to the 2002-2003 POF, about 10.0% of Brazilian adolescents had height/age deficits, with the 25th percentile of growth deficits being 25.0%.

The data from this study suggest that most of the adolescents studied present adequate linear growth, indicating good health and nutrition conditions in childhood in general, especially in the first years of life, but this may have been aggravated in some adolescents by the use of licit and illicit drugs as reported by most adolescents serving a sentence. Although while serving a juvenile detention program, these adolescents do not have

access to drugs, they often arrive in a very precarious nutritional status and this fact can lead to a delay in the improvement of their nutritional status.

Regarding the verification of the characteristics of the diet, there was a limitation in the data collection, because it was not possible to determine the actual amount that each adolescent consumed. As previously mentioned, the food that goes to the lodgings is quantified, but not identified. Thus, it is assumed that the data from this study may sometimes be overestimated or sometimes underestimated, due to the fact that the measurements were taken with raw food, and although the dishes were weighed after the food had been prepared, it cannot be guaranteed that all the adolescents consumed all the food equally. In addition, the menu is the same for all, and the food preferences of the adolescents were not observed.

Canella, Bandoni and Jaime[24] conducted a study using two methods to obtain the per capita quantities of food (prescription or records of foodstuffs output from the stock), since the choice of method is one of the limitations of the study, since it was not possible to standardize the data collection method. Based on this study, the output of foodstuffs from the stock was used, and although the correction and cooking factors of the service were observed, this method may have impaired how much was actually put into the adolescent. This fact confirms the limitation of the present study, since only one form of collection was used, which was to obtain the per capita quantities.

The analysis of the food served showed that despite having a food service accompanied by nutritionists, it cannot effectively prepare an adequate and healthy diet. This fact probably happens due to the quality of the food purchased by the company that manages the food and nutrition unit, and the little variation of foods and preparations that are offered. In addition, as individual food preferences and food taboos are not taken into consideration. These situations can lead to a monotony of menus and consequently a worsening in the acceptability indices of the meals served.

The findings of this research alert to the existence of unsatisfactory characteristics in adolescent eating and to the need for strategies to promote healthy eating, especially aimed at the most socially vulnerable groups. They also point to the need for monitoring the eating pattern of this age segment, to detect trends of change and incorporation of healthy eating profile, as well as to monitor the degree of social inequalities prevalent in food.

CONCLUSION

The present study verified that almost half of the studied adolescents are in the age group of 16 to 17 years old, are from Teresina or the interior of the State, and most of them have the eutrophic nutritional status.

The food served presented several inconsistencies, since it presented an excess of carbohydrates and proteins, which may have contributed to the high rate of overweight found among the adolescents.

Most of the macronutrients and micronutrients were inadequate. Thus, it is suggested a better adequacy of the food served to adolescents under socio-educational measure, since it can lead adolescents to develop several diseases caused by an inadequate diet.

It is important to point out that these findings are not conclusive, since the impossibility of better monitoring of the actual food intake of adolescents may have compromised the quality of the findings during this research.

We suggest an improvement in the menus used at the Center, and the implementation of a program of strategies for the promotion of healthy eating for all users.

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