133 - GROWTH SPURT AND BMI OF SCHOOL OF 9 TO 14 YEARS OF URBAN AREA OF THE CITY OF ARAPIRACA-AL.

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INTRODUCTION

In general, growth is a natural process and dynamic that occurs from conception to complete the adult size and resulting morphological changes such as the increase in the number of cells (hyperplasia), the increase in cell size (hypertrophy) and increase in the quantity of ingredients intercelulares1. Every human being is born with a genetic potential for growth that may or may not be achieved depending on the conditions of life to which they are exposed from conception until adulthood.2.

This growth process is influenced by intrinsic (genetic) and extrinsic (environmental, social, economic, cultural), among which stand out the food, health, hygiene, physical activity, housing and general care with child acting accelerating or retarding this process3.

Machado et al.4 point out that the World Health Organization (WHO) emphasizes the need for studies on the levels of physical growth and nutritional status of children and adolescents belonging to underdeveloped countries and / or development. Information obtained allow us to check the health status and identify the pattern of growth is influenced by genetic, social and environmental issues, a fact that contributes significantly to the creation of both programs, as well as strategies for promoting health and quality of life5.

In this perspective, several studies6, 7,8,9 have been made across the country in order to demonstrate our population characteristics and health in relation to children and adolescents, as well as propose possible solutions to the problems encountered.

According to WHO (1995) 3 is an acceptance of international monitoring physical growth through anthropometric measurements of height and weight, which are used for the elaboration of normative physical growth curves used as references in many countries. The growth curves developed by the World Health Organization in 2007 (WHO, 2007) 10, are regarded as the reference standard internationally, since the sample that generated the curves consisted of individuals from developed and underdeveloped countries, ethnic groups, customs and different genetic inheritance.

For Souza Pires and Neto1, is what happens in the school environment interaction between Physical Education and school during infancy until the end of puberty. Thus, the levels of students' health may be assessed by anthropometric tests performed during physical education classes because, "[...] before the height-for-age can evaluate longitudinal bone growth, history Nutritional past, ethnic and geographical variations and secular trends of school "11.

However, there is a paucity of studies related to height and BMI of schoolchildren in the state of Alagoas.

In view of the foregoing and the relevance of the topic, this study aims to assess the height and BMI of children and adolescents in the urban area enrolled in four schools in the municipal schools of Arapiraca - AL.

METHODOLOGY

This is a cross-sectional study, in which there is only one measurement for further analysis, character research that assesses the current state of amostra12.

This study was approved by the Ethics Committee of the Universidade Federal de Alagoas with protocol number 003360/2011-75.

The sample consisted of 1522 students of both sexes, with ages 9-14 years, with 745 males and 777 females, chosen at random among students duly enrolled in four schools in the urban municipal schools of Arapiraca - AL, in 2010. To determine body mass, we used a scale Techline ® BAL-150PA, properly calibrated and tested, the accuracy of which is 100 grams and the scale ranges from 0 to 150 kg. In assessing the height was used Sanny stadiometer ® compact portable model, graduated in cm. The measures were taken following the protocol proposed by Alvarez and Pavan13.

The body mass index (BMI) was calculated as the ratio of body weight (kg) by the square of height (m2).

To evaluate the relationship of height for age of the sample were used as reference growth curves height / age proposed by the World Health Organization (WHO, 2007) 10. Have to classify BMI for age and gender tables were used by Cole et al. (2000) 14.

In order to characterize the study sample used the statistic of central tendency and dispersion values (mean and standard deviation).

RESULTS

The results presented in Table 1 demonstrate that both the female students (F), as the male students (M) in all the age groups showed average values for height percentiles of normality within the internationally proposed by WHO (2007) 10. It is also observed that there were differences in the heights of schoolchildren aged between sex at ages 09, 10, 11, 13 and 14 years. It was found that girls showed higher values than boys up to 11 years. Already at age 12, the students of both sexes showed average values equal thereafter when the boys began to show above average values shown by the girls.

Table 1 - Mean and standard deviation for the stature of female students (F) and male (M) enrolled in municipal schools of Arapiraca in 2010.

	09 years	10 years	11 years	12 years	13 years	14 years
n	142	142	145	155	123	70
F	16,44±3,06	16,55±3,05	17,14±3,06	18,17±313	19,14±3,30	20,09±3,10
n	132	147	124	158	110	74
M	16,53±2,59	16,78±3,02	16,98±2,87	18,05±3,51	18,63±3,20	19,22±3,33

By checking the results presented in Table 2 and taking into account the classification proposed by Cole et al. (2000) 14, one can observe that the female students, and school males showed average values for the BMI classified as normal. The progression of the curve IMC developed similarly in both sexes. Both for boys and for girls, the average BMI described an upward stroke with the highest increase in the period between 11 and 12 years.

It was noticed that both sexes showed average values very close, except for 11 to 12 years, when the girls were found slightly above average. With respect to the average values of 09 to 14 years, found that boys showed higher values than those of girls between the ages of 09 and 10 years, but at around 11 to 12 years, the girls began to show higher values than the boys this framework they remained for the following age groups.

Table 2 - Mean and standard deviation of BMI of female students (F) and male (M) enrolled in municipal schools of Arapiraca in 2010.

	09 years	10 years	11 years	12 years	13 years	14 years
n	142	142	145	155	123	70
F	16,44±3,06	16,55±3,05	17,14±3,06	18,17±313	19,14±3,30	20,09±3,10
n	132	147	124	158	110	74
M	16,53±2,59	16,78±3,02	16,98±2,87	18,05±3,51	18,63±3,20	19,22±3,33

DISCUSSION

The study has limitations such as: (a) the fact that it has been conducted in a specific region of Brazil, a country characterized by cultural, ethnic, and socioeconomic climate, (b) because it is characterized as a cross-sectional study, (c) for not taking into account the maturational stages, eating habits and levels of physical activity assessed.

The mean height for age presented in this study indicate that under the current curves proposed by the school OMS10 the male and female are within normal limits in all age groups evaluated corroborating other studies9, 15 , 16.17 undertaken both regionally as studies that took place outside the context of social and cultural reality of the sample surveyed.

In the study performed by Silva et al.9 in Alagoas in the city of Arapiraca in 2009, we evaluated the height of 469 students, including 211 males and 258 females and concluded that the stature of female students from 12 years showed a decrease in growth compared to male corroborating the present study.

A longitudinal study by Bergmann et. al.15 in Rio Grande do Sul, with 70 students of both sexes between the ages of 10 to 14 years, 35 boys and 35 girls, who analyzed the growth spurt and peak growth velocity concluded that even 12 years significant differences were observed between the sexes, but at 13 and 14 years old boys had higher stature than girls, and that the peak height velocity occurred among boys age 13 and among girls from 10 to 11 years. Although the present study did not assess the peak growth velocity, one can observe evidence of similar behavior in the stature of schoolchildren of both sexes evaluated with the results observed in the study by Bergmann et. al.15.

Other research similar to this study was conducted with 2111 children and adolescents in the states of Sergipe and Pernambuco, by Silva et al.16, which concluded that children and adolescents are evaluated within a normal pattern of growth in relation to height growth to use as a reference curves from the National Health and Nutrition (PNSN) and the National Center for Health Statistics (NCHS).

NSN must emphasize that it is a household survey on probabilistic sample of Brazilian households, where, along with other information, anthropometric data were obtained for assessing the nutritional status of the population and, in particular, to establish the prevalence and national infantil18 regional malnutrition.

In recent years, Brazil has seen profound changes in the nutritional status of its population, including children and adolescents, the result of a process known as transition nutricional19. Several studies20, 21,22,23 have shown a rapid decline in the prevalence of malnutrition in children and adolescents and elevation, at a faster pace, the prevalence of overweight/obesity.

The etiology of obesity is multifactorial, with genetic and environmental factors involved. Among the environmental stand out excessive energy intake and physical activity diminuída21.

Authors21, 24 report that growth suffers more influence than the socioeconomic status of ethnic and geographical aspects. Socioeconomic status interferes in food availability and access to information, and may be associated with certain patterns of physical activity, becoming therefore an important determinant of the prevalence of obesity.

Regarding BMI can observe that the results obtained in this study corroborate the results of the study by Silva et al.25 with 1634 students, whose goal was to identify the levels of overweight and obesity in children and adolescents from public municipal teaching Arapiraca-AL, showing that 79.66% of children and adolescents who comprised the sample are within normal limits.

In cross-sectional study conducted by Campos et al.24, with 1158 adolescents, 587 private schools and 571 public schools, examined the relationship between socioeconomic status and the prevalence of overweight and obesity in adolescent students of public and private schools in Fortaleza, which found a higher prevalence of overweight / obesity in high socioeconomic classes (24.8%) compared to the lowest level (17.4%).

It should be noted that this discussion about secular trend studies conducted with BMI in children and adolescents Brasil27, China, Russia and EUA28 demonstrated increased levels of BMI in this population. These scientific evidence confirms that obesity is not only restricted to adults, and there is also a substantial increase in its prevalence in children of preschool age and in children and adolescents 6-17 anos20, 21,22.

CONCLUSION

The results showed that both the stature, as the students' BMI males and females in this study were within normal limits.

However, it should be noted the apparent increase in levels of obesity among children and adolescents, a fact that has

caused a number of health problems that can be noticed in the short and long term. In the first group are orthopedic disorders, respiratory disorders, diabetes, hypertension and dyslipidemia, in addition to disorders psicossociais27, 29. In the long term, increased mortality has been reported by various causes, particularly from coronary heart disease in adults who were obese during childhood and adolescência21, 29.30.

Finally, it is necessary to emphasize the importance of the role of professional physical education in schools regarding the periodic reviews of anthropometric and physical fitness, but also on the orientation of physical activities appropriate for these indexes are maintained within the standard normality.

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GROWTH SPURT AND BMI OF SCHOOL OF 9 TO 14 YEARS OF URBAN AREA OF THE CITY OF ARAPIRACA-AL.

ABSTRACT

The monitoring of height and BMI are important indicators of quality of life, and enable you to check the health status over certain periods of a given population. The present study aimed to evaluate the stature and BMI of schoolchildren of both sexes between the ages of 9 and 14 years. The sample consisted of 1522 students of both sexes, with ages 9-14 years, with 745 males and 777 females, chosen at random among students duly enrolled in four schools in the urban municipal schools of Arapiraca - AL, in 2010. The data collection was used: a stadiometer and balance Sanny ® Techline ® BAL-150PA. The results were obtained from tables regulations proposed by the WHO (2007) and the cut points suggested by Cole et al. (2000). For the treatment of the data was used statistics of central tendency and dispersion values (mean and standard deviation). The results demonstrate that both the stature, the BMI of the male students and female are within normal limits. We conclude that both the stature, as the students' BMI males and females in this study were within normal limits.

KEYWORDS: Height, BMI; School.

POUSSÉE DE CROISSANCE ET IMC DE L'ÉCOLE DE 9 À 14 ANS DE ZONE URBAINE DE LA VILLE DE ARAPIRACA-AL.

RÉSUMÉ

La surveillance de la taille et l'IMC sont des indicateurs importants de la qualité de la vie, et vous permettent de vérifier l'état de santé au cours de certaines périodes d'une population donnée. La présente étude visait à évaluer la taille et l'IMC des élèves des deux sexes, âgés de 9 et 14 ans. L'échantillon était composé de 1522 étudiants des deux sexes, les âges 9-14 ans, avec 745 hommes et 777 femmes, choisies au hasard parmi les étudiants dûment inscrits dans quatre écoles dans les écoles urbaines municipales de Arapiraca - AL, en 2010. La collecte de données a été utilisée: une toise et balance Sanny ® Techline ® BAL-150Pa. Les résultats ont été obtenus à partir des tableaux des règlements proposés par l'OMS (2007) et les points de coupe suggérées par Cole et al. (2000). Pour le traitement des données statistiques utilisées était de tendance centrale et de dispersion des valeurs (moyenne et écart type). Les résultats montrent que tant la taille, l'IMC des garçons et des filles sont dans les limites normales. Nous concluons que la stature à la fois, comme les hommes, les élèves IMC et les femmes dans cette étude étaient dans les limites normales.

MOTS-CLÉS: taille, l'IMC, l'école.

CRECIMIENTO Y CHORRO IMC DE LA ESCUELA DE 9 A 14 AÑOS DE LA ZONA URBANA DE LA CIUDAD DE ARAPIRACA-AL.

RESUMEN

El control de la altura y el IMC son indicadores importantes de la calidad de vida, y le permiten comprobar el estado de salud durante ciertos períodos de una población dada. El presente estudio tuvo como objetivo evaluar la estatura y el IMC de los escolares de ambos sexos entre las edades de 9 y 14 años. La muestra estuvo constituida por 1522 estudiantes de ambos sexos, con edades 9-14 años, con 745 varones y 777 mujeres, elegidos al azar entre los estudiantes debidamente matriculados en cuatro escuelas de las escuelas urbanas municipales de Arapiraca - al, en 2010. La recolección de datos se utilizó: un estadiómetro y Sanny equilibrio Techline ® ® BAL-150Pa. Los resultados se obtuvieron a partir de tablas regulaciones propuestas por la OMS (2007) y los puntos de corte de Cole et al. (2000). Para el tratamiento de los datos fue estadísticas utilizadas de tendencia central y dispersión (valores de media y desviación estándar). Los resultados demuestran que tanto la estatura, el índice de masa corporal de los alumnos y alumnas se encuentran dentro de los límites normales. Llegamos a la conclusión de que tanto la estatura como los machos de los estudiantes IMC y mujeres en este estudio se encontraban dentro de los límites normales.

PALABRAS CLAVE: Altura, el IMC, La Escuela.

CRESCIMENTO ESTATURAL E IMC DE ESCOLARES DE 9 A 14 ANOS DA ZONA URBANA DO MUNICÍPIO DE ARAPIRACA – AL.

RESUMO

O monitoramento da estatura e do IMC são importantes indicadores de qualidade de vida, além de possibilitar que se verifique o estado de saúde ao longo de determinados períodos de uma dada população. O presente estudo teve como objetivo avaliar a estatura e o IMC de escolares de ambos os sexos com a idade entre 9 e 14 anos. A amostra foi constituída de 1522 escolares de ambos os sexos, com a faixa etária de 9 a 14 anos, sendo 745 do sexo masculino e 777 do sexo feminino, escolhidos aleatoriamente entre alunos devidamente matriculados em quatro escolas da zona urbana na rede municipal de ensino de Arapiraca – AL, no ano de 2010. Para coleta dos dados utilizou-se: um estadiômetro Sanny® e balança Techline BAL-150PA®. Os resultados foram obtidos a partir das tabelas normativas propostas pela OMS (2007) e dos pontos de corte sugeridos por Cole et al. (2000). Para o tratamento dos dados foi utilizada a estatística de tendência central e valores de dispersão (média e desvio padrão). Os resultados demonstram que tanto a estatura, quanto o IMC dos escolares do sexo masculino e do sexo feminino se encontram dentro do padrão de normalidade. Conclui-se que tanto a estatura, quanto o IMC dos escolares do sexo masculino e do sexo feminino do presente estudo se encontram dentro do padrão de normalidade.

PALAVRAS-CHAVES: Estatura; IMC; Escolares.