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ABSTRACT

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The present study aim to evaluate the school feeding menu offered to students of a public school in the city of Manaus. Its a work of comparison and observation in order to analyze the portion of each preparation comparing them with the recommendation of energy and macronutrients established by the national school feeding program (PNAE). The analysis was realized in the feeding menu of one week, being the same dismembered in ingredientes and per capita, for the calculation of nutritional adequacy was used the averages of weekly comsumption. In the results found, it was observed the non adequacy of caloric amount and macronutrients, being all percentages below that recommended. In relation to the variety of the menu, the suply of all food groups was observed, how meat, fruits, milk, vegetables and legumes.

KEYWORDS : Teenager, nutritional recommendation, School Feeding Program (PNAE).

INTRODUCTION

The diet of all individuals must obey the "laws of nutrition", described by ESCUDERO, (1937), prioritizing the quality and quantity of food at meals, the harmony between them and their nutritional adequacy, therefore the menu must meet the individual and collective nutritional needs, discrimating foods by preparation and quantitative per capita, for energy, carbohydrates, proteins, lipids, vitamins and minerals (CUPPARI, 2005); (PIPITONE et al, 2002). The School Feeding Program (PNAE) recommends that students in their teenage years should receive at least one meal during the period that they are in school, requiring the same to be balanced, with offers of foods of high nutritional value. The school menu planning needs to be done by a nutritionist qualified and supervised by the CAE (School Nutrition Council), to guarantee the suply of all food groups, with energy value meeting 20 with energy value meeting 20% of daily energy needs (JEAN, et al. (2005); MASCARENHAS (2005).

The school meal should offer safe food, which respects the culture, the traditions, the eating habits and the sensorial aspects, considering the age group of students and their caloric needs, with at least three portions of fruits and vegetables per week (200g/student/week) being that the fruit drinks do not replace the obligation of th offer of fresh fruits (BRASIL/RES. FNDE n. 38/2009).

The present study aim to evaluate the school feeding menu offered to students of a public school in the city of Manaus-AMto high school students, comparing it with the standards established by the PNAE in proportions of calories and macronutrients.

METODOLOGY

Work done in a study of a menu offered in school feeding for high school students between the ages of 16 and 18 in a public school belonging to the state education network of the city of Manaus-Am, in the month of December 2016.

The analysis was performed observing the menu offered in the period of one week, being the same dismembered in compositions by ingredients and per capita (amount in grams) informed by the Department of School Food Distribution of the State of Amazonas. For the calculation of nutritional adequacy was used the average of the consumption of calories (energy), proteins, carbohydrates and

lipids, which were obtained based on the table of chemical composition of foods (FRANCO, 2000), and Table for evaluation of food consumption in home measures (PINHEIRO, et al, 2009).

The nutritional recommendations of macronutrients used as a reference are those indicated by the legislation of the PNAE, for comparison and verification of suitability according to resolution CD/FNDE/n.38/2009.

RESULTS AND DISCUSSION

Table 1 - Weekly nutritional analysis of a public school of Manaus/AM, 2016.

PREPARATION	COMPOSITION	KCAL TOTAL
Rice porridge	Rice Needle Crystal sugar	211,31 kcal
	Integral powder milk	
PREPARATION	COMPOSITION	KCAL TOTAL
Meat in strips with sauce	Beef strips	333,98 kcal
with spaghetti pasta.	Spaghetti Noodles	
Dessert: watermelon	Soybean oil, paprika,	
	pepper, salt, chili pepper,	
	sweet potato and	
	watermelon	
Milk with chocolate, and	Chocolate powder	287,00 kcal
orange flavor biscuit	Integral powder milk	
	Sequilhos biscuit	
Chopped fish fillet with	Rice Needle Beach bean	384,44 kcal
rice and bean (baião de	Regional fish minced	
dois) and manioc flour	meat Yellow flour	
toasted in butter or olive	Lemon, paprika, paprika,	
oil. Dessert: orange	green odor, chili pepper,	
	cabbage, soybean oil, salt	
	and orange	
Acai with tapioca flour	Frozen acai pulp Crystal	219,84 kcal
	Sugar Tapioca flour	

Therefore it can be seen in Table 1 that the menu offered presents variety, in macro and micronutrients, with meat, fish, milks, grains, vegetables, fruits and veggies, taking into account the recommendations of the PNAE.

From the analysis of the menu, they presented the following results:

 Table 2 - Weekly mean of nutrients according to the menu offered in the diet of students of a public school of Manaus-Am, 2016.

NUTRIENT	WEEKLY	RECOMENDATIONS FROM
	AVERAGE	PNAE
ENERGY (KCAL)	287,3	500
PROTEIN (G)	10,5	15,6
CARBOHYDRATE(G)	42,5	81,3
LIPID (G)	8,3	12,5
NDPCAL	10,8 %	6 - 10 %

Table 2 shows that in relation to macronutrients, the menu is not suitable with the indications of the PNAE, because all the results of the weekly average were below the recommended level. Regarding the quantity of calories served, it was observed that they also did not reach the proposed recommendations that guide the supply of 20% of the daily value of 2.500 kcal, being indicated a total of 500 Kcal, however, the weekly average found was 287,31 Kcal, being this percentage 11.49% below of the adequate.

The mean of NDPCAL found was 10.8%, being this value within the recommended, being the supply of usable protein adequate to the needs. Comparing the percentage of adequacy of the weekly average of the macronutrients, with to the menu offered, the following results were obtained: energy 57.46%, protein 67.50%, carbohydrates 52.38%, lipids 66,48%.

Providing all the nutrients in adequate amounts is essential for maintaining healthy weight and provides increased willingness to engage in intellectual activities at school (TIRAPEQUI, 2000). Nutrients are substances derived from a food, which provides energy and cooperates for the growth, development and maintenance of health and life (VALSECHI, 2001). Each nutrient has a specific function in the organism and the possibility of imbalance in food intake may lead to a compromise in the formation, growth and maintenance of the body (PEIXOTO, 2014).

The indications from PNAE used as references in the daily consumption of school meals are 500 kcal in energy in a diet of 2,500 kcal, 81.3 g of carbohydrate, 15.6 g of protein and 12,5 g of lipid, according to the resolution n° 38/2009 of FNDE (National Fund for the Development of Education), which establishes for the age group of 16 to 18 years the values of energy and macronutrients to be offered in school feeding for adolescents who study part time, therefore, they eat only one meal at school.

It will be up to the school to offer a snack, nutritionally adequate and in the form of a collective meal, seeking to encourage the adolescent to the challenges of an intellectual response to the pedagogical problems. (TIRAPEQUI, 2000). It is important to observe the quality and quantity of the food in the meals, because the result of an incorrect feeding, for example, can be the excess of weight or deficiencies of vitamins and minerals, noting that healthy eating is not only composed of fruits and vegetables, but by all food groups in the food pyramid (CUPARRI, 2005).

According with PNAE (art. 4°. Res. 38/2009 FNDE), "School feeding aims to contribute to biopsychosocial growth and development, learning, school performance and the formation of healthy eating habits of students, by means of actions of food and nutritional education and the provision of meals that cover their nutritional needs during the school term."

As regards proteins, they are responsible for the constitution of cells and energy supply. They comprise 18% of our body weight and almost exclusively constitute the skin, nails, muscles, cartilage, hair and tendons, constituting antibodies, enzyme production and hormones (ALVARENGA, 2010). Having as sources all types of meats, legumes (beans, chickpeas, lentils, peas, soybeans), milk and eggs.

The result of protein offered was 10.5 grams, being below the

indicated of 15.6 grams daily, corresponding to 67,50% of the indicated daily intake. Protein needs of adolescents can be measured around 12% to 15% of total caloric intake. Throughout adolescence the consumption of proteins is more closely linked to growth pattern than to age (COSTA, 2002).

According to the Dietary Intake Recommendations (RID) of the National Research Council Subcommittee of 1989, on a balanced diet, carbohydrates should account for the majority of energy consumption and are the main sources of energy needing to cover between 55% and 60% of daily caloric consumption.

Marques (2002) reports that carbohydrate corresponds to the essential source of energy from the diet around the world, is available in abundance in foods. Exercising various functions in the body, such as preserving muscle mass by supplying energy to muscles, generate the metabolism of fats and ensure the proper functioning of the central nervous system.

In addition to consist of agents of "sweet" sugar, are sources of fiber, important in the care of different nutritional conditions such as intestinal constipation, obesity, dyslipidemia and diabetes. Stimulating fiber intake as early as possible can slow down these types of nutritional changes, as well as prevent some cancers. Glucose resulting from the metabolism of simple carbohydrates (sugar) and complexes (starch) is the main fuel of the brain (SILVA 2004). Therefore, the composition of the diet and the balance between the macronutrients are fundamental (EISENSTEIN, et. al 2007).

Regarding the result shown in table 2, the supply of carbohydrates offered to the students was much lower than indicated. The weekly average of 42.5 grams was found in the study, and the recommended by PNAE is 81.3 grams of carbohydrates, the value found corresponds only to 52.38% of the recommended.

If the individual does not have glucose available for use in cells, such as in fasting or restrictive diets, the lipids will be oxidized, forming an excessive amount of ketones that can cause a metabolic acidosis in the organism, being able to lead to symptoms like headaches, dizziness, bad breath (PEIXOTO, 2014).

In the diet, lipids serve as a pooled source of energy (9 kcal), and serve as a conduit for fat-soluble vitamins and essential fatty acids, providing about 30% of daily needs. During pubertal growth, adolescents require a lot of energy, since lipids have an essential caloric function exerted by saturated and unsaturated fats found in oils, olive oil, butter, margarine, lard, bacon, sausages, creams, sauces, fried foods, mayonnaise, which can contribute 20 to 30% of the total calories in 1 to 2 servings per day (EISENSTEIN; et. al 2007).

The Nutrition Committe of American Academy of Pediatrics (AAP) also advise that in the first two decades of life the fats must supply 30% of the calorie of diet, unless in cases with more sensitivity to atherosclerosis (GIANINI, 2007).

In relation to the recomendation of lipids to school feeding the result found, was demonstrate in table 2. The offer of fats stands below of the recommended by PNAE. The indicated is 12,5 grams of lipid in each portion, but was offered to the estudents na feeding with 8,3 grams of lipids, being 66, 48 % of ideal.

CONCLUSION:

Based on the results obtained, it is concluded that the menu proposed by the food distribution management of the state high school network of the city of Manaus-Am recommended to the students, provides inadequate and insufficient quantities of macronutrients since the preparations presented in the analyzed menu did not meet the goals suggested by the PNAE. However, in relation to the variety of the menu it was verified the supply of all food groups.

REFERENCES:

- 1. ALVARENGA, Gabriel. A importância dos nutrientes para uma vida saudável, São Paulo, 2010.
- 2 BRASIL, Documento de Referência para Guias de Boas Práticas Nutricionais, Brasil 2009. Disponível em: portal. anvisa.gov.br.
- COSTA, E, et al, Programa de Alimentação Escolar: espaço de aprendizagem e 3. produção de conhecimento. Revista de Nutrição, Campinas, v.14, n.3 p.225-229, Dez . 2002.
- Δ CUPPARI, L. Guia de nutrição clinica no adulto. 2 ed. São Paulo: Manole , 2005.
- 5. EISENSTEIN, Evelyn, et al, Nutrição na adolescência. Jornal de pediatria, 2007/ Sociedade Brasileira de Pediatria. ESCUDERO, Pedro, Alimentação. Trad., Helion Póvoa e Waldemar; Berardinelli. Rio de б.
- Janeiro: Scientifica. 1937. 7. GIANINI, D. Recomendações Nutricionais do Adolescente, Adolescência & Saúde
- volume 4 nº 1 fevereiro 2007. MAHAN LK, ESCOTT-STUMP,S, RAYMOND JL. KRAUSE. Alimento Nutrição e 8.
- Dietoterapia. Editora Elsevier, 2012. MARQUES, L. R.; J. Carboidratos e Nutrição: fundamentos e aspectos atuais. São Paulo: 9.
- Editora Atheneu, 2002. p. 37-47. 10. MASCARENHAS, Jean; et al; Avaliação da Composição Nutricional dos Cardápios e
- Custo de Alimentação Escolar da Rede Municipal de Conceição do Jacuípe / Bahia; Revista de nutrição, BH, v. 15, n.1, p. 105-117 – Janeiro de 2005. PEIXOTO, Adriana Lopes. Nutrição da gestação a lactação, 2014. 11.
- 12.
- PIPITONE, Gandini, RPC, Programa de Alimentação Escolar: um estudo sobre descentralização, escola educadores. Saúde em Revista, 2001.
- 13. SILVA, Cleliani de Cassia da. Alimentação e Crescimento Saudável em Escolares. Alimentação, Atividade Física, e Qualidade de Vida dos Escolares do Município de Venhedo/SP. Campinas, 2014.
- 14. TIRAPEQUI, J. Nutriçao: Fundamentos e aspectos atuais. São Paulo: Atheneus, 2000.
- 15. VALSECHI, Octavio Antônio. O leite e seus derivados. Universidade Federal de São Carlos, Araras, São Paulo, 2000.