

Obesity may not always be Observed among the Urban Youth Population of West Bengal

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Abstract

Obesity (BMI>30), a medical condition, results from excess deposition of fat in the body. It has manifold negative impacts on health and has been found to be mainly associated with cardiovascular diseases, hypertension and diabetes. In developing nations, the main causes of obesity are sedentary lifestyle, physical inactivity and consumption of high calorie food, although genetics also plays a part in it. The aim of our pilot study was to estimate the tendency of getting overweight and obese in the age range of 20-24 years in an urban area of West Bengal. For this, we studied randomly 100 individuals and their height, weight, waist hip ratio, food habit and lifestyles were noted. Interestingly, obesity was not observed in our study population which was contradictory to some previous studies. So we hypothesize that age related stress and associated cortisol may be another factor for weight gain in the future.

Keywords: Obesity; Medical condition; Life style; Urban area.

Introduction

Obesity is a medical condition resulting from excess deposition of fat in different parts of the body that may have a negative impact on the health of an individual. Overweight (BMI> 25) and obesity (BMI>30) are major risk factors for cardiovascular diseases, diabetes and even cancer. Although genetic components have already been identified but life style plays a major role in the causation of obesity. Leptin, a hormone secreted from the fat cells has been found to be inactive in obese people. For every individual the amount of calorie intake varies. Consumption of foods rich in fat and carbohydrate and alcohol intake adds to a large amount of calories. This difference in the intake and burning of calories vary considerably too. In coronary heart disease, vulnerable plaque, a type of atheromatous plaque is formed in the inner walls of the artery. It is a deposition of WBC and lipid. The cardiovascular dysmetabolic syndrome seen in association with obesity is also related to insulin resistance and

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hypertension (Nicholas, 1999). Thus obese diabetic individuals are found to become resistant to the activity of insulin. Interestingly, this trend of becoming obese has mainly been seen in high and middle income countries, especially among children and adolescents. Matijasevich (2009) observed that it has been doubled over the past 10 years. Again in Brazil, the frequency of obesity in older children and adolescents got tripled between a span of 1975 and 1997 (Wang *et al*, 2002). Earlier studies from Chennai (Subramanyam *et al*, 2003) and Delhi (Kapil *et al*, 2002) showed the prevalence of obesity to be about 6% and 7%, respectively. The aim of our pilot study was to evaluate the tendency of weight gain and obesity in the age range of 20-24 years in an urban area of West Bengal.

Material and Method

West Bengal is one of the Eastern states of India. Our study was conducted to estimate the trends of getting overweight and obesity among the students in the Department of Zoology, University of Calcutta, West Bengal, and pursuing Master's degree. Randomly 85 girls and 15 boys having an age range between 20 and 24 years were studied.

A questionnaire was prepared to note the lifestyle, food habit and physical activities, if any. Their height, weight, BMI (Body Mass Index) and waist-hip circumference were measured using standard protocol.

Results & Discussion

Globally, there had been an alarmingly increase in the rate of obese adolescents. This has led to serious health problems. In developing nations, the main attributes of obesity are sedentary lifestyle, physical inactivity and consumption of calorie rich foods. India is currently observing a rise in the numbers of individuals in the middle-class who are detected with obesity. A large part of the Indian population has started depending mainly on processed foods containing a huge percentage of trans-fat, sugars, and other unhealthy and artificial ingredients. Excess body weight not only causes a series of serious complications among the aged but also results in joint disorders and knee pain among the younger people (Gambhir *et al*, 2014). Obesity itself is not only a disease but is considered as the core of many diseases. BMI is used to determine obesity i.e. body fat. BMI is calculated using height and weight. Starting at 25.0, the higher the BMI is, the greater becomes the risk of developing obesity associated health problems. Based on the level of BMI, obesity has been categorized into three

Table 2: Showing clinical symptoms

Symptom	No. of individuals
Diabetic	2
Non-diabetic	98
Hypertensive	4
Non hypertensive	96
Menstrual regular	80
Menstrual irregular	5

different classes. A person is referred to as overweight if the BMI is 25.0-29.9. Class 1 (low-risk), Class 2 (moderate-risk) and Class 3 (high-risk) obesity is considered if BMI is 30.0 - 34.9, 35.0 - 39.9 and equal to or greater than 40.0 respectively. Increased weight poses significant health dangers for certain cancers, diabetes and heart related diseases. A recent study in US showed that Class III obesity was significantly associated with increased rates of total mortality (Kitahara *et al*, 2014). Overweight leading to mortality is an issue of continuous debate. Several studies in U.S. have found a clear instance of death resulting from obesity and associated physical inactivity (Allison *et al*, 1999a; Allison *et al*, 1999b). However, according to Flegal (2005), although obesity leads to higher number of deaths but being overweight had a protective effect. He showed that there had been around 86,000 lesser deaths than that was expected had the BMI been in the normal range. Obesity is undoubtedly a risk factor but age, gender and smoking profile also interacts with it. Finkelstein (2010) showed that life expectancy in individuals having normal body weight and being non-smoker increases life span by about 20 years compared to a smoker class 3 obese individual. In the present study, we observed that BMI of both males (22.13 ± 2.96) and females (22.28 ± 3.63) were in the normal range. Our age range was between 20-24 years. Interestingly, we found no obese in our study population. However, a number of studies showed the prevalence of obesity in the population of West Bengal. Thus the

Table 1: Showing study parameters

Sex	No. of Individuals	Age	Height	Weight	BMI	WHR
Male	15	22.33±0.62	170.00±7.77	64.30±11.34	22.13±2.96	0.87±0.05
Female	85	21.98±0.94	156.50±5.99	54.68±9.51	22.28±3.63	0.85±0.06

question is raised that how the people currently having normal body weight become obese after a few years. As discussed earlier, life style, sedentary habit, consumption of fast food may be the probable cause of this quick conversion from normal to obese. Another reason for not observing obesity in our study is that mostly it consisted of the student population. After a certain age, more or less everyone has to enter into the professional world where stress seems to become a part of their daily lives. .During stress, corticotropin-releasing hormone (CRH) is released which makes the body alert and prepares it for “fight or flight” response. This results in the dilation of pupil and intake of more oxygen into the lungs. Also, appetite gets suppressed and the digestive system becomes inactive temporarily. CRH triggers the release of the adrenal hormones, adrenaline and cortisol that helps in mobilizing carbohydrate and fat for quick energy. However, this cortisol shows a two-fold effect on fat. As soon as the immediate stress get over, the adrenaline dissipates, but the cortisol remains to aid in bringing balance in the body. It does so by increasing the appetite. Thus cortisol may not be the sole reason but can definitely be a factor of obesity.

References

- Allison DB, Zannolli R, Narayan KMV. The direct health care costs of obesity in the United States. *American Journal of Public Health*. 1999a; 89(8): 1194–1199.
- Allison D, Fontaine KR, Manson JE, Stevens J, VanItallie TB. Annual deaths attributable to obesity in the United States. *Journal of the American Medical Association*. 1999b; 282(16): 1530–1538.
- Finkelstein EA, Brown DS, Wraga LA, Allaire BT, Hoerger TJ. Individual and aggregate years-of-life-lost associated with overweight and obesity. *Obesity*. 2010; 18(2): 333–339.
- Flegal KM, Graubard BI, Williamson DF, Gail MH. Excess deaths associated with underweight, overweight, and obesity. *Journal of the American Medical Association*. 2005; 293(15): 1861–1867.
- Gambhir IS, Khurana V, Kishore D, Sinha AK, Mohapatra SC. A clinico-epidemiological study of cognitive function status of community-dwelling elderly. *Indian Journal of Psychiatry*. 2014; 56(4): 365–370.
- Kapil U, Singh P, Pathak P, Dwivedi SN, Bhasin S. Prevalence of obesity amongst affluent adolescent school children in Delhi. *Indian Pediatrics*. 2002; 39(5): 449–452.
- Kitahara CM, Flint AJ, de Gonzalez AB, Bernstein L, Brotzman M, MacInnis RJ, Moore SC, Robien K, Rosenberg PS, Singh PN, Weiderpass E, Adami HO, Anton-Culver H, Hartge P. Association between Class III Obesity (BMI of 40–59 kg/m²) and Mortality: A Pooled Analysis of 20 Prospective Studies. *PLoS Medicine*. 2014; 11(7): e1001673.
- Matijasevich A, Victora CG, Golding J, Barros FC, Menezes AM, Araujo CL, Smith GD. Socioeconomic position and overweight among adolescents: Data from birth cohort studies in Brazil and the UK. *BMC Public Health*. 2009; 9(1): 105.
- Nicholas SB. Lipid disorders in obesity. *Current Hypertension Reports*. 1999; 1(2): 131–136.
- Subramanyam V, Rafi M. Prevalence of overweight and obesity in affluent adolescent girls in Chennai in 1981 and 1998. *Indian Paediatrics*. 2003; 40(4): 332–336.
- Wang Y, Zhang Q. Are American children and adolescents of low socioeconomic status at increased risk of obesity? Changes in the association between overweight and family income between 1971 and 2002. *The American Journal of Clinical Nutrition*. 2006; 84(4): 707–716.