Original Article

Pediatric Education and Research
Volume 3 Number 4, October - December 2015

Prevalence of Overnutrition among Late Adolescents

Usha Pranam G.*, Pranam G.M.*, Manjunath G.A.**

*Assistant Professor, **Professor, Department of Paediatrics, Navodaya Medical College, Raichur.

Abstract

Introduction: Childhood obesity is one of the most serious public health challenges of the 21st century. [1]Overweight and obesity among the adolescents is in the rising trend that often begins in childhood. *Materials and Methods:* cross-sectional study carried out over a period of six months, from November 2013 march 2014. 240 adolescents, 16 to 18 years of age, of raichur city, Karnataka, India were included as subject in the study. *Results*: A total of 240 adolescents in the age group of 12 to 18 years were analyzed. Out of these 132 (55%) subjects were males. The mean BMI of the sample was 21.04 ± 2.07 kg / m^2 among boys and 23.25 ± 1.91 kg / m^2 among girls. The prevalence of overweight among adolescents was 13.18% (5.31% among boys and 15.74% among girls) and obesity was overall 1%. *Conclusion*: With this study we would like to place a take home message that the over weight and obesity is highly prevalent among adolescents. The onset of the same is noted as early as in childhood. The late adolescent is the best time for the primary prevention.

Keywords: Adolescents; Overweight; Obesity; BMI.

Introduction

Childhood obesity is one of the most serious public health challenges of the 21st century. The problem is global and is steadily affecting many low- and middle-income countries, particularly in urban settings. [1]Overweight and obesity among the adolescents is in the rising trend that often begins in childhood. Overweight for children is defined as a BMI at or above the 85th and less than the 95th percentile, and obesity is defined as a BMI greater than the 95th percentile for age and gender (NIH, 2012)[2]. Adolescent overweight and obesity is the leading cause of morbidity in adulthood. The prevalence of overweight and obesity have doubled among children and tripled among adolescent over past 30 yrs. (CDC, 2013)[3,4]. The prevalence has increased at an alarming rate. Prevalence varies within the country because of differences in the lifestyle, mainly in the dietary patterns, and physical activity. In addition to this urbanization and industrialization are the main culprits for the increase in the prevalence of childhood and adolescent obesity. No published literature can be found in this part of the country to assess the prevalence and determinants of obesity among adolescents.

Materials and Methods

This study was a community based cross-sectional study carried out over a period of six months, from November 2013 march 2014 . Study sample was calculated with a reference value of 11% of the general

Corresponding Author: Dr. Usha Pranam, C/O Dr G A Manjunath, H.No 5, Bheemaraya Colony, Yeramarus Camp, Raichur-584101 Karnataka

E-mail: drushagowdar@rediffmail.com

adolescent population are overweight in India.. A total of 240 subjects were selected for this study. A multistage stratified random sampling procedure was adopted. colleges were selected by a simple random technique.

The subjects were adolescents, 16 to 18 years of age, of raichur city, Karnataka, India. After reaching the concerned school, the classes were selected randomly. The adolescents were chosed by simple random techinique using student database of the school. The adolescents were weighed using a electronic weighting machine with an error of ±100 g by Trained investigators. The weighing scale was regularly checked with known standard weights. A portable anthropometric rod was used for measuring the height, with an error to the nearest of 0.1 cm, using standard procedures [6]. The BMI was calculated with the standard formula. The WHO reference, BMI for age were used to classify into overweight and obesity. Adolescents were categorized into two groups namely overweight (e" eighty-fifth percentile) and obese (e" ninety-fifth percentile). The socioeconomic status was assessed based on the Kuppuswamy classification. Analysis was done using SSPS version 11.0 . For all statistical tests, $P < 0.05$ was taken as the significant level.

Results

A total of 240 adolescents in the age group of 12 to 18 years were analyzed. Out of these 132 (55%) subjects were males. The mean BMI of the sample was 21.04 ± 2.07 kg/m^2 among boys and 23.25 ± 1.91 kg/m^2 among girls. The prevalence of overweight among adolescents was 13.18% (5.31% among boys and 15.74% among girls) and obesity was overall 1% [Table 1).

Table 1: Table displaying Mean weight and mean height for respective recorded in our study

Age	Sex	n	Mean weight	Mean height	Mean BMI
16 yrs	Male	60	55.98±4.03	166.83±4.60	20.19±1.82
16 yrs	Female	52	58.69 ± 3.40	158.92 ± 3.70	23.28 ± 1.96
17yrs	Male	48	61.70±3.16	169.98±5.18	21.44±1.86
17yrs	Female	35	59.62 ± 5.56	160.37 ± 3.98	23.10 ± 1.89
18yrs	Male	24	62.12±4.46	166.83±4.43	22.37±2.15
18yrs	Female	21	60.90 ± 5.43	161.38 ± 5.07	23.38±1.91

Table 2: Prevalence of overweight and obesity according to its determinants N = 240

Sex	Weight	Height	BMI	Underweight	Normal	Overweight	Obese
Male	59.18 ±4.79	167.98 ± 4.99	21.04 ± 2.07	14 (10.6%)	111 (84.09%)	7 (5.31%)	0 (0%)
Female	59.42 ± 4.65	159.87 ± 4.17	23.25 ± 1.91	1 (0.92%)	89 (82.42%)	17 (15.74%)	1 (0.92%)

Discussion

The overall prevalence of overweight adolescents among the study group was found to be 13.18%, which was consistent with a recent study.(2)[8] However, the National Nutrition Monitoring Bureau surveys in 2002, in rural areas, reported the prevalence of as little as 0.6%. the urban adolescents studied (7.2%) was 10 times higher then that of their rural counterparts[9] However, the prevalence was lower in this study compared with studies carried out in cities such as Ludhiana, Punjab, Pune, Maharashtra, Dehli, Chennai, and Tamil Nadu[13]. A similar study done in Hyderabad showed that the prevalence of overweight was 7.2% among the 12 to 17 year age group[10]. Although, some other studies done in India showed a higher prevalence of overweight and obesity [11-14]. A study in Delhi on affluent school children showed the prevalence of obesity to be 7.4%[15]. Another study among affluent girls in Delhi reported the prevalence of obesity and overweight to be 5.3 and 15.2%, respectively[16]. Similar studies had been conducted to assess the prevalence of overweight and obesity in India and the results are comparable to our study, with respect to the prevalence of obesity[15,17]. A study done in USA during 2001–2002 showed the prevalence of overweight and obesity as 31.5 and 16.5%, respectively, for the 6 to 19 year age group[18]. A clear socioeconomic gradient in the prevalence of overweight and obesity was observed in this study, which was consistent with other studies [10,11,20]. The prevalence was marginally higher among girls compared with boys ($p > 0.05$), as observed in many international studies. The results revealed that regular physical activity was an important factor in reducing the prevalence of overweight and obesity, which was consistent with other studies[10,11]. Overweight and obesity were marginally higher in

the pubertal age group, i.e., 13 to 15 years of age, as was observed in other studies in Delhi[13] and Chennai[13], perhaps because of increased adipose tissue and overall body weight in children during puberty. The prevalence of overweight and obesity were marginally less in the postpubertal period (16 to 17 years of age). It has been reported earlier that the number of fat cells increases during periods of rapid growth up to 16 years of age, after which increased fat ordinarily accumulates by increasing size of the fat cells already present[13]. Freedman et al.[11] showed the adverse effects of overweight in their 17-year follow-up study and reported that an early average increase of 0.5 kg/m^2 of BMI in children increases the risk for hypertension, dyslipidemia, and type 2 diabetes a decade later. It is interesting to note that <"8% of adolescents perceived that they were overweight, which indicates that the self-reporting of obesity could also be a good indicator of the problem. There is an urgent need to educate the urban community on the aspects of healthy food habits and desired lifestyles to prevent overweight/obesity and its associated ill effects.

References

1. http://www.who.int/dietphysicalactivity/childhood/en/.
2. Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of obesity and trends in body mass index among US children and adolescents, 1999-2010. *Journal of the American Medical Association*2012;307(5):483-490.
3. National Center for Health Statistics. Health, United States, 2011: With Special Features on Socioeconomic Status and Health. Hyattsville, MD; U.S. Department of Health and Human Services; 2012.
4. Subramanya V, JayaShree R, Rafi M. Prevalence of overweight and obesity in affluent adolescent girls in Chennai in 1981 and 1998. Indian Pediatr. 2003; 40:332–6.
5. Jelliffee DB. Assessment of nutritional status of the community. Geneva: World Health Organization; 1988.
6. 13. Cole TJ, Bellizzi MC, Flegal KM, Dietz WH. Establishing a standard definition for child overweight and obesity: International survey. BMJ. 2000;320:1–6.
7. Who bmi charts.
8. Aggarwal T, Bhatia RC, Singh D, Sobti PC. Prevalence of obesity and overweight in affluent adolescents from Ludhiana, Punjab. Indian Pediatr. 2008;45:500–01.[PubMed].
9. National Nutrition Monitoring Bureau. Diet and nutritional status of rural population national institute of nutrition. India: Indian Council of Medical Research Hyderabad; 2002.
10. Laxmaiah A, Nagalla B, Vijayaraghavan K, Nair M. Factors affecting prevalence of overweight among 12 to 17 year-old urban adolescents in Hyderabad, India. Obesity (Silver Spring) 2007;15:1384–90. [PubMed].
11. Ramachandran A, Snehalatha C, Vinitha R, Thayyil M, Kumar CK, Sheeba L, et al. Prevalence of overweight in urban Indian adolescent school children. Diabetes Res Clin Pract. 2002;57:185–90. [PubMed].
12. Chatterjee P. India sees parallel rise in malnutrition and obesity. Lancet.2002;360:1948. [PubMed].
13. Kaur S, Kapil U, Singh P. Pattern of chronic diseases amongst adolescent obese children in developing countries. Curr Sci. 2005;88:1052–6.
14. Khadilkar VV, Khadilkar AV. Prevalence of obesity in affluent school boys in Pune.Indian Pediatr. 2004;41:857–8. [PubMed].
15. Kapil U, Singh P, Pathak P, Dwivedi SN, Bhasin S. Prevalence of obesity amongst affluent adolescent school children in Delhi. Indian Pediatr. 2002;39:449–52.[PubMed].
16. Mehta M, Bhasin SK, Agrawal K, Dwivedi S. Obesity amongst affluent adolescent girls. Indian J Pediatr. 2007;74:619–22. [PubMed].
17. Kaneria Y, Singh P, Sharma DC. Prevalence of overweight and obesity in relation to socio economic conditions in two different groups of school age children of Udaipur city (Rajastan) J Indian Assoc Community Med. 2006;7:133–5.
18. Sidhu S, Marwah G, Prabhjot Prevalence of overweight and obesity among the affluent school children of Amritsar, Punjab. Coll Antropol. 2005;29:53–5. [PubMed].
19. Hedley AA, Ogden CL, Johnson CL, Carroll MD, Curtin LR, Flegal KM. Prevalence of overweight and obesity among US children, adolescents and adults. 1999-2002.JAMA. 2004;291:2847–50. [PubMed].
20. Kasmini K. Prevalence of overweight and obesity among school children aged between 7–16 years amongst the 3 major ethnic groups in Kuala Lampur, Malaysia.Asia Pac J Clin Nutr. 1997;6:1724. [PubMed].

Subscription Form

I want to renew / subscribe international class journal **"Pediatric Education and Research"** of Red Flower Publication Pvt. Ltd.

Subscription Rates:

- India: Institutional: Rs.7000, Individual: Rs.6300, Life membership (10 years only for individulas) Rs.63000.
- All other countries: $240

Name and complete address (in capitals):

Payment detail:
Demand Draft No.
Date of DD
Amount paid Rs. / USD

1. Advance payment required by Demand Draft payable to Red Flower Publicaion Pvt. Ltd. payable at Delhi.
2. Cancellation not allowed except for duplicate payment.
3. Agents allowed 10% discount.
4. Claim must be made within six months from issue date.

Mail all orders to
Red Flower Publication Pvt. Ltd.
48 / 41-42, DSIDC, Pocket-II, Mayur Vihar Phase-I, Delhi - 110 091 (India)
Tel: 91-11-22754205, 45796900, Fax: 91-11-22754205
E-mail: redflowerppl@vsnl.net, redflowerppl@gmail.com
Website: www.rfppl.co.in

Special Note!

Please note that our all Customers, Advertisers, Authors, Editorial Board Members and Editor-in-chief are advised to pay any type of charges against Article Processing, Editorial Board Membership Fees, Postage & Handling Charges of author copy, Purchase of Subscription, Single issue Purchase and Advertisement in any Journal directly to Red Flower Publication Pvt. Ltd.
Nobody is authorized to collect the payment on behalf of Red Flower Publication Pvt. Ltd. and company is not responsible of respective services ordered for.