

**PREVALENCE OF OBESITY IN YOUNG ADOLESCENTS OF URBAN BHOPAL*****G.R Mahor (M.D)**

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Received 11 June 2013; Revised 14 June 2013; Accepted 20 June 2013**ABSTRACT**

Background: As the country's economy is improving at exponential rate, living habits of Indian population has changed abruptly leading to rapid proliferation of fast food centers thus increase in consumption of fatty food leading to increase in tendency of obesity. Obesity is the major risk factor for non communicable diseases like hypertension, diabetes and cardiovascular diseases.

Materials and methods: For this study 684 both male and female participants with age group between 16 to 18 years of age (both male and females with equal number) who are non smokers, non alcoholics and were not suffering from any systemic illness were recruited. BMI (body mass index) and waist to hip ratio (WHR) was assessed in all the participants. WHR 0.85 was considered as cutoff.

Results: We observed 11.54% of study population was obese with BMI >30 and 18.56 were overweight with BMI 25-29.9. About 31.87% of study population has truncal obesity with WHR of >0.85. And were observed no statistically significant variation in the percentage of obesity between male and females but males has statistically significant high truncal obesity than females ($p < 0.01$).

KEYWORDS: obesity; BMI; WHR**INTRODUCTION:**

Economic growth in India is driving an unprecedented shift in population to urban centers. Bhopal is one of 11 Indian cities figured amongst the 100 fastest growing cities in the world with average population growth rate of 2.69% with present population of 20 lakhs. The urbanization of India is taking place at a faster rate than in the rest of the world. By 2030, 40.76 per cent of India's population will be living in urban areas compared to about 28.4 per cent now [1]. As the country's economy is improving at exponential rate, living habits of Indian population has changed abruptly leading to rapid proliferation of fast food centers thus increase in consumption of fatty food leading to increase in tendency of obesity. Obesity is the major risk factor for the development of non communicable diseases like diabetes, hypertension and cardiovascular diseases [2]. With rapid economic development and increasing westernization of lifestyle in the past few decades prevalence of these diseases has reached alarming proportions amongst Indians in the recent years. After school education, new college going population is highly vulnerable to external factors owing to newfound independence and the influence through peer pressure and exposure to media. Few studies like kapil et al [3], and kaur et al [4] are available on the prevalence of obesity in metro cities like Delhi but no studies were available till date on prevalence

of obesity in two tire cities like Bhopal. Hence the present study is undertaken to assess the prevalence of obesity in young adolescents of Bhopal city.

METHODS AND MATERIALS:

This study was done in department of community medicine, L.N. Medical College & RC-Bhopal and was approved by Institutional Ethics Committee. Brief information sheet both in English and Hindi were given to participants and asked them to go through the detailed procedure and protocol of this study and participants were free to take decision whether to take part or not in this study. Written consent was taken from all the participants. For this study 684 both male and female participants with age group between 16 to 18 years of age (both male and females with equal number) who are non smokers, non alcoholics and were not suffering from any systemic illness were recruited. BMI (body mass index) and waist to hip ratio (WHR) was assessed in all the participants. WHR 0.85 was considered as cutoff.

Statistical analysis

All the data was analyzed with SPSS- version 19 Chicago USA. Students t-test was applied to assess the statistical significance in frequency of obesity, overweight and truncal obesity between male and female participants. $P < 0.05$ was considered as significant and $p < 0.01$ as highly significant.

RESULTS:

In this study from table-1 we observed 11.54% of study population was obese with BMI >30 and 18.56 were overweight with BMI 25-29.9. About 31.87% of study population (table-2) has truncal obesity with WHR of >0.85.

from table-3 we observed no statistically significant variation in the percentage of obesity between male and females but males has statistically significant high truncal obesity than females ($p < 0.01$).

Table 1: Prevalence of overweight and obesity among young adults based on BMI

Sample size	Over weight BMI (25-29.9)	Obesity BMI (>30)
684	127 (18.56)	79 (11.54)

Figures in parentheses denote percentages.

Table 2: Frequency of truncal obesity based on WHR (waist to hip ratio).

Sample size	Waist to hip ratio (WHR) >0.85
684	218 (31.87)

Figures in parentheses denote percentages.

Table-3 showing statistical variation in obesity and truncal obesity between male and females:

Parameters	Male	Female	P value
Obesity (BMI >30)	38	41	>0.05
Over weight (BMI >25 – 29.9)	71	56	<0.05
Truncal obesity (WHR >0.085)	124	94	<0.01

DISCUSSION:

In this study we observed 11.54% of study population were obese with no statistical difference between males and females ($p > 0.05$) indicating the upward rise in prevalence of obesity in developing countries as like in developed countries [5]. Through our questionnaire in this study we observed this increased trend in obesity might be due to sedentary lifestyle and the same was observed by Singh RB and Pella D [6]. In their study they observed overall prevalence of sedentary behavior was 59.3% among women and 58.5% among men. Sedentary behavior was significantly ($P < 0.001$) associated with obesity in both sexes, compared with non obese men and women. The other major factor is abrupt change in dietary pattern. In this study we observed the majority of study population consumes at least 4 servings of high calorie and fat rich food a week. Consuming oil rich food proved to be a major risk factor for obesity [7]. From this study we observed that the prevalence of obesity is at par with metros like Delhi which is having obesity of more than 13% [8]. In this study we observed 31.87% of our study population has increased waist to hip ratio and the tendency was more in males than females ($p < 0.01$). Waist hip ratio (WHR) is an indicator of the degree of masculine distribution of adipose tissue. It is now well established that a high WHR indicates abdominal fat accumulation. Abdominal obesity is the key component of metabolic syndrome (MS) –which is the major risk factor for CVD and type 2 diabetes. Even with lower BMI, Asians have higher

visceral adiposity than Caucasian populations. For this reason, the international task force of World Health Organization (WHO) has set lower cut-off BMI values for Asians to define overweight and obesity (more than 23 and 25 kg/m² respectively) [9]. As the prevalence of obesity is increasing, the incidence of metabolic syndrome is also increasing exponentially leading to increase in incidence of diabetes and cardio vascular diseases in India [10].

Conclusion: from this study we observed very high prevalence of obesity even in two tire cities like Bhopal with 11.45% which might lead to increase in incidence of non communicable diseases like diabetes and CVD. Hence time has come for Governmental and non-governmental agencies of the country to work together in encouraging young adults to adopt healthy lifestyle and to educate them regarding the adverse effects of obesity to reduce the high burden of obesity in India.

REFERENCES:

1. Yajnik CS. The insulin resistance epidemic in India: Fetal origins, Later lifestyle, or both? Nutr Rev 2001; 59: 1-9.
2. Ramachandran A, Snehalatha C, Kapur A, Vijay V, Mohan V, Das AK, et al. High prevalence of diabetes and impaired glucose tolerance in India: National urban diabetes survey. Diabetologia, 2001; 9: 1094-1111.
3. Kapil U, Singh P, Pathak P, Dwivedi SN, Bhasin S Prevalence of obesity amongst affluent adolescent

- school children in Delhi. Indian Pediatr 2002; 39:449–452.
4. Kaur S, Sachdev HP, Dwivedi SN, Lakshmy R, Kapil U. Prevalence of overweight and obesity amongst school children in Delhi, India. Asia Pac J Clin Nutr 2008;17:592–596.
 5. Lobstein T, Baur L, Uauy R. Obesity in children and young people: A crisis in public health. Report to the WHO. London IASO international Obesity Task Force; 2004.
 6. Singh RB, Pella D. Prevalence of obesity, physical inactivity and undernutrition, a triple burden of diseases during transition in a developing economy. The Five City Study Group. Acta Cardiol 2007;62:119-27.
 7. Cavadine C. Dietary habits in adolescent: Contribution of snacking. In: Ballabriga A. Feeding from Toddlers to Adolescence. Philadelphia: Nestle Nutrition Workshop Series. 1996; 37: 117-129.
 8. Sharma A, Sharma K, Mathur KP. Growth pattern and prevalence of obesity in affluent schoolchildren of Delhi. Public Health Nutr. 2007;10(5):485-91.
 9. The Asia-Pacific perspective: Redefining obesity and its treatment. Geneva, Switzerland: World Health Organization; 2000.
 10. Deepa M, Farooq S, Datta M, Deepa R, Mohan V. Prevalence of . metabolic syndrome using WHO, ATP III and IDF definitions in Asian Indians : the Chennai Urban Rural Epidemiology Study (CURES-34). Diabetes Metab Res Rev 2007; 23: 127-34.