

89 - NUTRITIONAL STATUS OF CHILDREN OF THE NETWORK OF MUNICIPAL PUBLIC ELEMENTARY SCHOOL CITY OF MACAPÁ-AP

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INTRODUCTION

The study of nutritional status is of great importance in the evaluation and monitoring of child growth and development, as it offered as a key indicator of health status and quality of life of a population.

The influence of nutrition on health of the individual is measured by assessing the nutritional status. In turn, the nutritional status is defined as "the degree to which the physiological need for nutrients of the individual being served through the food they are eating, (balance between intake and expenditure or the need for nutrients) (KRAUSE, 1991).

The anthropometric assessment of nutritional status of schoolchildren have been traditionally implemented in a reference which is made from the observation weight, height and age of the child. There are several records of epidemiological studies on the evaluation of nutritional status using anthropometry as an indicator or direct method, which is applied mainly in the pathogenic (GAMA, 2000, Monteiro & Conde, 2000, Carvalho et al., POST et al., 1999, Ribas et al., 1999; MALTA et al., 1988, Ferreira et al., 1997). The results of these studies are based on direct indicators, because they show the problem itself, ie the biological manifestations that express the status of the population (Vasconcelos, 2000).

In Brazil, has been detected progression of the nutritional transition, characterized by a reduction in the prevalence of nutritional deficits and the more expressive occurrence of overweight and obesity not only in adults but also children and adolescents (Wang, 2002). Studies in some Brazilian cities show that overweight and obesity was over 20% of children and adolescents, and in Recife, 35% of schoolchildren (BALABAN, 2001).

Obesity is a nutritional problem which has increased considerably, both in developed countries as in developing countries (FISBERG, 1995). This situation is favored by inappropriate lifestyle, represented by a sedentary lifestyle, family customs, incorrect, inadequate nutrition, unbalanced meals and consumption of sweets and candies, among other Popkin et al. (1995). Moreover, urban life has been associated with changes in behavior, especially in relation to diet and physical activity, factors significantly related to obesity Popkin et al. (1995).

The practice of watching television for several hours each day, the spread of electronic games, the abandonment of breastfeeding, the incorrect use of processed foods and replacing processed foods in the domestic industrial, are factors that should be considered in determining growth childhood obesity OLIVEIRA et al. (2003).

Treatment of obesity in children is more effective when working with parents, they are considered the main agents of change GOLAN et al. (1998). The eating habits of parents influence nutrient intake in preschool children. These authors suggest that television may play an important role in promoting health in order to guide parents and thus change the eating habits of children, thereby preventing, chronic disorders in adulthood OLIVEIRA et al. (2003).

The World Health Organization (WHO, 1995) has been stressing for some time, the need for studies on the levels of growth and nutritional status of populations of developing countries and underdeveloped, mainly due to the lack of recent information, and also considering the huge increase in overweight and obesity in school-age populations.

Given the complexity and variability of the Brazilian nutritional profile, especially considering the paucity of references to northern and northeastern population, it is of paramount importance to a study aiming to investigate the nutritional status of children aged 07 to 10 years basic education in public and urban area of Macapá (AP).

METHODOLOGICAL PROCEDURES

This study characterized as descriptive research with quantitative analysis (minimum, maximum, mean, median and standard deviation). The population of public schools of urban city of Macapá was estimated by the Censur escolar/2009 in 10,000 students, distributed in 33 schools. Through statistical calculations the sample consisted of 2071 students of both sexes, aged between 07 and 10 years enrolled between the 1st to 4th grades of elementary school, selected by proportional random sampling by schools and conglomerate class. As a tool for checking the weight and height of school children used a digital scale with a capacity of 150 kg and a stadiometer tape type, with 2000 cm with an accuracy of 01 mm. Anthropometric evaluation was done by weight, height and age. Inferential comparison between groups was performed using the chi-square (χ^2). With the level of significance of the null hypothesis of 5% ($p < 0.05$).

RESULTS AND DISCUSSION

Of the 2071 children, 1097 (52.96%) were male and 974 (47.0%) were female. Table 01 and 02 shows the comparison of the nutritional status of schoolchildren in males and females of the southern and northern parts of weight for age according to NCHS.

Tabela 01 - Comparação do estado nutricional de escolares do sexo masculino e feminino na faixa etária de 07 a 10 anos de escolas públicas da zona sul, 2009, de acordo com os critérios de Waterlow - 1976

Estado nutricional	Masculino		Feminino		Total	
	n	%	n	%	n	%
DC	11	1,87	02	0,38	2,25	
DP	153	26,10	145	28,21	54,31	
DA	24	4,09	15	2,91	7,00	
EU	219	37,37	154	29,96	67,33	
SP	56	9,55	77	14,98	24,53	
OB	103	17,57	89	17,31	34,88	
GO	20	3,41	32	6,22	9,63	
Total	586	100	514	100	200	

Legenda: GO - Grande obeso; OB-Obeso; SP - Sobrepeso; EU - Eutrófico; DA - Desnutrição Atual; DP - Desnutrição progressa; DC - Desnutrição crônica.
p-valor <0.001*, Qui-Quadrado de aderência, GL=6.

According to the data in Table 14, it is observed that in men the levels of obesity (overweight, obesity and obese grade), and the levels of malnutrition (chronic malnutrition, stunted growth and malnutrition), presented with (9.55%, 17.57% and 3.41%), amounting to 30.9% for cases of obesity, compared with normal weight (37.37%) and (1.87%, 26.10 % and 4.09%),

amounting to 32.06% for malnutrition. Since female levels of obesity (overweight, obesity and high obesity) and malnutrition (malnutrition, stunted growth and malnutrition), presented with (14.98%, 17.31% and 6.22%), amounting to 38.51% for the cases of obesity, compared with normal weight (29.96%) and (0.38%, 28.21% and 2.91%), amounting to (31.5%).

Comparing the male students and female, the p-value <00.0001 * is highly significant indicating that there are real differences in status between the sexes. It was found that there was a prevalence of normal weight (37.37%) for males from the south and a high rate (38.51%) for the cases of obesity for women of the south. As the analysis of results of chi-square the category that showed the most difference was the stunted growth. Being that malnutrition also obtained a lower rate of occurrence in all age groups and chronic malnutrition, no significant results. The prevalence of overweight found in the school of Macapá was considered low (39.6%) and below that found in national surveys (Giugliano et al. 2004; SALAZAR et al., 2006, Costa et al, 2006) and international (SALAZAR et al., 2006), Farias et al, 2003).

Tabela 03: Distribuição Percentual do estado nutricional de meninas e meninos de ± 7 a ± 10 anos de idade, da zona norte e zona sul, matriculadas nas escolas de ensino fundamental do Município de Macapá em 2008, de acordo com os critérios de Waterlow, 1976.

Idade	GO	OB	SP	EU	DA	DP	DC	Total
	n%	n%	n%	n%	n%	n%	n%	
± 7	9 (3,3)	67 (24,6)	32 (11,8)	127 (46,7)	20 (7,4)	12 (4,4)	5 (1,8)	272 (100%)
± 8	2 (0,3)	138 (20,5)	8 (1,2)	244 (36,2)	140 (20,8)	124 (18,4)	18 (2,7)	674 (100%)
± 9	3 (0,5)	197 (32,2)	33 (5,4)	157 (25,7)	64 (10,5)	99 (16,2)	58 (9,5)	611 (100%)
± 10	1 (0,2)	154 (30)	16 (3,1)	53 (10,3)	59 (11,5)	171 (33,3)	60 (11,7)	514 (100%)
T	15 (4,3)	556 (107,3)	89 (21,5)	581 (118,9)	283 (50,2)	406 (72,3)	141 (25,7)	2071 (100%)

Legenda: GO - Grande obeso; OB-Obeso; SP - Sobrepeso; EU - Eutrófico; DA - Desnutrição Atual; DP - Desnutrição progressa; DC - Desnutrição crônica.
p-valor < 0.001*, Qui-Quadrado

The assessment of nutritional status of schoolchildren in males and females in the age between 07 to 10 years in public schools in the north, a statistically significant difference (p-value <0.0001 *) and according to Residue Analysis chi-square, the category that showed the most difference was stunted, they also perceive that the male (149 students), equivalent to (29.15%) presented with a higher percentage of malnutrition. There was also a high rate (42.70%) of overweight in both sexes.

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p-valor < 0.001*, Qui-Quadrado

The assessment of nutritional status between the ages obtained p-value <0.001 * which is highly significant indicating real differences, as it turns out that the ages of 7 to 8 years category Eutrophic predominates (82.9%). At the age of 9 years the predominant category Obese (32.2%). At the age of 10 years is a greater proportion of categories malnutrition (33.3%) and obesity (30%).

Comparison of weight / body height of schoolchildren in this study, the results show lower values than the curves of the NCHS. These findings differ from those found in Macapá-AP, and the students of this region lower, but lighter than the average child examined by the NCHS. These results differ from findings of population-based studies in Brazil, indicating a decline of malnutrition in children and adolescents (ANGELS et al., 2003, Monteiro et al, 1999).

Malnutrition in Brazil seems to relate to geographic region: in North and Northeast regions, malnutrition is at least two times higher than in the Midwest and four times higher than in the southern region (IBGE, 1997).

Regarding gender, it was observed that the 2071 school children, malnutrition stood out in first place in both sexes, and, with excess weight were more common in girls (24.6% and 8.4% respectively the results of this study differ from those found in the literature (21.29%), suggesting reduced malnutrition and increased overweight.

Tables 04, 05, 06 and 07 show the values of central tendency and dispersion of weight and height by sex and age, in the northern and the southern city of Macapá - AP.

	7 anos		8 anos		9 anos		10 anos	
	Zona Sul	Zona Norte						
Mínimo	16.3	15.8	14.7	17.8	18.5	15.8	18.0	17.9
Média	24.7	22.1	25.8	29.8	28.2	31.2	36.0	34.8
Mediana	24.0	21.6	24.7	28.5	26.4	28.3	36.5	36.5
Máximo	38.0	35.0	116.0	46.7	52.5	56.0	56.4	54.5
D Padrão	4.5	4.4	8.9	6.3	6.4	10.1	9.9	11.2

Tabela 04: Valores de tendência central e de dispersão do Peso (kg) de meninas, conforme a região da cidade de Macapá-AP.

The girls from the south in the age group between 09 and 10 years presented with a minimum value of (18.5, 18) higher compared to other age groups. It was noticed that the average weight in the north was higher than in the south in the age groups 08, 09 and 10 years. The median weight, there was a greater dispersion in children aged 10 years in the area south of the city of Macapá - AP. The maximum weight were found in girls aged 08 years in the south. The standard deviation of weight values were significant, being (8.9) for girls aged 08 years in the south zone in relation to other age groups.

	7 anos		8 anos		9 anos		10 anos	
	Z Sul	Z Norte	Z Sul	Z Norte	Z Sul	Z Norte	Z Sul	Z Norte
Mínimo	15.0	14.0	14.0	17.5	18.7	17.0	18.7	18.9
Média	23.0	20.8	25.0	29.8	27.0	31.5	34.6	34.4
Mediana	22.0	20.7	24.2	28.5	25.7	28.0	32.4	36.5
Máximo	37.0	37.0	47.5	54.0	57.0	57.0	57.0	55.5
D Padrão	4.5	4.3	5.2	7.3	6.0	10.7	10.2	10.2

Tabela 05: Valores de tendência central e de dispersão do Peso (kg) de meninos, conforme a região da cidade de Macapá-AP.

The boys in the age groups between 09 to 10 years presented with a higher minimum, mean, median, maximum and standard deviation of body weight in both the neighborhood is north and south.

	7 anos		8 anos		9 anos		10 anos	
	Z Sul	Z Norte	Z Sul	Z Norte	Z Sul	Z Norte	Z Sul	Z Norte
Mínimo	113.6	113.6	110.0	110.0	117.0	118.0	117.0	120.0
Média	121.7	121.4	123.5	124.0	126.0	126.6	128.3	129.9
Mediana	121.0	121.0	123.0	124.3	125.5	126.0	127.0	129.0
Máximo	132.0	131.0	139.0	139.0	138.0	138.0	148.0	148.0
D Padrão	3.6	3.3	5.1	4.5	3.9	4.8	6.3	5.5

Tabela 06: Valores de tendência central e de dispersão da Estatura (cm) de meninas, conforme a região da cidade de Macapá-AP.

The girls in the age groups between 09 to 10 years presented with a higher minimum, mean, median, maximum and standard deviation of height in both areas: north and south.

	7 anos		8 anos		9 anos		10 anos	
	Z Sul	Z Norte	Z Sul	Z Norte	Z Sul	Z Norte	Z Sul	Z Norte
Mínimo	13.2	13.2	16.0	117.0	12.0	116.0	12.0	118.0
Média	119.0	118.3	121.8	123.1	125.1	126.4	127.2	129.1
Mediana	120.0	120.0	122.0	122.0	125.3	126.0	127.0	129.0
Máximo	131.0	132.0	138.0	138.0	144.0	142.0	144.0	138.0
D Padrão	13.7	16.5	9.6	4.6	10.1	5.6	10.5	5.3

Tabela 07: Valores de tendência central e de dispersão da Estatura (cm) de meninos, conforme a região da cidade de Macapá-AP.

The boys in the age of 08, 09, and 10 presented with a higher minimum, average, median, maximum and standard deviation of stature.

The results of the adequacy of weight for height of boys and girls in both areas: north and south, the findings differ because they are significantly outside the guidelines established by the NCHS.

CONCLUSION

Probably due to inadequate socioeconomic conditions in the region of Macapá, it was found that the prevalence of malnutrition was approximately three times greater than that of overweight. In this sense, malnutrition found in the region can be considered a public health problem.

This study aimed to investigate, by means of a horizontal approach the status of the sample of students from public schools in the city of Macapá (AP). Thus, the most severe cases of malnutrition are among the children of poor families, which showed increased prevalence of malnutrition. Because of this, the concerns about the nutritional deficits in children are directed to investigations with monitoring of child development, to ensure a healthier life.

We hope that the evidence can help with some preventive measures of public health policies, aimed at the implementation of educational activities in schools to raise awareness among administrators, teachers, parents and / or employees to fight malnutrition and childhood obesity.

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NUTRITIONAL STATUS OF CHILDREN OF THE NETWORK OF MUNICIPAL PUBLIC ELEMENTARY SCHOOL CITY OF MACAPÁ-AP

ABSTRACT

The study aimed to investigate the nutritional status of children 07 to 10 years of primary education in public and urban area of Macapá (AP). The sample consisted of 2071 elementary school students of both sexes, enrolled, selected by proportional random sampling by schools and conglomerate class. As a tool for checking the weight of school children used a digital scale with a capacity of 150 kg and a stadiometer tape type, with 2000 cm with an accuracy of 01 mm. Anthropometric evaluation was done by weight, height and age. Nutritional status was assessed by the criterion of WATERLOW (1976), the benchmark was the NCHS. Inferential comparison between groups was performed using the chi-square (χ^2). With the level of significance of the null hypothesis of 5% ($p < 0.05$). The result of the assessment of nutritional status between the ages obtained p-value $< 0.001^*$ which is highly significant indicating real differences, as it turns out that the ages of 7 to 8 years category predominates Eutrophic (46.7%), at the age of 9 years, the predominant category Obese (32.2%). At the age of 10 years had a greater proportion of categories malnutrition (33.3%) and obesity (30%). The status, it was observed that the highest rates of malnutrition appeared in the North of the males, and in the southern region of females, and the malnutrition appeared high in both regions. Conclusion: Malnutrition was found in regions of Macapá can be considered a public health problem of great relevance to society.

KEYWORDS: Nutritional status, obesity, malnutrition.

ÉTAT NUTRITIONNEL DES ENFANTS DU RESEAU DES MUNICIPALES VILLE ÉCOLE ÉLÉMENTAIRE PUBLIQUE DE MACAPÁ-AP

RÉSUMÉ

L'étude visait à étudier l'état nutritionnel des enfants de 07 à 10 ans d'enseignement primaire en espace public et urbain de Macapá (AP). L'échantillon se composait de 2.071 élèves des écoles primaires des deux sexes, se sont inscrits, choisis par tirage aléatoire proportionnelle par les écoles et la classe de conglomerat. Comme un outil de vérification du poids des enfants des écoles ont utilisé une échelle numérique avec une capacité de 150 kg et un type de bande stadiomètre, avec 2000 cm avec une précision de 01 mm. Anthropométriques évaluation a été faite par poids, la taille et l'âge. L'état nutritionnel a été évalué par le critère de WATERLOW (1976), l'indice de référence était le NCHS. Comparaison entre les groupes d'inférence a été effectuée en utilisant les χ^2 chi-(carré). Avec le niveau de signification de l'hypothèse nulle de 5% ($p < 0,05$). Le résultat de l'évaluation du statut nutritionnel entre les âges obtenus valeur de $p < 0,001^*$ qui est très significatif indiquant des différences réelles, car il s'avère que les âges de la catégorie ans 7 à 8 eutrophes prédomine (46,7%), à l'âge de 9 ans ans, la catégorie prédominante obèses (32,2%). À l'âge de 10 ans avaient une plus grande proportion des catégories de malnutrition (33,3%) et l'obésité (30%). Le statut, il a été observé que les taux les plus élevés de malnutrition apparut dans le Nord des mâles, et dans la région sud de femmes, et la malnutrition paraît élevée dans les deux régions. Conclusion: La malnutrition a été constaté dans les régions de Macapá peut être considéré comme un problème de santé publique d'une grande pertinence pour la société.

MOTS CLÉS: état nutritionnel, l'obésité, la malnutrition.

ESTADO NUTRICIONAL DE LOS NIÑOS DE LA RED PÚBLICA MUNICIPAL DE LA CIUDAD DE LA ESCUELA PRIMARIA MACAPÁ-AP

RESUMEN

El objetivo del estudio fue investigar el estado nutricional de los niños de 07 a 10 años de educación primaria en las zonas públicas y urbanas de Macapá (AP). La muestra consistió de 2071 estudiantes de escuelas primarias de ambos sexos, inscritos, seleccionados por muestreo aleatorio proporcional por las escuelas y la clase de conglomerado. Como una herramienta para comprobar el peso de los niños de la escuela utiliza una balanza digital con una capacidad de 150 kg y un tipo de cinta estadiómetro, con 2000 cm con una precisión de 01 mm. La evaluación antropométrica fue realizada por peso, talla y edad. El estado nutricional se evaluó por el criterio de WATERLOW (1976), el valor de referencia era el NCHS. Inferencial comparación entre grupos se realizó mediante la chi-cuadrado (χ^2). Con el nivel de significación de la hipótesis nula de 5% ($p < 0,05$). El resultado de la evaluación del estado nutricional entre las edades obtenidas valor de $p < 0,001^*$, que es muy significativo que indica las diferencias reales, ya que resulta que las edades de la categoría 7 a 8 años predomina eutróficas (46,7%), a la edad de 9 años, la categoría predominante obesos (32,2%). A la edad de 10 años presentaban una mayor proporción de las categorías de la desnutrición (33,3%) y obesidad (30%). La condición jurídica, se observó que las tasas más altas de desnutrición apareció en el norte de los machos, y en la región meridional de las mujeres, y la desnutrición apareció alta en ambas regiones. Conclusión: La malnutrición se encuentran en las regiones de Macapá puede considerarse un problema de salud pública de gran importancia para la sociedad.

PALABRAS CLAVE: estado nutricional, la obesidad, la desnutrición.

ESTADO NUTRICIONAL DE CRIANÇAS DA REDE PÚBLICA MUNICIPAL DE ENSINO FUNDAMENTAL DA CIDADE DE MACAPÁ-AP

RESUMO

O objetivo do estudo foi Investigar o estado nutricional de crianças de 07 a 10 anos do ensino fundamental da rede pública e urbana do município de Macapá (AP). A amostra constituiu-se de 2071 escolares do ensino fundamental de ambos os sexos, regularmente matriculados, selecionados por meio de amostragem aleatória proporcional por escolas e por conglomerado de turma. Como instrumento para verificação do peso corporal dos escolares, utilizou-se uma balança digital com capacidade máxima para 150 Kg e um estadiômetro tipo trena, com 2000 cm, com uma precisão de 01 mm. A avaliação antropométrica fez-se através de peso, estatura e idade. O estado nutricional foi avaliado através do critério de WATERLOW (1976), cujo padrão de referência foi o NCHS. A comparação inferencial entre grupos foi realizada utilizando-se do teste Qui-quadrado (χ^2). Adotou-se nível de significância da hipótese de nulidade de 5% ($p < 0,05$). O resultado da avaliação do estado nutricional entre as idades obteve p-valor $< 0.001^*$ o qual é altamente significativo indicando reais diferenças, como se constata que nas idades de 7 a 8 anos predominou a categoria Eutrófico (46.7%), na idade de 9 anos predominou a categoria Obeso (32.2%). Na idade de 10 anos houve uma maior proporção das categorias Desnutrição Pgressa (33.3%) e Obesa (30%). No estado nutricional, observou-se que os maiores índices de desnutrição apareceram na região norte para o sexo masculino, e na região sul para o sexo feminino, sendo que a desnutrição pgressa apareceu elevada em ambas as regiões. Conclusão: A desnutrição encontrada nas regiões de Macapá pode ser considerada um problema de Saúde Pública de grande relevância para a sociedade.

PALAVRAS-CHAVE: Estado nutricional, obesidade infantil, desnutrição.

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