75 - BODY COMPOSITION AMONG ELEMENTARY SCHOOL STUDENTS: CONSIDERATIONS ON CHILDHOOD OBESITY.

MARCELO JANNUZZI FRANCESCHIN; LUIZ ANTONIO PEREIRA DE ALMEIDA
COLÉGIO BRIGADEIRO NEWTON BRAGA
UNIG, RIO DE JANEIRO, RJ, BRAZIL
marcelojannuzzi@globo.com

1-INTRODUCTION

The current society witness and carries out the expansion of the overweight cases and obesity. Changes in political, social and economical organization had brought great effect on habits and behaviors of individuals as a whole. Such changes together with technological advances had printed a lifestyle based on poor alimentary habits and on a culture of scarcity of movement and of physical activity (SIMÃO, 2004).

One of the consequences of this new organization is the increasing incidence of overweight and obesity and complications for the health related with this fact, such as diabetes, hypertension, cardiopathies, vascular cerebral accidents among others (HAUSMAN *et al.,*2001).

Thus, obesity is already considered a worldwide epidemic, being considered by the World Health Organization as the disease of 21st century. Epidemiological data presented by the WHO through the Standing Committee of Nutrition, in session carried through in 2006, shows that approximately 300 million adults carry on some degree of obesity in the world currently (SCN/WHO, 2006).

Despite current epidemiological data on obesity refer to adult individuals, many research indicates an increase of prevalence of obesity among children and teenagers as well, as a reflection of the lifestyle adopted by their parents (BANKOFF, 2000).

It is less rare the association between high levels of body fat among children and teenagers with the development of several chronic diseases like diabetes, hypertension, heart diseases which are more commonly seen among adults and elderly (OLLER & DÂMASO, 1993; POLLOCK *et al.,* 1986 *apud* PETROVSKY, 1999). This fact inspires much concern.

Obese children will probably become obese adults and have more chances to develop health problems related to the excess of body fat (DERELIAN, 1995; LAZZOLI *et al.*, 1998).

Because of this, it is very important to fight this reality among children. This study intends to investigate the anthropometric profile of children of elementary school of Colégio Brigadeiro Newton Braga, in Rio de Janeiro, ages between 6 and 10 years old, so that several classes and extra classes educational activities could be proposed on the health promotion issues related to overweight and obesity. Because it is a research conducted in a school environment, and it has its concerns to the global formation of the pupils, more than only the transmission of contents, its unfolding collaborate with the promotion of a School Physical Education of ampler character, which cares about health promotion issues as transversal subjects, according to recommendation of the national curricular parameters (MEC, 2006), that they aim to deal with conceptions on health or what is healthful, valuation of habits and lifestyle, attitudes before the different questions, directing its approaching on the daily life of the students.

2-EXPERIMENTAL PROCEDURE

The current study, a direct research, aims to verify the body composition profile of students from Colégio Brigadeiro Newton Braga, and for this, it will make use of the descriptive method that, as Lüdorf (2003), is that one where the researcher deals with the investigated variables without interference or manipulation the same ones.

Meetings with responsible for the clarification and the sensitization for the adhesion to the project had been carried through initially.

After that, it was distributed, to the totality of the pupils, an invitation to the participation together with an assented term directed to the science and authorization of their parents.

All the participants of the study had been informed of the adopted procedures and the objectives and purposes of the research, having its participation assented in signed term.

This investigation takes as subjects of research 137 of the 309 integrant pupils of 2ª 4ª grades of the elementary education of Colégio Brigadeiro Newton Braga, with average age of 9,53 ± 1,14 years old, chosen teams from the authorization of their parents.

Two parameters related to the body composition had been considered: the body mass index (BMI) and the percentage of body fat (%G).

The body mass and the stature had been measured in Filizola® scale, antropométrica model, equipped with stadiometer and, from this data, the body mass index of the pupils was calculated. The BMI served as base for classification of the pupils in categories of normal corporal weight (OK), overweight (SP) or obese (OB). The reference values for this classification are presented by Cole *et al* (2000).

The body fat percentage was calculated through protocols of skin fold measures. Measures techniques had been carried out as described by Martins (2003), using a Sanny® scientific fat caliper.

The equations selected for estimating the percentage of body fat had been developed by Guedes (1994) and are specific for the infantile and teenager public. Such protocol possesses distinct equations according to age development, gender and race of individuals and use as parameter the sum of triceps and subscapular skin folds.

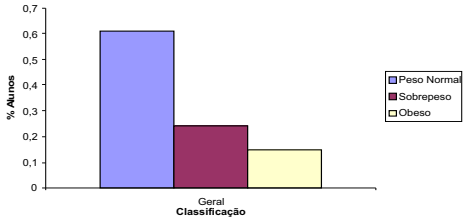
The data table formulated in Microsoft® Office Excel 2003 in portable microcomputer Hewlett-Packard dv 1000. The subjects of this study had been organized in three sub-groups in accordance with its pertaining school level: 2A, 3A and 4A, referring to second, third and fourth grades, respectively. For a detailed comment more the question of the sort between the pupils was taken in consideration. The separation between boys and girls for each one of the treated grades was carried through and such groups had received denominations "H" for the boys and "M" for the girls.

3-RESULTS AND DISCUSSION

The average and standard DESVIO was used for the statistical analysis of collected data expressed assuming that the related strategies of descriptive statistics apply to the nature of referred data set as continuous and of normal distribution.

The subjects of this research present the following characteristics: age 9,53 ± 1,14 years, weight 37,4 ± 11,15 kg and stature 1,38 ± 0,09 m and BMI calculated for this contingent is 19,24± 3,98Kg/m^2. From the individual calculation of this index, and classification according to the reference table of presented by Cole *et al* (2000), the individuals of this study had been distributed as presented in the graph below:

Graph 1: Classification of students according to their body mass index



The general overview of presented data above confirms a preoccupying reality: approximately 40% of the participant children if find above of the weight considered adjusted for its age, either in some degree of same overweight or obesity. The ratios of this classification according to school grade, expressed in percentages in the table below, give some track on as the body mass index behaves in accordance with the ages of the studied individuals. The approached average ages for second, third and fourth are, respectively 8, 9 and 10 years.

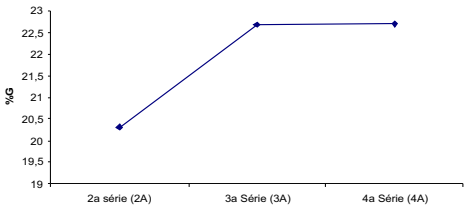
Table 1: Classification os students according to their BMI and school grade.

	OK%	SP%	OB%
2nd grade (2A)	0,62	0,28	0,1
3rd grade (3A)	0,63	0,25	0,12
4th grade (4A)	0,57	0,20	0,23

Legend: OK, normal weight; SP, overweight; OB, obese.

The researched sample presents practically the same ponderal distribution between the considered grades, despite the considered grade. When the analyzed parameter, however is the percentage of fat of the individuals perceives clearly the influence of this factor. The graph below shows the behavior of this parameter.

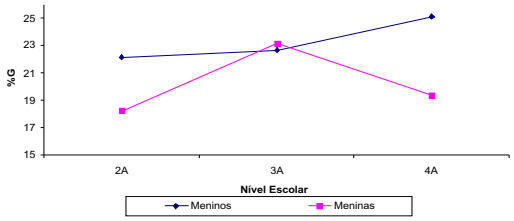
Graph 2: development of body fat percentage according to school grade.



As seen in the figure above, there is a great increase of the percentage of body fat in the period between the second and third grades, followed by the stabilization of this value from the third grade until de fourth. This indicates that the major gain of fat mass occurs in early ages and how much this can be concerning if we consider that this fact has a narrow relation with poor nutrition habits and low level of physical activity. The gain of fat mass, except in cases of special health conditions, is provoked by a caloric acquisition greater than its expense in practised physical activities and these two last ones are due to a lifestyle taken for individuals, or, when it comes to children, the habits cultivated in their families. The graphic above suggests that good alimentary habits and physical activity are being put aside earlier into the children's life, or they are not even being constructed, developed or stimulated. Alves *et al*. (2005) in his study shows a straight relation between the practice of sports in the adolescence and the maintenance of an active lifestyle during adult ages. The authors still satate that physical activity habits acquired during childhood and the adolescence tend to be kept during all life and must be stimulated among younger groups.

The ratio of evolution of the body fat percentage behaves differently according to observed gender. Girls present an increase of 27% in the from the second to the third grades. However there is a retrocession in the following age band, returning to the original value of body fat percentage. Boys' starting value is higher than girls' of same age (22.13% for boys against 18,21% for girls), however older boys a ratio of acquirement of fat mass is less PRONUNCIADO, although values do not present reduction with the advance of age. The Graph below illustrates the differences found for different gender on this parameter.

Graphic 3: Evolution of bodyfat percentage accordingto gender.



Legend: 2A, second grade; 3A, third grade; 4A, fourth grade.

According to Marcondes (1978), the ratio of growth varies with the age and phase of development. Girls show an increase of the tax of growth in the prepubertal phase, between 10 and 12 years. Boys, however, show this increase a little later, around 13 years old, together with their pubertal phase. A greater ratio of growth is associated with an increase of the basal caloric expense due to body development and adaptation of the physiological functions to the new corporal dimensions. Thus, as the transition between the third and fourth grades, for girl, comes along with the increase of growth ratio, you assume that this increase of the basal caloric expense may be the factor that contributes for the reduction of the average observed body fat, despite the magnitude of the reduction is not enough to bring body fat composition to a healthy level.

It's becoming more evident the association between the prevalence of obesity and the development of illnesses such as hypertension, cardiopathies, diabetes and other chronic diseases, even among infantile public. This reality inspires much concern, since obese children will probably become obese adults, liable to a greater risk of developing all sorts of overweight related health problems.

The incidence of overweight and obesity cases presents very relevant behavior characteristics, based on an inadequate sedentary lifestyle, inadequate habits, unsatisfactory unbalanced feeding. However, the period of time between the first year of life and school age seems to be most critical in the development of the lasting obesity among children, since this is a phase where these habits strong are established.

Thus preventive effort on education, health promotion and quality lifestyle should be carried on among children and adolescents on school environment in order to avoid issues related to the overweight and obesity.

The panorama observed in this small sample reflects a world-wide trend: the increasing incidence of overweight and obesity cases in early ages. A more detailed research, concerning the level of practiced physical activity, knowledge regarding the alimentary habits and social and economic level of these individuals will contribute on the better understanding of the problem. The specific knowledge on the causes and related factors allows delineation of adequate and accurate strategies of intervention to fight this reality.

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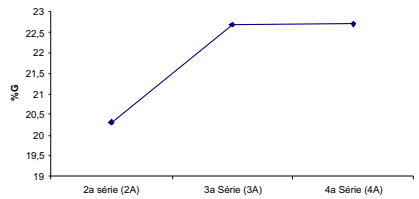
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Marcelo Jannuzzi Franceschin
Rua Jaime Perdigão , 135/ 102
Ilha do Governador - Rio de Janeiro - RJ - Brasil
CEP 21920- 240
TEL (21) 2462-4886
marcelojannuzzi@globo.com

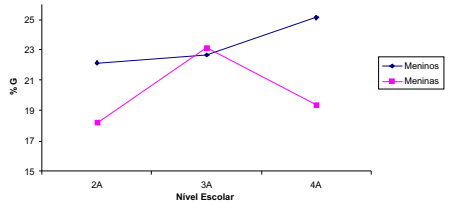
BODY COMPOSITION AMONG ELEMENTARY SCHOOL STUDENTS: CONSIDERATIONS ON CHILDHOOD OBESITY.

The current society witness and carries out the expansion of overweight cases and obesity. Social, economic and political changes together with technological advances have brought a lifestyle based on inadequate alimentary habits and lack of physical activity. Obesity is related with the development of several diseases like diabetes, hypertension and cardiopathies even among children as a result from the lifestyle taken by their parents. This fact inspires much concern because obese children will probably become unhealthy obese adults. This research aims to verify the body composition profile through anthropometric testing of elementary school students from Colégio Brigadeiro Newton Braga (n=137), located in Rio de Janeiro, and for this, it will make use of the descriptive method. The body mass index (BMI) was calculated and the body fat composition (%G) was determined as described by Guedes (1994). The subjects of this research present the following characteristics: age 9,53 ± 1,14 years old, weight 37,4 ± 11,15 kg, stature 1,38 ± 0,09 m and BMI 9,24± 3,98Kg/m^2. Their classification according to the reference table presented by Cole *et al.* shoed that 39% of all showed some degree of overweight or obesity. The evolution of %G according to school grade and gender is shown on graphics 1 and 2 respectively.

Graphic 1



Graphic 2



Graphic 1 shows a great increase of %G in the period between the second and third grades, indicating that the major gain of fat mass occurs in early ages. The panorama observed in this small sample reflects a world-wide trend: the increasing incidence of overweight and obesity cases among children and adolescents. More detailed research on the level of practiced physical activity, alimentary habits and social and economic level of these individuals will contribute on better understanding of the problem and will allow delineation of adequate interventions to fight this reality.

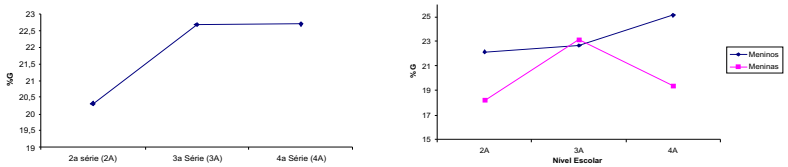
KEYWORDS: OBESITY, BODY COMPOSITION, CHILDREN

PROFIL DE COMPOSITION CORPORELLE DES ÉCOLIERS DE L'ENSEIGNEMENT FONDAMENTAL: CONSIDÉRATIONS SUR L'OBÉSITÉ INFANTILE.

La société actuelle est témoin et protagoniste d'une épidémie mondiale d'obésite. Les changements sociaaux, économiques et politiques associés aux progrès technologiques ont imprimé un style de vie basé sur des habitudes alimentaires inadéquates et sur un comportement sédentaire. L'obésité est associée au développement des diverses maladies telles que la diabète, l'hypertension, les cardiopathies entre autres, même chez les enfants et les adolescents, comme réflexe du style de vie adpoté par leurs parents ; raison de grand souci vu que les enfants obèses deviennent probablement des adultes obèses plus exposés à ce type de maladie. Cette recherche se propose à vérifier, à travers des études descriptives, le profil anthropométrique des éleves de la deuxième à la quatrième séries de l'enseignement fondamental du Colégio Brigadeiro Newton Braga (n=137), situé à Rio

de Janeiro. On a calculé l'indice de masse corporelle (IMC*) et le pourcentage de graisse (%G) selon le protocole décrit par Guedes (1994) pour le publique infantil. Le public cible de cette étude présente les caractéristiques suivantes: âge 9,53 ± 1,14 ans, poids 37,4 ± 11,15 Kg et taille 1,38 ± 0,09 m et le IMC* 19,24 ± 3,98 Kg/m^2. La classification des individus selon le tableau de référence présenté par Cole *et al.* (2000) a indiqué que 39% du total présentent un certain degré de surpoids ou d'obésité. L'évolution de %G en accord avec le niveau scolaire et le genre est présentée dans les graphiques 1 et 2 respectivement.

Graphique 1 Graphique 2



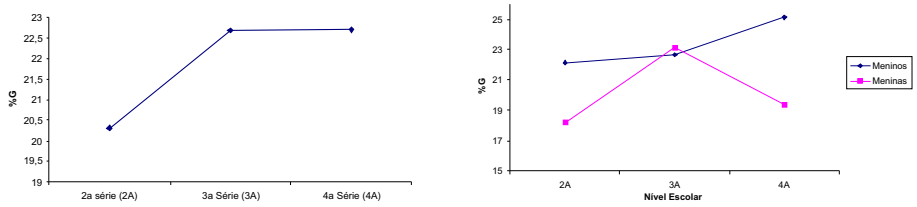
Le graphique 1 expose un grande hausse en %G dans le passage de la deuxième à la troisième série, ce qui indique l'apport de masse grasse. Le panorama observé dans cet échantillon réfléchit une tendence mondiale: la croissante incidence des surpoids chez les jeunes. On suppose que l'alimentation inadéquate et le caractère sédentaire soient les principaux promoteurs de cette réalité. On suggère une étude plus spécifique sur les causes et les facteurs concernant l'ébauche des interventions qui combattent cette réalité..

MOTS-CLÉS : OBÉSITÉ, COMPOSITION CORPORELLE, ENFANT.

PERFIL DE LA COMPOSICIÓN CORPORAL DE ESTUDIANTES DE NIVEL FUNDAMENTAL: CONSIDERACIONES SOBRE OBESIDADE INFANTIL.

La sociedad actual testigua e protagoniza uma epidemia mundial de obesidade. Câmbios sociales, econômicos e políticos associados a avanzos tecnológicos trajeron un estilo de vida basado em hábitos alimentares inadecuados y sedentarismo. La obesidade es asociada al desarollo de vários males como diabetes, hipertensión y cardiopatias mismo entre niños y adolescentes, como resultado del estilo de vida adoptado por sus pais. Esto es especialmente preocupante visto que ninõs obesos provavelmente tornaranse adultos obesos más propensos al risco de presentar estes problemas de salud. Esta pesquisa tiene como objetivo, a través de um estudio descriptivo, el perfil antropométrico de estudiantes del según hasta el cuarto nível del ensino fundamental del Colégio Brigadeiro Newton Braga (n=137), localizado em la ciudad de Rio de Janeiro. Calculose el índice de masa corporal (IMC) y el percentage de gordura corporal (%G) según el protocolo descrivido por Guedes (1994) para el público infantil. Los sujetos deste estúdio presentaron las seguintes características: edad 9,53 ± 1,14 anos, peso 37,4 ± 11,15 Kg, estatura 1,38 ± 0,09 m e IMC 19,24 ± 3,98 Kg/m^2. La clasificación de los indivíduos según la tabla de referencia presentada por Cole *et al.* (2000) mostró que 39% del total presenta algún grado de sobrepeso o obesidade. La evolución del %G de acordo com el nível escolar y gênero es presentada en los gráficos 1 y 2 respectivamente.

Gráfico 1 Gráfico 2



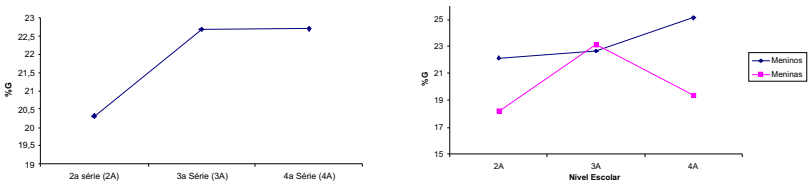
El gráfico 1 presenta um gran aumento en el %G em la pasaje entre el segundo y tercero nível, mostrando que el aporte de masa gorda ocure temprano em la vida de los niños. El panorama observado en esta muestra refleja una tendência mundial: la creciente incidencia de sobrepeso em bandas etárias jóvenes. Segerese um estúdio más específico acerca de lãs causas e fatores relacionados para la delineación de intervenciones que combatan esta realidad.

PALABRAS-CLAVES: OBESIDADE, COMPOSICIÓN CORPORAL, OBESIDADE INFANTIL.

PERFIL DE COMPOSIÇÃO CORPORAL DE ESCOLARES DE ENSINO FUNDAMENTAL: CONSIDERAÇÕES SOBRE OBESIDADE INFANTIL.

A sociedade atual testemunha e protagoniza uma epidemia mundial de obesidade. Mudanças sociais, econômicas e políticas associadas a avanços tecnológicos imprimiram um estilo de vida pautado em hábitos alimentares inadequados e sedentarismo. A obesidade é associada ao desenvolvimento de diversos males como diabetes, hipertensão, cardiopatias entre outras mesmo entre crianças e adolescentes, como reflexo do estilo de vida adotado por seus pais, fato preocupante visto que crianças obesas provavelmente tornam-se adultos obesos mais expostos a tais problemas de saúde. Esta pesquisa propõe-se a verificar, através de estudo descritivo, o perfil de antropométrico dos alunos de segunda a quarta séries do ensino fundamental do Colégio Brigadeiro Newton Braga (n= 137), localizado no Rio de Janeiro. Calculou-se o índice de massa corporal (IMC) e percentual de gordura (%G) segundo protocolo descrito por Guedes (1994) para o público infantil. Os sujeitos deste estudo apresentam as seguintes características: idade 9,53 ± 1,14 anos, peso 37,4 ± 11,15 Kg e estatura 1,38 ± 0,09 m e o IMC 19,24 ± 3,98 Kg/m^2. A classificação dos indivíduos segundo a tabela de referencia apresentada por Cole *et al.* (2000) mostrou que 39% do total apresentam algum grau de sobrepeso ou obesidade. A evolução do %G de acordo com o nível escolar e gênero é apresentada nos gráficos 1 e 2 respectivamente.

Gráfico 1 Gráfico 2



O gráfico 1 mostra um grande aumento no %G na passagem da segunda para a terceira série, indicando o quão cedo ocorre o aporte de massa gorda. O panorama observado nessa amostra reflete uma tendência mundial: a crescente incidência de sobrepeso em faixas etárias jovens. Supõe-se que alimentação inadequada e sedentarismo sejam os principais promotores desta realidade. Sugere-se um estudo mais específico sobre as causas e fatores relacionados para o delineamento de intervenções que combatam esta realidade. **PALAVRAS-CHAVE**: OBESIDADE, COMPOSIÇÃO CORPORAL, CRIANÇA.