(e) ISSN Online: 2321-9599

(p) ISSN Print: 2348-6805

ORIGINAL ARTICLE

EVALUATION OF NUTRITIONAL STATUS AMONG OVERWEIGHT CHILDREN

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ABSTRACT:

Background: An important step during childhood and adolescence is monitoring of nutritional status. It serves as a cord of the healthcare system. Various school health programs should be initiated to determine the nutritional status amongst children. The aim of the present study was to assess nutritional status amongst overweight children. **Materials and methods:** The present epidemiological cross sectional study was carried out in the Institute, State during a period of 1 year (June 2014- June 2015). The following data was compiled for each student it included age, gender, weight, height and body mass index. The nutritional status of the over-weight and obese children were assessed based on their age and sex. Z score which was less than or equal to -2 was taken as underweight, score between -2 to 1 was considered as adequate and score more than 1 was taken as overweight. For assessing the growth of adolescents Anthro Plus 2007 software was used. Descriptive Statistics was used to classify the nutritional status. **Results:** A total of 910 adolescents took part in this cross sectional study. There were 60.4% students (n=550) who were less than 10 years and 29.1% adolescents (n=265) were between 10-15 years. Approximately 10.4% adolescents (n=95) were more than 15 years of age. Majority of adolescents were males (51.6%) and rest 48.3% (n=440) were females. Only 1.5% adolescents who were less than 10 years were malnourished. Majority of the subjects (76.2%) in this age group had normal weight. There were 22.3% (n=123) adolescents of this group who were overweight. Major group of overweight children (36.8%) were more than 15 years of age. **Conclusion:** From the above study we can conclude that there are still certain proportions of children that are overweight. Educating children about balanced diet can be an asset in reducing their count. In our study, There were 8.1% adolescents who were height deficient (n=81) and majority of them had adequate height (91.1%).

Keywords: Adolescents, malnourished, obesity.

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This article may be cited as: Pishrody IK. Evaluation of nutritional status among overweight children. J Adv Med Dent Scie Res 2017;5(9):50-52.

Access this article online	
Quick Response Code	Website: www.jamdsr.com
	DOI: 10.21276/jamdsr.2017.5.9.11

INTRODUCTION

An important step during childhood and adolescence is monitoring of nutritional status. It serves as a cord of the healthcare system. It can help in monitoring the growth and development, helps in detection and analysis of risk factor for various health issues and determination of associated morbidity and mortality.[1,2] A household budget survey conducted in Brazil during a period of 2008-2009, showed that 68% of children had growth retardation.[3]But now days various studies have shown that there is increased prevalence of overweight children and it has overpowered malnutrition amongst different age groups and demographic strata. This leads to significant increase in the risk of non communicable diseases which are earlier in onset.[4,5]

In recent years various assessment protocols have been developed and BMI (body mass index) which is obtained from various national studies using different methods has been used as indicator.[6-8] Since children and adolescents represent future of the nation and these most prone to diseases, therefore they are good indicator for evaluating nutritional disorders in general population.[9] Various different kind of references have been used to establish nutritional disorders amongst children. Various school health programs should be initiated to determine the nutritional status amongst children. The aim of the present study was to assess nutritional status amongst overweight children.

MATERIALS AND METHODS

The present epidemiological cross sectional study was carried out in the Institute, State during a period of 1 year (June 2014- June 2015). In this year a total of 1120 students enrolled in the Batch. Out of these there were 210 students who could not continue the study because of their own reasons. Therefore, this study enrolled 910 students. These students were majorly adolescents. The following data was compiled for each student it included age, gender, weight, height and body mass index. The nutritional status of the over-weight and obese children were assessed based on their age and sex. Body weight of the children was measured on a digital scale that varied

from 0 to 150 Kgs and height was measured from a scale that was fixed to a wall that ranged from 0 to 200 cm. from this body mass index was calculated as body weight divided by height in m^2. The nutritional status was assessed using BMI/ age index which diagnosis growth delay and excess weight. Z score which was less than or equal to -2 was taken as underweight, score between -2 to 1 was considered as adequate and score more than 1 was taken as overweight. For assessing the growth of adolescents Anthro Plus 2007 software was used. Descriptive Statistics was used to classify the nutritional status.

RESULTS

A total of 910 adolescents took part in this cross sectional study. There were 60.4% students (n=550) who were less than 10 years and 29.1% adolescents (n=265) were between 10-15 years. Approximately 10.4% adolescents (n=95) were more than 15 years of age. Majority of adolescents were males (51.6%) and rest 48.3% (n=440) were females. There were 8.1% adolescents who were height deficient (n=81) and majority of them had adequate height (91.1%). There were 1.9% adolescents (n=18) who were malnourished and 73.8% (n=672) had normal weight. Only 24.2% (n=220) were overweight (Table 1).

Table 2 shows the nutritional status according to body mass index. Only 1.5% adolescents who were less than 10 years were malnourished. Majority of the subjects (76.2%) in this age group had normal weight. There were 22.3% (n=123) adolescents of this group who were overweight. Major group of overweight children (36.8%) were more than 15 years of age. There were 73.9% adolescents (n=196) of 10-15 years of age had normal weight. One of 12 males and 6 females were malnourished. There were 110 males and females who were overweight. There were 74.1% males and 73.6% females who had normal weight.

Table 1: Characteristics according to age, gender and nutritional status

VARIABLE	FREQUENCY	PERCENTAGE
Age		
<10 years	550	60.4
10-15 years	265	29.1
>15 years	95	10.4
Gender		
Male	470	51.6
Female	440	48.3
Height/age		
Height deficient	81	8.9
Adequate height	829	91.1
BMI/age		
Malnutrition	18	1.9
Normal weight	672	73.8
Overweight	220	24.2

Table 2: Nutritional status according to body mass index

VARIABLE	n	NUTRITIONL STATUS						P value
		malnutrition		Normal weight		Overweight		
Age		n	%	n	%	n	%	
<10 years	550	8	1.5	419	76.2	123	22.3	>0.05
10-15 years	265	7	2.6	196	73.9	62	23.3	
>15 years	95	3	3.2	57	60	35	36.8	
Gender								
Male	470	12	2.5	348	74.1	110	23.4	>0.05
Female	440	6	1.4	324	73.6	110	25	

DISCUSSION

There are still no standard criteria developed to accurately determine the nutritional status. Various controversies still exist regarding the reference values and the cut off limit to be used.[10-12] In a study conducted by O'Neil et al[13] amongst 596 Irish children who were aged between 5 to 12 years they observed an increased prevalence of overweight children in the entire group. The criteria followed were given by Centre of Disease control[14] and International Obesity task force criteria[15]. In our study, only 1.5% adolescents who were less than 10 years were malnourished. Majority of the subjects (76.2%) in this age group had normal weight. There were 22.3% (n=123) adolescents of this group who were overweight. Major group of overweight children (36.8%) were more than 15 years of age. There were 73.9% adolescents (n=196) of 10-15 years of age had normal weight. One of 12 males and 6 females were malnourished. There were 110 males and females who were overweight. There were 74.1% males and 73.6% females who had normal weight. There was more number of female adolescents who were overweight. This study was in accordance with the study conducted by Vieira et al[16] and Guedes et al[17]. They conducted a study to determine the prevalence of overweight children and adolescents and found that predominately females were overweight.

In a study conducted by Wang and Wang[18] who used the criteria given by Cole et al[7] and Must et al[19] and found similar results for overweight adolescents. Therefore criteria for comparing the results for obesity should be chosen with care and proper pilot study. In a study conducted by Chinn and Rona[20], who assessed obesity amongst children aged between 4 to 11 years, found that during a ten year period the prevalence of obesity increases. In large city excess weight amongst adolescents may be due to lifestyle changes and these changes are also gaining popularity amongst small town children.[4] In our study the prevalence of obesity increases with age and in a study conducted by Lindsay et al[21] and Chagas et al[22] showed that obese adolescents have increased chances of being obese adults. Children of this age group are increasingly adopting sedentary lifestyles and are becoming a couch potato. They are greatly influenced by peer and media. There are a few drawbacks of our study. These include a smaller sample size. Students of different schools should be enrolled and nutritional status of different geographic area should be compared so as we are able to compare the geographic variations in the nutritional status. BMI varies with height and height varies amongst gender. This variation was not taken into consideration in our study.

CONCLUSION

From the above study we can conclude that there are still certain proportions of children that are overweight. Educating children about balanced diet can be an asset in reducing their count. In our study, There were 8.1% adolescents who were height deficient (n=81) and majority of them had adequate height (91.1%). There were 1.9% adolescents (n=18) who were malnourished and 73.8% (n=672) had normal weight. Only 24.2% (n=220) were overweight.

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Source of support: Nil **Conflict of interest:** None declared