01 - NUTRITIONAL PROFILE OF STUDENTS OF THE TRIPLE FRONTIER REGION – BRAZIL, PARAGUAY AND ARGENTINA

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INTRODUCTION

Epidemiological studies carried out recently found that in almost all industrialized countries of the world and also in developing countries have been an alarming increase in the prevalence of obesity among children and adolescents in the last four decades. Prevention should be among the highest public health priorities and certainly include the improvement of lifestyles healthier In all age groups, including children and adolescents (BOUCHARD, 2003).

For WHO (2003), levels of physical growth among children and adolescents can be regarded internationally as one of the most important indicators of both quality of life of a country and the extent of existing distortions in the same population with its different subgroups. Waltrick (1996) reinforces that currently there may be a good child care without the control of its growth. The main motivation for the study of body composition in children and adolescents is the special interest in seeking information on the fractionation of body weight in its various components, in view of the close relationship between the quantity and distribution of fat and some indicators of health (BRAY and BOUCHARD, 1988).

In the case of Brazil and other countries with similar characteristics, such as Paraguay and Argentina, these studies assume an even more important. Although some regions (industrialized) already have a more defined the epidemiological transition, in the other words, the non communicable diseases are major causes of morbidity and mortality, such as obesity and diseases associated with it. While in other places, infectious diseases and communicable diseases are still prevalent, a reflection of underdevelopment, which is strongly related to malnutrition (MINAYO, 2004).

This study aims to compare the indexes of nutritional status of children of different nationalities in the region of the Triple Frontier. This is a unique region in the world, due to the large flow of people and services and the absence of factors that block this broader relationship. This allowed them to live together at such different social groups, creating all sorts of interface political, economic and cultural that allows the development of an “own culture” with own ideas, customs, traditions and tastes that, although specific to each country, incorporating specificities of Paraguay, Argentina and Brazil (WHO / PAHO, 2004).

Thus, this study was to evaluate the indices of nutritional status of schoolchildren aged 6 to 12 years for both sexes, the cities that comprise the Triple Border region.

METHODOLOGY

This research is characterized as descriptive, which is the study of the status of the population in the given time of research and cross-sectional (Thomas et al., 2007).

The study covered the cities of Foz do Iguassu, Parana - Brazil, Ciudad del Este, Paraguay - Paraguay and Puerto Iguazú, Misiones - Argentina, evaluating children 6 to 12 years from 2 schools each city.

The study sample consisted of 457 children, of whom 214 were females and 243 males were evaluated and the following variables: gender, age (years), weight (kg), height (m), waist circumference (cm) and triceps skinfold and subscapular (mm).

The measurement of body weight was performed in Filizola ® with a precision of 0.1 kg to height was used a tape posted on a flat wall without footnotes and square, with the volunteer standing erect, barefoot bound. Were placed in contact with the instrument measures the posterior surface of the heel, pelvis, waist and occipital region, and the head oriented in the Frankfurt plane.

Measurements of skin folds and other measurements of waist circumference were performed in accordance with the guidelines of PETROSKI (2003). The instrument used for the skin fold measurements was a skin fold caliper ® brand and a flexible tape measure to measure waist circumference.

The body mass index was obtained by the equation recommended by WHO (1997), and the ratio of weight divided by height squared (BMI = weight (kg) / height2 (m) respecting the classification proposed by Cole et al. (2000).

The calculation of the percentage of fat was accomplished by means of a specific equation for children and adolescents, the results obtained by the sum of skin folds and triceps skin fold (TR + SE), and data interpretation made by using the proposed table by Lohman (1987).

The diagnosis of the risk of developing cardiovascular diseases was performed using the circumference of the waist and classified according to the criteria of Fernandez (2004).

To determine if the averages were significantly different, t tests were used up chi-square to check between the mean differences between groups and the distribution among the population.

RESULTS

Were evaluated 457 children, of these 214 (%) were female and 243 (%) male. In Foz do Iguaçu were evaluated 160 children, 82 (%) female and 78 male, in Ciudad del Este with the evaluations were made of 167 children, where 84 (%) were female and 83 (%) male and Puerto Iguazú in the sample consisted of 130 children, 48 (%) and 82 (%) boys.

According to the figures presented in Table 1 can be observed that there were no significant differences between genders for the variables: age, weight and BMI. However, boys showed higher values for height and waist circumference (WC) and the girls had the highest percentage of body fat (% BF).

Table 1 - Characteristics of the sample (mean and standard deviation).

Variables	Girls	Boys	Total
Age (decimal)	7,86 ± 1,56	8,07 ± 1,64	7,97 ± 1,60
Height (m) *	1,30 ± 0,11	1,33 ± 0,11	1,32 ± 0,11
Weight (Kg)	30,35 ± 8,87	31,11 ± 9,43	30,75 ± 9,17
BMI (Kg/m^2)	17,50 ± 2,73	17,28 ± 2,74	17,39 ± 2,73
%BF*	24,40 ± 9,64	20,63 ± 10,27	22,40 ± 10,15
WC (cm)*	56,70 ± 6,83	58,02 ± 7,17	57,40 ± 7,04

*significant difference (p<0,05)

Chart 1 presents the values found for the BMI of the three cities, classified according to the cutoff points suggested by Cole et al. (2000), to characterize a state of normalcy, low weight and obesity.

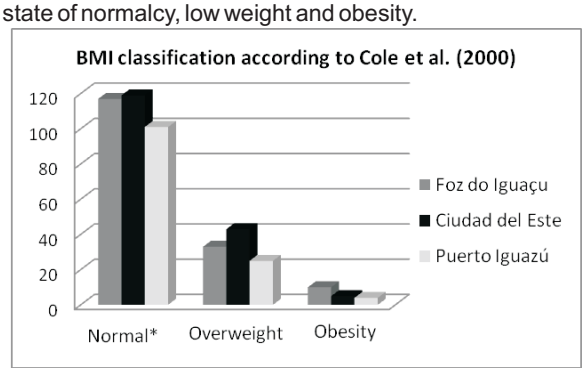

Chart 1. Classification of the sample according to nutritional status.

According to BMI classification, 65.85% of girls in Foz do Iguassu are within the range considered normal, 25.61% 8.54% overweight and obesity, already among boys 80.77% had normal weight, 15.38% 3.85 overweight and obesity. In Ciudad del Este, 72.62% of girls are normal weight, overweight and 25.00% 2.38 obesity, among boys 69.88% had normal weight, overweight and 26.50% 3.62% obesity. Already in Puerto Iguazú, 72.92% of girls have normal weight, 25.00% 2.08% overweight and obesity among boys, 80.49% had normal weight, overweight and 15.85% 3.66% obesity.

It can be concluded according to the analysis of data, in Puerto Iguazú found higher rates of normal weight (77.70%), Ciudad del Este has the highest number of overweight individuals (25.74%) and Foz had the highest incidence of obesity (6.25%).

Our findings corroborate the studies of population-based representative of the population, indicate that malnutrition and low prevalence of overweight in children and adolescents (ANJOS et al., 2003)

Other recent studies confirm the current paradigm. The data obtained by Oliveira et al. (2007) confirm that overweight and obesity have actually increased, even in populations with low purchasing power. The prevalence of overweight observed in children (21.85%) can be considered high compared to other studies. More recently, comparing the data from the National Household Expenditure (refrigerators), held in 1974 to 1975 with the survey data on living standards (PPV), held in 1996 to 1997 only in the Southeast and Northeast, there An increased prevalence of overweight and obesity from 4.1% to 13.9% in children and adolescents aged 6 to 18 years (WANG, MONTEIRO e POPKIN, 2002).

More recently, Silva et al. (2005) in a study of 1616 children and adolescents between 2 and 19 years old from different socioeconomic conditions, found a prevalence of overweight of 14.5% and 8.3% for obesity. Comparing the data from these studies with others in the South, we found that the prevalence of overweight and obesity is very close. Nardo Jr (2004) in a sample of 205 adolescents in Paraná aged between 13 and 17 years found an incidence of obesity was 10.4%.

Chart 2 shows the average values of body fat percentage of the cities involved in the study and classified according to the guidelines proposed by Lohman (1992).

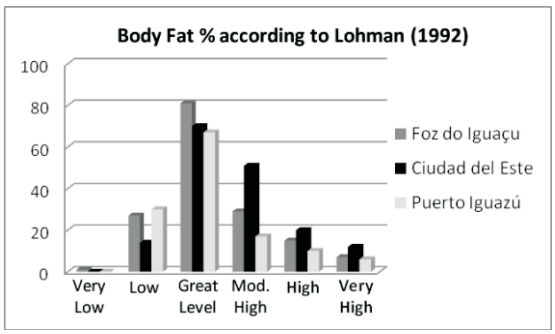

Chart 2. Classification of children according to the percentage of fat.

There is very low among girls in Foz do Iguassu, 15.85% had low, 48.78% optimal level, 20.73% moderately high, at 10.97% and 3.67% higher at very high. Among boys 1.28% had very low, 17.95% low, 52.57% optimal level, 15.38% moderately high, high 7.69% and 5.13% too high. In Ciudad del Este was not found very low levels of body fat among girls, 10.72% had low, 47.62% optimal level, 27.38% moderately high, high 8.33% and 5.95% very high, between boys and girls, there were no cases of very low level, 6.02% had low, 36.14%, which is great, moderately high 33.74%, 15.66% and 8.44 high % too high. In Puerto Iguazú, there were no cases of very low level of fat in both the male and the female, of these, 20.83% were very low, 54.18% optimal level, 14.58% moderately high level, 8, 33% higher and 2.08% too high, among boys 24.39% had low rates, 50.00%

optimal level, 12.19% moderately high, high 7.32% and 6.10% too high.

This shows that the sample of Puerto Iguazú has a higher number of individuals with low body fat (23.08%), Foz do Iguassu was found the best combination of optimum level of body fat (50.62%) and Ciudad del Este contacted indices were most alarming of body fat, and their sample 30.54% had moderately high level, 11.98% and 7.18% higher too high, noting the high incidence of risk in the future of chronic degeneration of this population.

Chart 3 expresses the classification rates of WC second Fernadez (2004).

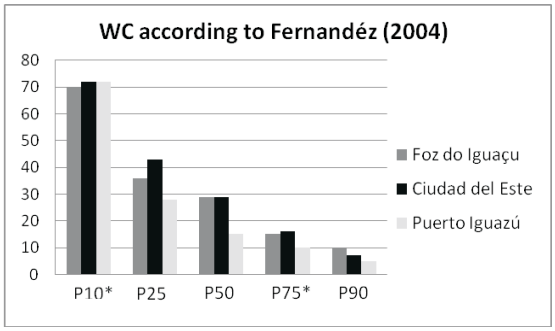

Chart 3. Sample classification according to the risk of developing cardiovascular disease.

Many surveys conducted over the past decade have suggested that abdominal obesity must be considered so that they can sort, precisely, overweight individuals in relation to health risks.

Thus, with reference to the 75th percentile as an indicator of increased risk of cardiovascular disease, one sees a high proportion in the three cities, especially in Foz do Iguassu and Ciudad del Este, where they found higher rates: 15.58%, and 13 , 78%, respectively. In Puerto Iguazú, 11.54% of the students had rates above P75.

These indices show the great need for more effective attention of public authorities in the current state of progress of conditions related to overweight.

Charts 4 and 5 present the variations found between BMI and BF% from the mean values, with increasing age, and those of the female and male, respectively.

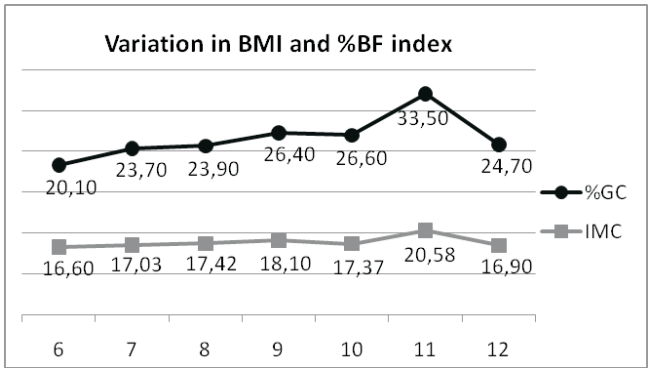

Chart 4. Change in BMI and% BF with age in the female population.

The percentage of fat shows itself as more sensitive indicator of excess body fat and is clearly reflected in Charts 4 and 5. Note the fact that the percentage of fat has reached the average value of 30% at 11 years of age among girls, higher than the expected ideal for this age group.

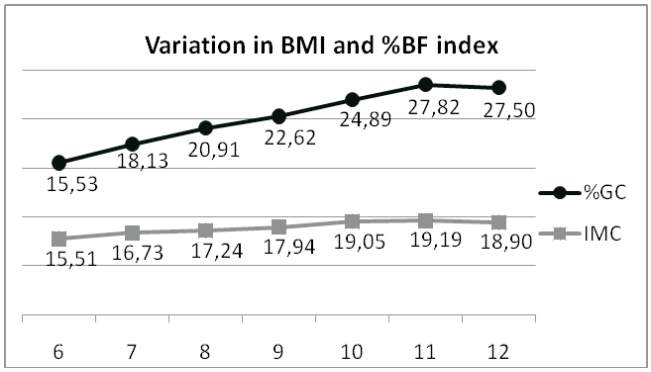

Chart 5. Change in BMI and% BF in men.

The picture observed among boys is very similar to that seen among girls. Thus, it is evident the need for regular monitoring of levels of fat because there is a high prevalence of children with an excess of body fat, which is not always reflected by body mass index. In this sense, the physical education teacher should include in your routine didactic and pedagogic aspects of body composition assessment.

FINAL CONSIDERATIONS

The results of this study indicate a prevalence of overweight and obesity among individuals involved in the process: 22.10% and 4.16% respectively. these indices are very similar to those found in other recent studies worldwide.

Confirming this way, the current scenario where at the same time that child malnutrition has been fought, there is increasing prevalence of overweight and obesity in childhood and adolescence. What is caused by changes in lifestyle and diet of the population, resulting in the emergence of various types of dysfunctions and risk factors for chronic diseases.

Thus, before this fact is necessary that the authorities of Brazil, Paraguay and Argentina carry out joint actions for prevention and control of health problems in the Triple Border, acting primarily for the purpose of educating the population about the importance of adopting a healthy lifestyle.

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NUTRITIONAL PROFILE OF STUDENTS OF THE TRIPLE FRONTIER REGION – BRAZIL, PARAGUAY AND ARGENTINA

Epidemiological studies carried out recently found that in almost all industrialized countries of the world, and also in developing countries, there has been an alarming increase in the prevalence of obesity among children and adolescents in the last four decades. This study aims to compare the indexes of nutritional status of children of different nationalities in the region of the Triple Frontier, which is a unique region in the world. Thus, this study aimed to evaluate physical growth and nutritional status of schoolchildren aged 6 to 12 years for both sexes, the cities of the Triple Border Region. This is characterized as a descriptive cross-sectional and covered the cities in the region known as the Triple Frontier, and these Ciudad del Este in Paraguay, Foz do Iguassu, Brazil, Puerto Iguazu, Argentina. Evaluations were performed according to guidelines proposed by Petroski, and the body mass index was obtained by the ratio of weight divided by height squared, while the WHO (1997). The calculation of the percentage of fat was performed by a specific equation for children and adolescents, proposed by Lohman (1987). And the classification of waist circumference followed the guidelines of Fernández (2004). The results of this study show high values for this population indicate a prevalence of overweight and obesity among the subjects involved in the process: 22.10% and 4.16% respectively. Thus, it is clear that there is an urgent need to encourage the practice of regular physical activity and the acquisition of adequate nutrition among children and adolescents, and in this context the physical education teacher plays a relevant role in this task.

KEY-WORDS: Nutritional State, Students, Triple Border Region.

PROFIL NUTRITIONNEL DE ÉTUDIANTS LA TRI TRANSFRONTALIÉRE – BRÉSIL, LE PARAGUAY ET L'ARGENTINE

Les études épidémiologiques réalisées récemment montre que dans presque tous les pays industrialisés du monde, et aussi dans les pays en développement, il ya eu une augmentation alarmante de la prévalence de l'obésité chez les enfants et les adolescents au cours des quatre dernières décennies. Cette étude vise à comparer les indices de l'état nutritionnel des enfants de différentes nationalités dans la région de la triple frontière, qui est une région unique au monde. Ainsi, cette étude visait à évaluer la croissance physique et l'état nutritionnel des enfants scolarisés âgés de 6 à 12 ans pour les deux sexes, les villes de la zone des trois frontières région. Cela se caractérise comme une croix descriptive en coupe et couvert les villes de la région connue comme la Triple Frontière, et ces Ciudad del Este au Paraguay, Foz do Iguaçu, au Brésil, à Puerto Iguazu, en Argentine. Les évaluations ont été effectuées conformément aux lignes directrices proposées par Petroski, et l'indice de masse corporelle a été obtenu par le rapport du poids divisé par la taille au carré, alors que l'OMS (1997). Le calcul du pourcentage de matières grasses a été réalisée par une équation spécifique pour les enfants et les adolescents, proposée par Lohman (1987). Et le classement du tour de taille a suivi les orientations de Fernández (2004). Les résultats de cette étude montrent des valeurs

élevées pour cette population indiquent une prévalence de surpoids et d'obésité chez les sujets impliqués dans le processus: 22.10% et 4.16% respectivement. Ainsi, il est clair qu'il ya un besoin urgent d'encourager la pratique d'activité physique régulière et l'acquisition d'une alimentation adéquate chez les enfants et les adolescents, et dans ce contexte, le professeur d'éducation physique joue un rôle important dans cette tâche.

MOTS-CLÉS: État Nutritionel, Étudiants, Tri Trasnfronteiliére.

PERFIL NUTRICIONAL DE LOS STUDIANTES DE LA REGIÓN DE LATRIPLE FRONTERA – BRASIL, PARAGUAY Y ARGENTINA.

Los estudios epidemiológicos realizados recientemente encontró que en casi todos los países industrializados del mundo, y también en los países en desarrollo, ha habido un aumento alarmante de la prevalencia de obesidad entre los niños y adolescentes en las últimas cuatro décadas. Este estudio tiene como objetivo comparar los índices del estado nutricional de los niños de diferentes nacionalidades en la región de la Triple Frontera, que es una región única en el mundo. Así, este estudio tuvo como objetivo evaluar el crecimiento físico y estado nutricional de los escolares de 6 a 12 años para ambos sexos, las ciudades de la Región Triple Frontera. Este se caracteriza como una cruz descriptivo, transversal y cubiertas las ciudades en la región conocida como la Triple Frontera, y estos de Ciudad del Este en Paraguay, Foz do Iguacu, Brasil, Puerto Iguazú, Argentina. Las evaluaciones se realizaron según las directrices propuestas por Petroski, y el índice de masa corporal fue obtenido por el cociente entre el peso dividido por altura al cuadrado, mientras que la OMS (1997). El cálculo del porcentaje de grasa fue realizada por una ecuación específica para los niños y adolescentes, propuesto por Lohman (1987). Y la clasificación de la circunferencia de la cintura a las directrices de Fernández (2004). Los resultados de este estudio muestran valores altos para esta población indican una prevalencia de sobrepeso y obesidad entre los sujetos involucrados en el proceso: el 22,10% y 4,16% respectivamente. Por lo tanto, es evidente que existe una necesidad urgente de fomentar la práctica de actividad física regular y la adquisición de una adecuada nutrición entre los niños y adolescentes, y en este contexto, el profesor de educación física desempeña un papel relevante en esta tarea.

PALABRAS-LLAVE: Estado Nutricional, Estudiantes, Región de la Triple Frontera.

PERFIL NUTRICIONAL DE ESCOLARES DA REGIÃO DA TRÍPLICE FRONTEIRA – BRASIL, PARAGUAI E ARGENTINA.

Estudos epidemiológicos realizados recentemente constataram que em quase todos os países industrializados do mundo, e também nos países em desenvolvimento, tem ocorrido um aumento alarmante da prevalência de obesidade entre crianças e adolescentes nas últimas quatro décadas. Este estudo visa comparar os índices de estado nutricional das crianças de nacionalidades distintas da região da Tríplice Fronteira, sendo esta uma região única no mundo. Desta forma, este trabalho teve como objetivo principal avaliar crescimento físico e estado nutricional de escolares na faixa etária de 6 a 12 anos de ambos os sexos, das cidades da região da Tríplice Fronteira. Este se caracteriza como uma pesquisa descritiva de delineamento transversal e abrangeu as cidades situadas na região conhecida como Tríplice Fronteira, sendo estas Ciudad del Este, no Paraguai, Foz do Iguaçu, no Brasil, Puerto Iguazú, Argentina. As avaliações foram realizadas segundo as orientações propostas por Petroski, sendo o Índice de Massa Corporal foi obtido pela razão entre o peso dividido pela estatura ao quadrado, respeitando a classificação da OMS (1997). O cálculo do percentual de gordura foi realizado por meio de uma equação específica para crianças e adolescentes, proposta por Lohman (1987). E a classificação da circunferência da cintura seguiu as diretrizes de Fernandéz (2004). Os resultados encontrados no presente estudo apresentam valores elevados para esta população apontam uma prevalência de sobrepeso e obesidade entre os sujeitos envolvidos no processo: 22,10% e 4,16%, respectivamente. Deste modo, fica claro que há urgente necessidade de estimular a prática de atividade física regular e a aquisição de uma alimentação adequada entre crianças e adolescentes, e que neste âmbito o professor de Educação Física têm papel relevante nesta tarefa.

PALAVRAS-CHAVE: Estado Nutricional, Escolares, Região da Tríplice Fronteira.

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