National Journal of Physiology, Pharmacy and Pharmacology

RESEARCH ARTICLE

A study on the prevalence of childhood obesity in private schools of Kurnool city population

Sailaja M V[1], Amarnath K[1], Narsing Rao B[2]

[1]Department of Physiology, Viswabharathi Medical College, Kurnool, Andhra Pradesh, India, [2]Department of Physiology, Sri Venkata Sai Medical College, Mahabubnagar, Telangana, India

Correspondence to: Amarnath K, E-mail: vmc.faculty@gmail.com

Received: May 11, 2018; **Accepted:** January 01, 2018

ABSTRACT

Background: Excessive energy intake and reduced physical activity are worldwide accepted contributing factors for childhood obesity. **Aims and Objectives:** The objective of this study was to study the prevalence of childhood obesity. **Materials and Methods:** A total of 50 healthy children between the age group of 10 and 15 years were selected from private schools in Kurnool city. Schools were selected based on simple random sampling method. The height was measured using stadiometer with an accuracy of 0. 1 mm. Weight was recorded using a weighing machine, calibrated to 0.5 kg accuracy. Body mass index (BMI) was calculated based on the formula. Children were categorized based on BMI as per the NCHS guidelines with respect to their age and sex. 25 children with BMI < 85th percentile for their corresponding age and sex were considered as non-obese (controls) and 25 children with BMI >95th% for their corresponding age and sex were considered as obese. 15 male children and 10 female children students of both obese group and control group are considered in the present study for better correlation. **Results:** The average height, weight, and BMI of obese children are highly significant when compared to the normal children in the present study. Significantly higher values of average height, weight, and BMI of obese children of the ages of 10–11, 12–13, and 14–15 years were more when compared to the normal children of same age group were noted. **Conclusion:** Health campaigns in schools to assess schoolchildren height, weight, and BMI to checkout childhood obesity for better prospective of child health.

KEY WORDS: Body Mass Index; Height; Obesity; Weight

INTRODUCTION

Childhood obesity is associated with poorer gross motor development and is more prone to orthopedic problems.[1] Multiple health risks are associated with overweight and obesity in children. Childhood obesity that develops in or persists into adolescence is not only the most difficult to treat but also associated with the greatest risk of serious complications.[2] Body mass index (BMI) also correlates with markers of secondary complications of obesity, including current blood pressures, blood lipids and with long-term mortality.[3] During prepubertal years, obese children present higher growth velocity and accelerated bone age compared to lean subjects.[4,5] The current study was planned to study the prevalence of childhood obesity in private school children of Kurnool city and correlated with normal children.

Access this article online	
Website: www.njppp.com	Quick Response code
DOI: 10.5455/njppp.2018.8.0519201062018	

MATERIALS AND METHODS

A total of 50 healthy children between the age group of 10 and 15 years were selected from private schools in

Kurnool city. Schools were selected based on simple random sampling method. The study was conducted after taking clearance from Kurnool Medical College Ethical Committee. Schoolchildren, <10 years and >15 years, diagnosed to be obese due to endogenous causes, with endocrine disorders are excluded in the present study. Anthropometric measurements such as height and weight were taken to those children aged 10–15 years who are interested and for whom consent is taken either from warden or parent after explaining the procedure clearly. The age of the children was obtained from the school records. The height was measured by making the child to stand upright, barefoot on the ground with heels, buttocks and shoulder touching the wall, and head facing ahead. The height was measured using stadiometer with an accuracy of 0.1 mm. Weight was recorded using a weighing machine, calibrated to 0.5 kg accuracy. BMI was calculated based on the formula. Children were categorized based on BMI as per the NCHS guidelines with respect to their age and sex. 25 children with BMI <85th % for their corresponding age and sex were considered as non-obese (controls) and 25 children with BMI> 95th % for their corresponding age and sex were considered as obese. 15 male children and 10 female children students of both obese group and control group are considered in the present study for better correlation.

RESULTS

The average height, weight, and BMI of obese children are significantly higher when compared to the normal children in the present study [Table 1]. In 10–11 years age group, the average height of five obese children is more when compared to the normal children of same age group. The average height of eight obese children in the age group of 12–13 years is more when compared to the normal children of same age group. The average height of 12 obese children in the age group of 14–15 years is more when compared to the normal children of same age group. A higher significance of average Height of Obese Children of the ages of 10-11, 12-13 and 14-15 years was noted compared to Controls of the same age group in the present study [Table 2]. We have also noted significantly higher values of average weight of obese children of the ages of 10–11, 12–13, and 14–15 years were more when compared to the normal children of same age group [Table 3], and average BMI of obese children of the ages of 10–11, 12–13, and 14–15 years was more when compared to the normal children of same age group was noted in the present study [Table 4].

Table 1: Distribution of study sample and their average height, weight, and BMI

Parameters	Obese	Normal	*t* value	*P* value
Height	1.5516±0.069623	1.4558±0.08143	4.424242	0.000056*
Weight	68.44±8.817974	35.2±4.21307	17.00646	0.00001*
BMI	28.4±2.27303	16.14±1.31909	22.37397	0.00001*

*Significant *P* value, BMI: Body mass index

DISCUSSION

BMI is a simple and convenient method for the measurement of obesity in children and adult.[6] The obese children have greater caloric input and positive nitrogen balance, leading to the release of growth hormone and promotion of linear growth which is in agreement with results of our study. The average weight and BMI are significantly higher in obese children compared to normal children in our study in agreement with previous study.[7] The association between dietary patterns and child weight status may depend on child characteristics such as age, gender, rate of growth, and familial susceptibility to weight gain. High BMI for age is associated with increased body fat, metabolic risk factors, and high levels of adult BMI.[8,9] Direct relationship between height and BMI among 5–18-year-old children suggested that height and adiposity are strongly correlated in children, especially in those under 12 years of age and also stated that the prevalence of obesity was significantly greater among taller children of the same age.[10,11] Improved nutrition due changes in diet and physical activity, in conjunction with a decreased prevalence of infections, has contributed synergistically to improving linear growth.[12] Obesity and height are generally not associated in adults whereas having positive association consistently in childhood.[11,13-15] The association between tallness and excess weight can be explained by the increased hormonal and skeletal maturation, leading to faster linear growth in childhood and earlier puberty.[16] The average weight and BMI in obese children among the age group of 10–11, 12–13, and 14–15 years are significantly increased in our study correlating with the previous study.[17] High BMI in childhood markedly enhances the risks of cardiovascular diseases once they become adults.

Table 2: Age wise distribution and mean height of study sample

Age	Height				*t* value	*P* value
	Obese		Normal			
	Sample	Mean±SD	Sample	Mean±SD		
10–11	5	1.478±0.05630	5	1.352±0.063796	3.31120	0.01067*
12–13	8	1.545±0.06886	8	1.47±0.048989	2.50998	0.02498*
14–15	12	1.58666±0.05069	12	1.49166±0.070817	3.77868	0.00103*

*Significant *P* value. SD: Standard deviation

Table 3: Age wise distribution and mean weight of study sample

Age	Weight				*t* value	*P* value
	Obese		Normal			
	Sample	Mean±SD	Sample	Mean±SD		
10–11	5	58.2±9.47101	5	29±2.738612	6.62269	0.00016*
12–13	8	68.125±7.14017	8	35.5±1.772810	12.5428	0.0000001*
14–15	12	72.9166±5.91543	12	37.58333±3.203927	18.1940	0.0000001*

*Significant *P* value. SD: Standard deviation

Table 4: Age wise distribution and mean BMI of study sample

Age	BMI				*t* value	*P* value
	Obese		Normal			
	Sample	Mean±SD	Sample	Mean±SD		
10–11	5	27±3.674234	5	16±0	6.69438	0.00015*
12–13	8	28.375±1.187734	8	16.5±0.755928	23.8567	0.0000001*
14–15	12	29±2.044949	12	17±1.758098	15.4142	0.0000001*

*Significant *P* value, BMI: Body mass index. SD: Standard deviation

CONCLUSION

Our study suggests that need of conducting health campaigns in schools to assess schoolchildren height, weight, and BMI to checkout those who are prone to childhood obesity for better prospective of child health.

ACKNOWLEDGMENT

The authors are also grateful to authors, editors, and publishers of all those articles, journals, and books from where the literature for this article has been reviewed and discussed.

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How to cite this article: Sailaja MV, Amarnath K, Rao BN. A study on the prevalence of childhood obesity in private schools of Kurnool city population. Natl J Physiol Pharm Pharmacol 2018;8(9):1302-1304.

Source of Support: Nil, **Conflict of Interest:** None declared.