

Prevalence of overweight and obesity among upper primary school children of Sangareddy district: A cross-sectional study

Sowmithri M L¹, Kishore Babu Mathi^{2*}, Akshay Salgar³, Nagaiah⁴

^{1,2}Assistant Professor, ³Associate Professor, ⁴Professor, Department of Community Medicine, MNR Medical College, Sangareddy, Telangana 502285, INDIA.

Email: kish.mbbs@gmail.com, sowmithrimudundi@gmail.com

Abstract

Background: Obesity in childhood and adolescence has been related to an increase in mortality in adulthood on follow up. Due to difficulty in the treatment of obesity in adults and the many long-term adverse effects of childhood obesity, prevention of childhood obesity has now been recognized as a public health priority. **Objective:** To determine the prevalence of overweight and obesity among upper primary school children. **Material and Methods:** The present study was a cross sectional study undertaken to determine prevalence of overweight and obesity in upper primary school children. The study was done in 4 schools, which were selected randomly in an urban area of Sangareddy during study period of June 2014-May 2015. A total sample size of 1150 children studying in class 5th to 7th, from the selected schools were included in the study population. Children having some endocrinal abnormalities associated with obesity were excluded from study. The study was approved by the Ethical Committee of the Medical College. Permission was obtained from the authorities of local school. The questionnaire was pre-tested and validated during the pilot study. The recording of all the anthropometric measurements were done with guidelines issued by the World Health Organization.⁹ The international cut off points recommended by IOTF(International Obesity Task Force)¹⁰for body mass index were used for classifying children as overweight and obese. Data analysis was done with the help of SPSS version 22 **Results:** The most of the children were from the age group of 11(34.44%) and 12(33.67%) years. Range was 9-14 years. The prevalence of obesity among children was 1.44% and overweight was 8.54%. **Conclusion:** There is a need to establish effective prevention and health promotion programmes to maintain healthy weights and avoiding complications associated with obesity.

Key Words: IOTF, Obesity, overweight.

*Address for Correspondence:

Dr. Kishore Babu Mathi, Assistant Professor, Department of Community Medicine, MNR Medical College, Sangareddy, Telangana 502285, INDIA.

Email: kish.mbbs@gmail.com

Received Date: 08/06/2018 Revised Date: 18/07/2018 Accepted Date: 03/08/2018

DOI: <https://doi.org/10.26611/1011721>

Access this article online

Quick Response Code:



Website:

www.medpulse.in

Accessed Date:
08 August 2018

INTRODUCTION

Obesity has become a colossal epidemic causing serious public health concern and contributes to 2.6 million

deaths worldwide every year.¹ Obesity is associated with an increased risk of morbidity and mortality as well as reduced life expectancy. The last two decade of previous century have witnessed dramatic increase in health care cost due to obesity and related issues among children and adolescents.² Once considered a high-income country problem, overweight and obesity are now on the rise in low- and middle-income countries, particularly in urban settings. Close to 35 million overweight children are living in developing countries and 8 million in developed countries.³ There are numerous psychological, physical and economic consequences of obesity. Childhood obesity affects self-esteem and has negative consequences on the cognitive and social development.⁴ Conditions

such as type 2 diabetes mellitus, hypertension and hypercholesterolemia, which were noted primarily in adults, are becoming more common among children with the increase in the prevalence of obesity.⁵ India is in the midst of rapidly escalating epidemic of type2 diabetes mellitus and coronary heart disease (C.H.D.). Indians as an ethnic group are particularly at high risk for insulin resistance and central obesity both forerunners for C.H.D. and life style disorders.⁶ Obesity in childhood and adolescence has been related to an increase in mortality in adulthood on follow up. Hoffman *et al* observed almost twice the risk of death in adolescents (> 18 year olds) with BMI > 25 kg/m²(compared to subjects with BMI <25kg/m²) during 20 year follow up.⁷ Due to difficulty in the treatment of obesity in adults and the many long-term adverse effects of childhood obesity, prevention of childhood obesity has now been recognized as a public health priority.⁸ With this background in mind, the present study was undertaken to know the prevalence of overweight and obesity in upper primary school children.

MATERIAL AND METHODS

The present study was a cross sectional study undertaken to determine prevalence of overweight and obesity in upper primary school children. The study was done in 4 schools, which were selected randomly from the list of all schools in an urban area during study period of June 2014 - May 2015. The study population was school children from 5th to 7th standard from the randomly selected schools of urban area of Sangareddy. A total sample size of 1150 children studying in class 5th to 7th, from the selected schools were included in the study population. All the upper primary school children studying in the schools and present on the day of examination were included and children having some endocrinal abnormalities associated with obesity were excluded from study. The study was approved by the Ethical Committee of the Medical College. Permission was obtained from the authorities of local school. The questionnaire was pre-tested and validated during the pilot study. The questionnaire used to record the data regarding the various socio-demographic variables, various influencing factors with respect to obesity and the values of the anthropometric measurements. The recording of all the anthropometric measurements were done with minimum clothes without shoes and was conducted on the guidelines issued by the World Health Organization.⁹ The international cut off points recommended by IOTF(International Obesity Task Force)¹⁰ for body mass index were used for classifying children as overweight and obese. If BMI analogue for age and sex is 25 kg/m² and more but less than 30 kg/m², then the child is overweight and BMI analogue for age and sex is 30 kg/m²

and more, then the child is obese. Percentages, mean, Chi-square test, univariate analysis was done with the help of SPSS version 22.

RESULTS

Table 1: Distribution of Children According to their Age and Sex Composition

Age group (years)	Male (%)	Female (%)	Total (%)
9	4 (0.62%)	5 (15.55%)	9 (1.13%)
10	154 (23.54%)	137 (14.60%)	291 (25.94%)
11	250 (38.23%)	157 (15.87%)	407 (29.63%)
12	197 (30.12%)	201(20.63%)	398 (38.06%)
13	49 (7.49%)	23 (17.14%)	72 (4.3%)
14	0 (0%)	5 (16.19%)	5 (0.94%)
Total	654(100%)	528 (100%)	1182 (100%)

The most of the children were from the age group of 11(34.44%) and 12(33.67%) years. Range was 9-14 years.

Table 2: Distribution of Children According to their Body Mass Index

Body Mass Index	No. Of Children	Percentage (%)
Underweight	476	40.28
Normal	588	49.74
Overweight	101	8.54
Obese	17	1.44
Total	1182	100

Out of 1182, the total number of obese children were 17 (1.44%) and number of overweight children were 101 (8.54%). Percentage of underweight children was 40.28%.

Table 3: Distribution of Children According to their Sex and Body Mass Index

Sex	BMI			TOTAL
	<25	25-29.99 (OVERWEIGHT)	≥30 (OBESE)	
Female	478 (90.53%)	43 (8.14%)	07 (1.33%)	528 (100)
Male	586 (89.60%)	58 (8.87%)	10 (1.53%)	654 (100)
Total	1064 (90.02%)	101 (8.54%)	17 (1.44%)	1182 (100)

(X² value= 0.28, D.F. =1, p>0.05 (Not Significant)

The combined Proportion of overweight and obesity was more among male population (10.40%) as compared to females (9.47%). There was no statistical difference between sex of the children and their BMI.

Table 4: Distribution of Children According to their Age and Body Mass Index

Age group (in years)	BMI			TOTAL
	<25	25-29.99 (OVERWEIGHT)	≥30 (OBESE)	
9-11	640 (90.52%)	56 (7.93%)	11 (1.55%)	707 (100)
12-14	424 (89.26%)	45 (9.47%)	06(1.27%)	475 (100)
Total	1064 (90.02)	101 (8.54)	17 (1.44)	1182 (100)

χ^2 value= 0.5, D.F.=1, $p>0.05$ (Not Significant)

The percentage of obese children was slightly more in the age group 9-11 years (1.55%) as compared to others. Overweight children were more in 12-14 years age group (9.47%) Difference between them is not significant ($p>0.05$)

DISCUSSION

The present cross-sectional study was conducted to study the prevalence of childhood obesity and overweight among the study population. The distribution of children was almost similar in all the standards. Most of the children were from age group of 10-12 years. Mean age was 11.2 ± 0.92 years. Out of 1182 children 654 (55.32%) were males and 528 (44.68%) were females. These findings were consistent with the study done by Premanath *et al*¹¹ in Mysore, there were 54.5% were males and 46.1% were females. Similar findings were observed in a study by Kurian *et al*¹², where out of total children 54% were males and 46% were females. In the school children studied, the prevalence of overweight was 8.54% and obesity was 1.44%. Similar results were seen by Mishra A *et al*¹³ (2.8%), Avula Laxmaiah *et al*¹⁴ (1.6%), Mahajan *et al*¹⁵ (2.12%), Kotian *et al*¹⁶ (4.4%) and Bharati *et al*¹⁷ (1.2%) Prevalence of obesity in our study was 1.44%, similar results were seen by Mishra A *et al*¹³ (2.8%), Avula Laxmaiah *et al*¹⁴ (1.6%), Mahajan *et al*¹⁵ (2.12%), Kotian *et al*¹⁶ (4.4%) and Bharati *et al*¹⁷ (1.2%) The widely differing prevalence of overweight and obesity was due to different definitions used, age groups and sex taken for the study, area selected and methodology used. It was also found that the prevalence of obesity was more among male population (1.53%) as compared to that in females (1.33%). Though the difference was not significant. In a study by Bharati *et al*¹⁷ at Wardha city, the proportion of overweight/obesity was 4.4 and 4.3 per cent among boys and girls respectively, but the difference was not significant ($p=0.84$) The finding was also comparable with a study by Kapil *et al*¹⁸ carried out at Delhi where percentage of males was more (8.3%) as compared to female (5.5%). In contrast to our study Kumar *et al*¹⁹ found that percentage of obese females (8.82%) was more than males (5.59%).

In a study by Kotian *et al*¹⁶ from south Karnataka it was found that prevalence of overweight and obesity was more in girls (10.5%) than boys (9.3%) and this difference was not significant ($p=0.72$). The combined prevalence of overweight and obese children was more in the age group of 12-14 years (10.74%) as compared to 9-11 years age group (9.48%). Difference between them is not significant ($p>0.05$) indicating that there is no statistical association of age with the prevalence of obesity and overweight among the upper primary school children. This may be because our study population is mainly from age of 10-12 years. In a study by Kapil *et al*¹⁸ conducted at Delhi in age group of 10-16 years it was found that maximum prevalence of obesity was in the pubertal age group 10-12 years. In another study by Premnath *et al*¹¹ carried out in children of 5-16 years, it was found that the prevalence of obesity was maximum in the age group of 5-7 years and it was decreased as the age advanced from 5-16 years. In a study conducted by S. Kumar *et al*¹⁹ it was observed that prevalence was higher among children of higher age group as compared to younger ones. Unnithan *et al*²⁰ also found greater prevalence of obesity in 14 and 15 years age group as compared to that among 10 and 11 year age group.

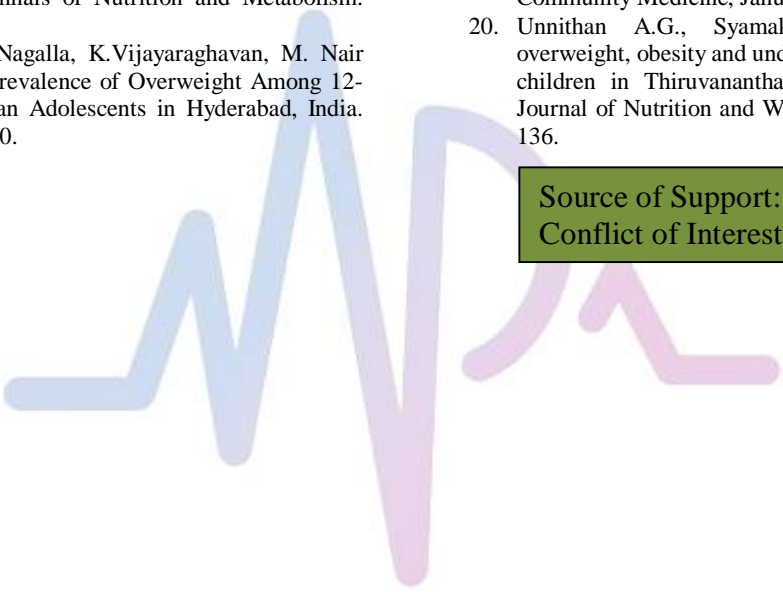
CONCLUSION

The present study revealed a high prevalence of overweight (8.54%) among upper primary school children. Hence, there is a need to establish effective prevention and health promotion programmes to maintain healthy weights and avoiding complications associated with obesity.

REFERENCES

1. World Health Organization. Preventing chronic diseases: A vital investment. World Global Report, Geneva: 2005: 199-205.
2. Wang G, Dietz WH. Economic burden of obesity in youths aged 6 to 17 years: Pediatrics 2002; 109: E81-1.
3. World health organization, global strategy on diet, physical activity and health, childhood overweight and obesity. 2012
4. Must A, Strauss RS. Risk and consequences of childhood and adolescent obesity. International Journal of Obesity Related Metabolic Disorder 1999; 23: 2-11.
5. Deitz WH. Overweight in childhood and adolescence. New England Journal of Medicine 2004; 350:855-7.
6. Vijaya Raghavan K, Singh Darshan, Swaminathan MC, Height and Weight of Well-nourished Indian School Children. Indian Journal of Medical Research 1971;59(4): 648-654.
7. Hoffmans MDAF, Kromhout D, de Lezenne Coulander C. The impact of body mass index of 78,612, 18-year-old Dutch men on 32-year mortality from all causes. J Clin Epidemiol. 1988; 41:749-756.

8. Park K: Park's Textbook of Preventive and Social Medicine: Banarsidas Bhanot Publishers, 20th Edition, 2011; 345-349.
9. WHO Expert Committee. Physical status: The use and interpretation of anthropometry. WHO Technical Report Series, No.854: 439-452.
10. T. J. Cole, M. C. Bellizzi, K. M. Flegal, and W. H. Dietz, "Establishing a standard definition for child overweight and obesity worldwide: international survey," British Medical Journal 2000; 320(7244):1240-1243.
11. M Premanath, H Basavana Gowdappa, M.A Shekar, S.B. Vikram, D Narayanappa Mysore Childhood Obesity Study, Indian pediatrics.2010; 47 (2):171-73.
12. Kuriyan R, Bhat S, Thomas T, Vaz M and Kurpad AV. Television viewing and sleep are associated with overweight among urban and semi-urban South Indian children. Nutrition Journal, Sep 2007; 6:25.
13. Misra A, Shah P, Goel K, Hazra DK, Gupta R, Seth P, The high burden of obesity and abdominal obesity in urban Indian schoolchildren: a multicentric study of 38,296 children. Annals of Nutrition and Metabolism. 2011; 58:203-11
14. Avula Laxmaiah, B. Nagalla, K. Vijayaraghavan, M. Nair Factors Affecting Prevalence of Overweight Among 12- to 17-year-old Urban Adolescents in Hyderabad, India. 2007; 15 (6):1384-90.
15. Preetam B Mahajan, Anil J Purty, Zile Singh, Johnson Cherian, Study of childhood obesity among school children aged 6 to 12 years in union territory of Puducherry. Indian journal of community medicine 2011, 36(1):45-50
16. Kotian M, Kumar G, Kotian SS. Prevalence and Determinants of Overweight and Obesity Among Adolescent School Children of South Karnataka. Indian Journal of Community Medicine, January 2010; 35:176-178
17. D.R. Bharati, P.R. Deshmukh and B.S. Garg, Correlates of overweight and obesity among school going children of Wardha city, Central India Indian J Med Res June 2008; 127: 539-543
18. Kapil U, Singh P, Pathak P, Dwivedi SN, Bhasin S.: Prevalence of obesity among Affluent adolescent school children in Delhi. Indian Pediatrics: 2002; 39: 449-452.
19. Kumar S, Mahabalaraju DK, Anuroopa MS. Prevalence of Obesity and its influencing factors among affluent school children of Davengere City. Indian Journal of Community Medicine, January 2007; 32:15-17.
20. Unnithan A.G., Syamakumari S. Prevalence of overweight, obesity and underweight among school going children in Thiruvananthapuram, Kerala. International Journal of Nutrition and Well-being, May 2010; 23:132-136.



Source of Support: None Declared
Conflict of Interest: None Declared