Frequency of overweight/ obesity among school going children of Pakistan

Asmat Abbas Shah[1], Muhammd Younas[1], Asad Muhammad Karim Ali[2], Tehreem Yazdani[2], Wajeeha Saeed Butt[3], Tahira Rafique[4], Najam Akhtar[1]

[1]Department of Pathology, PAF Hospital Islamabad, Pakistan
[2]Department of Pathology, PAF Hospital Sargodha, Pakistan
[3]Department of Pathology, Dow Medical College, Karachi, Pakistan
[4] Department of Pathology, KRL Hospital, Pakistan

ABSTRACT

Objective: To study the association of BMI and lipid profile with fatty liver diagnosed on abdominal Ultrasounds.

Patients and Methods: A descriptive cross sectional study was carried out at PAF Hospital Islamabad & PAF Hospital Sargodha from 1st March 2014 to 30th September 2014. Two hundred seventy seven male children undergoing Central Medical Board for admission in PAF Public School Sargodha were enrolled in the study by non-probability convenience sampling between 11-14 years who were physically fit. Height and weight of each individual was measured & BMI was calculated as; BMI=weight (kg)/height (m)2. Participants were divided into 4 groups on basis of BMI.

Results: Among 277 individuals mean age was 12.9 ±0.9 years. Age range was 11 to 14 years. Average height was 157 ± 6.3 cm and weight was 43±8kg, 21 candidates belonged to rural areas and 256 candidates belonged to urban areas. Maximum candidates 179(64%) belonged to Group1-BMI<18kg/(m)^2, 95(34%) belonged to Group2-BMI18-22.9kg/(m)^2 whereas 3(1%) individuals belonged to Group 3- BMI23-24.9kg/(m)^2 and no individuals belonged to Group 4 BMI >25kg/(m)^2. One candidate was found to be positive for HBsAg, no one had anti HCV or HIV, Fasting blood Glucose was within reference range for all participants, serum Cholesterol was raised only in 1 candidate and Urine Glucose/ Albumin were normal in all candidates.

Conclusion: Frequency of overweight among healthy school going males children of Pakistan is 1% which is quite low.

Key Words: Overweight, Obesity, BMI.

This article can be sited as: Shah AA, Younas M, Ali AMA, Yazdani T, Butt WS, Rafique T, Akhtar N. Frequency of overweight/ obesity among school going children of Pakistan. Pak J Pathol. 2015: 26(3): 76-80.

INTRODUCTION

Overweight and obesity are a global epidemic, with 1 billion overweight people, of whom 300 million are obese, and at least 2.6 million die each year as a result of being overweight or obese[1]. Children and adolescents are worst affected with an estimated 10% of the world's school-going children being overweight and one quarter of these being obese [2,3]. Childhood obesity adversely affects physiological and psychosocial well-being; significantly increases the likelihood for adult obesity; results in non-communicable diseases like diabetes, cardiovascular diseases, osteoarthritis and cancer; and leads to increased mortality and morbidity, heavy health expenditures and reduced social status[4,5,6].

Accurate quantification of body fat is not usually available in clinical practice [7] & quantitative evaluation to detect excess body fat is performed by calculating the body mass index (BMI) by dividing measured body weight in kilograms by the height in meter squares i.e kg/(m2) [8]. It is to be emphasized that in South Asia, including Pakistan, social and environmental changes are occurring rapidly, with increasing urbanization, changing lifestyles, higher energy density of diets, and reduced physical activity [9]. Childhood obesity is determined by factors in the home, school and society and a multidisciplinary approach is needed to prevention [10].

Frequency of overweight/obesity was 8.8% overweight and 2.4% obese among healthy adult males in our population[11]. Anwar A et al have shown high prevalence of obesity and overweight among children in private schools which has direct relationship with decreased physical activity and other factors like watching TV, role of media and lack

Correspondence: Lt Col Muhammad Younas, Classified Pathologist, Combined Military Hospital, Malir, Pakistan.
Email: **muhammadyounas1971@yahoo.com**

Received: ***16 Jun 2015****; Revised:* ***13 Aug 2015****; Accepted:****29 Aug 2015***

of diet control by parents [12]. Martorell R has concluded that childhood obesity has been reported to be the highest in developed countries; however, its prevalence is on a rise in underprivileged societies as well. The prevalence of obesity among children in Pakistan was reported to be 2.6% which is higher as compared to other South Asian countries like India and Thailand where it is relatively low [13]. Jafar TH et al have concluded that the rapidly rising burden of obesity with persistent levels of under nutrition among Indo-Asian children is a unique and complex challenge and represents a major threat to the healthcare services [14].

World Health Organization has recommended different BMI cut-off points for South East Asia because they have more morbidity for any given BMI [15]. International Association for the Study of Obesity and the International Obesity Task Force have suggested lower BMI cutoff values to define overweight (23.0–24.9 kg/m2) and obesity (25.0 kg/m^2 or greater) in Asian populations [16]. Indo-Asian specific definition of obesity is set as BMI ≥ 25 kg/ (m^2) and overweight as BMI ≥ 23 kg/ (m^2) [17]. As obesity during adolescence is predictor of health state in later life & studies about its prevalence are lacking in our setup, so present study was conducted to find out the frequency of overweight and obesity in healthy school going children by measuring their BMI kg/ (m^2) and its correlation with metabolic abnormalities in our setup.

PATIENTS AND METHODS

A descriptive cross sectional study was carried out at PAF Hospital Islamabad & PAF Hospital Sargodha from 1st March 2014 to 30th September 2014. Two hundred seventy seven male children undergoing central medical board for admission in PAF Public School Sargodha were enrolled in the study by non-probability convenience sampling between 11-14 years who were physically fit and had height within their 95th confidence interval. These students were studying in class 7th/8th and were seeking admission in PAF Public School Sargodha.

In order to compute BMI, the height and weight of each individual was measured. For this purpose standardized weighing scales and measuring tapes were used. The formulae utilized during the data collection process are as follows: BMI=weight(kg)/height(m)^2.The cutoff criteria used for the BMI: BMI<18 kg/(m)^2-underweight, 18-22.9 kg/(m)^2-normal weight, 23- 24.9 kg/(m)^2- overweight and ≥ 25 kg/ (m)^2-obese [18]. On the basis of BMI, individuals were divided into four groups as;

Group1-BMI<18kg/(m)^2
Group2-BMI18-22.9kg/(m)^2
Group3-BMI23-24.9kg/(m)^2
Group4-BMI≥25kg/(m)^2

Blood HBsAg, anti HCV, anti HIV, Fasting serum Glucose/ Cholesterol, and Urine Glucose/ Albumin were analyzed.

Statistical analysis: Statistical analysis of data was done by using statistical package for social sciences (SPSS) version 16.0. Descriptive statistics were carried out to summarize the data. Frequency and percentages were calculated for obesity and BP. Mean and standard deviation (SD) was calculated for numerical data including age, height, weight and BMI. Data was compared by student 't' test among different groups. *p* value < 0.05 was considered significant.

RESULTS

Among 277 individuals mean age was 12.9 ± 0.9 years. Age range was 11 to 14 years. Average height was 157 ± 6.3 cm and weight was 43±8kg. Among 277 candidates, 21 candidates belonged to rural areas and 256 candidates belonged to urban areas (Figure-1).

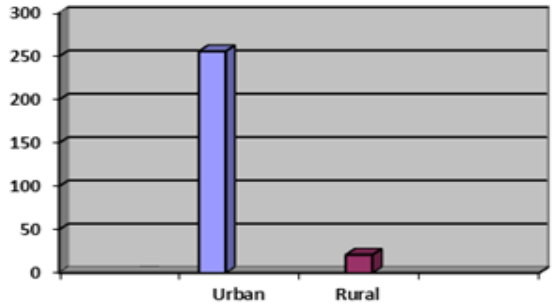

Figure 1: Urban rural distribution of participants (n=277).

Province wise maximum candidates 250(87%) belonged to Punjab. Candidates from Sindh, Khyber Pakhtunkhwa, Kashmir and Northern Areas were 2, 14, 3 and 8 respectively. Maximum candidates 179(64%) belonged to Group 1-BMI<18kg/(m)^2, 95(34%) belonged to Group 2-BMI18-22.9kg/(m)^2 whereas 3 (1%) individuals belonged to Group 3 and no individuals belonged to Group 4 as shown in Figure-2.

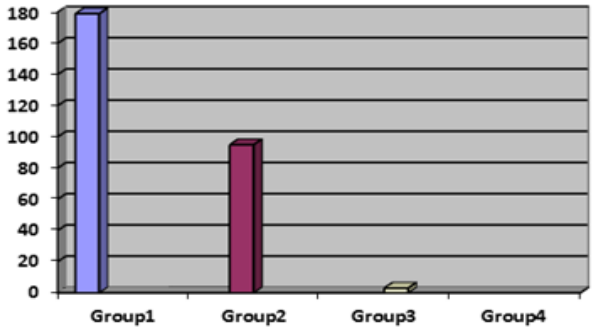

Figure 2: Distribution of participants according to BMI groups (n=277)

One candidate was found to be positive for HBsAg, no one had anti HCV or HIV, Fasting blood Glucose was within reference range for all participants, serum Cholesterol was raised only in 1 candidate and Urine Glucose/ Albumin were normal in all candidates.

DISCUSSION

Developing countries are increasingly vulnerable to the worldwide epidemic of obesity, which affects all segments of the population[19,20].

Results of present study (n=277) are quite encouraging, which has shown that maximum candidates 179 (64%) belonged to Group1-BMI<18kg/(m)^2, 95(34%) belonged to Group2-BMI18-22.9kg/(m)^2 whereas only 3 (1%) individuals belonged to Group 3 – BMI 23-24.9 kg/(m)^2 and no individuals belonged to Group 4 BMI >25kg/(m)^2. This finding of 1% overweight among adolescence is even lower than 2.6% which was shown by Martorell R et al [13]. Previously Warraich HJ et al has shown that 28% of the students had weight greater than the 85th centile corresponding to overweight and obesity [21]. Similarly Anwar A et al have studied children from age 10–15 in two private schools of Lahore, and concluded that 11.9% were obese and 21.8% were overweight which is very high as compared to present study [12].

Among 277 candidates, 256 (92%) candidates belonged to urban areas and 21 (8%) candidates belonged to rural areas which are in contrast to earlier studies [8,9,14]. Out of these 3 individuals (group 3) with increased BMI, 2 belonged to urban and 1 belonged to rural settings. This finding is of great significance and is in contrast to earlier studies. Mean age of participants was 12.9 ± 0.9 years and age range was 11 to 14 years. Province wise maximum candidates 250(87%) belonged to Punjab.

The findings of present study may be attributable to Comprehensive health care awareness campaigns as highlighted by Mushtaq MU et al for National preventive strategy for childhood obesity and targeted interventions tailored to local circumstances with meaningful involvement of communities [22]. Similarly Ishaque A et al have proved association between strong determinants of obesity and overweight & concluded Health education of students for known risk factors should be integrated with curriculum of science from elementary classes [23].

One candidate was found to be positive for HBsAg, no one had anti HCV or HIV, Fasting blood Glucose was within reference range for all participants, serum Cholesterol was raised only in 1 candidate and Urine Glucose/ Albumin were normal in all candidates which is in accordance with the findings of BMI in study population.

Limitation of the present study is that subject population was not evenly distributed among provinces and predominantly belonged to urban settings. Further research is recommended to find etiological factors, trends of obesity, its correlation with metabolic abnormalities and means to effectively control weight in adolescents with increased BMI in larger scale studies

CONCLUSION

Frequency of overweight among healthy school going male children of Pakistan is 1% which is quite low.

REFERENCES

1. World Health Organization, Global Strategy on Diet, Physical Activity and Health: Overweight and obesity. [http://www.who.int/dietphysicalactivity/en/index.html]
2. Dietz WH, Robinson TN: Overweight children and adolescents. N Engl J Med 2005, 352:2100-2109.
3. Lobstein T, Baur L, Uauy R: Obesity in children and young people: a crisis in public health. Obes Rev 2004, 5(Suppl 1):4-104.
4. Han JC, Lawlor DA, Kimm SYS: Childhood obesity. Lancet 2010, 375:1737-48.
5. Guo SS, Chumlea WC. Tracking of body mass index in children in relation to overweight in adulthood. American Journal of Clinical Nutrition 1999; 70:145–8.
6. Freedman D, Wang J, Thornton JCl. Classification of body fatness by body mass index-for-age categories among children. Archives of Pediatric and Adolescent Medicine 2009; 163:801–11.
7. Bharmal FY. Trends in nutrition transition: Pakistan in focus. J Pak Med Assoc 2000; 50: 159-67.
8. Aziz S, Noorulain W, Zaidi UR, Hossain K, Siddiqui IA. Prevalence of overweight and obesity among children and adolescents of affluent schools in Karachi. J Pak Med Assoc 2009; 59: 35-8.
9. Nanan DJ. The obesity pandemic--implications for Pakistan. J Pak Med Assoc 2002; 52: 342-6.
10. Ahmed J, Laghari A, Naseer M, Mehraj V. Prevalence of and factors associated with obesity among Pakistani schoolchildren: a school-based, cross-sectional study. East Mediterr Health J 2013; 19:242-7.
11. Younas M, Khan AA, Siddique M. Obesity/overweight among healthy adult males seeking employment in pakistan army. Pak Armed Forces Med J 2013;
12. Prevalence of obesity among the school-going children of lahore and associated factors. Anwar A, Anwar F, Joiya H, Ijaz A, Rashid H, Javaid A. Mehmood M.J Ayub Med Coll Abbottabad 2010;22:27-32.
13. Martorell R. Obesity. 2020 Focus 5 (Health and Nutrition Emerging and Reemerging Issues in Developing Countries). Available at: http://www.ifpri.cgiar.org/2020/focus/focus05/focus05_07.htm.
14. Jafar T H, Qadri Z, Islam M, Hatcher J, Bhutta Z A, Chaturvedi N. Rise in childhood obesity with persistently high rates of undernutrition among urban school-aged Indo-Asian children. Arch Dis Child 2008; 93:373–8.

15. World Health Organization. Obesity: preventing and managing the global epidemic: report of a WHO consultation on obesity. Geneva, 3-5 June 1997. Geneva: WHO, 1998.
16. Choo V. WHO reassesses appropriate body-mass index for Asian populations. Lancet 2002; 360: 235.
17. Kolsdaard ML, Anderson LF, Tonstad S, Brunborg C, Wangensteen T, Joner G et al. Ethnic differences in metabolic syndrome among overweight and obese children and adolescents: the Oslo Adiposity. Intervention Study. Acta Paediatr 2008; 97: 1557-63.
18. Troiano RP, Flegal KM, Kuczmarski RJ. Overweight prevalence and trends for children and adolescents. The national health and nutrition examination surveys, 1963 to 1991. Arch Pediatr Adolesc Med 1995; 149: 1085-91.
19. Friedrich MJ. Epidemic of obesity expands its spread to developing countries. JAMA 2002; 287: 1382-62.
20. Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of childhood and adult obesity in the United States, 2011-2012. Journal of the American Medical Association 2014; 311:806-14.
21. Warraich HJ, Javed F, Faraz-ul-Haq M, Khawaja FB, Saleem S. Prevalence of Obesity in School-Going Children of Karachi. PLoS ONE 2009;4:e4816.
22. Mushtaq MU, Gull S, Abdullah HM, Shahid U, Shad MA, Akram J. Prevalence and socioeconomic correlates of overweight and obesity among Pakistani primary school children. BMC Public Health. 2011 25;11: 724. doi: 10.1186/1471-2458-11-724.
23. Frequency of and factors leading to obesity and Overweight in school children. Ishaque A, Ahmad F, Zehra N, Amin H. J Ayub Med Coll Abbottabad 2012;24:34-8.