Incidence of Overweight and Obesity among Urban and Rural Males of Amritsar

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Abstract

Global epidemic of obesity is one of the main public health problems in developed as well as developing countries. The present study was undertaken to assess the prevalence of overweight and obesity among urban and rural males of Amritsar district of Punjab. 1,000 adult males (500 urban and 500 rural) in the age group 20-50 years were screened for overweight and obesity from height and weight measurements. The prevalence rate of malnutrition was calculated according to the critical limits of body mass index (BMI). The observations show that the combined overall prevalence rate of overweight and obesity, according to WHO (1998) and WHO (2000) classification, in the present study is 24.7% and 46.1%, respectively. The frequency of overweight and obesity is more among urban males than in their rural counterparts.

Key Words: Body Mass Index, Overweight, Obesity, Punjabi Males

Introduction

As the pandemic of overweight and obesity around the globe continues to rise, many developing countries face a double burden of over nutrition and under nutrition *(WHO/FAO, 2002).* The scope and distribution of both types of malnutrition must be understood so that public health resources can be channelled appropriately. In recent years, India has controlled the problem of severe under nutrition to a substantial extent among young children but now facing a rising epidemic of overweight and obesity among children and adults. Only limited data on prevalence of overweight and obesity are available for adults in India. According to *WHO (1998),* there is a special need to collect good quality nationally representative prevalence data on obesity from countries, those are undergoing the so-called nutrition transition. India, especially the state of Punjab, is also passing through such a transitional phase of socio-economic development which has the potential of altering the nutritional status of her population groups. Therefore, in the present study, an attempt has been made to investigate the prevalence of overweight and obesity in urban and rural adult males of Amritsar district of Punjab.

Materials and Methods

The data for the present study have been collected from 500 urban and 500 rural males of age 20 years and above during the year 2004-2005. All subjects were of Punjabi origin and belonged to upper middle class with an increase ranging from Rs. 10000 to Rs. 30000 per month. The majority of the urban data were collected from residential colonies, occupied by well-to-do officers, professors

and doctors of Amritsar city of Punjab. Rural data were collected from landowners of 'Ram Tirath' and 'Chugawan' village of the Amritsar district of Punjab. Urban males in this sample lead a very sedentary and comfortable life, but rural males are very hardworking. They work is farms, take care of the products of the farms and even look after the cattle, etc. The information regarding age, occupation, income, etc. was collected through the pre-tested interview schedule from each individual.

For the assessment of overweight and obesity, height and weight measurements were taken on each subject using the standard protocol given by *Weiner and Lourie (1981).* The practical and clinical definition of obesity is based on body mass index (BMI). Therefore, the value of BMI was calculated for each subject as follows:

$$BMI = Weight\ (kg) / Height^2\ (m)$$

The suggested critical limits of BMI by *WHO (1998, 2000)* were utilised for the assessment of overweight and obesity.

WHO (1998) Classification

Classification	BMI (kg/m^2)
Underweight	< 18.5
Normal	18.5-24.9
Overweight	25.0-29.9
Obese Grade I	30.0-34.9
Obese Grade II	35.0-39.9
Obese Grade III	≥ 40.0

WHO (2000) Classification

Classification	BMI (kg/m^2)
Underweight	< 18.5
Normal	18.5-22.9
Overweight	23.0-24.9
Obese Grade I	25.0-29.9
Obese Grade II	≥ 30.0

Results & Discussion:

Table 1. Classification of urban and rural adult males of Amritsar according to WHO (1998) criteria of BMI

BMI	Urban males		Rural males		Nutritional status
	N	% age prevalence	N	% age prevalence	
< 18.5	16	3.2	46	9.2	Under nourished
18.5-24.9	321	64.2	370	74.0	Normal
25.0-29.9	99	19.8	64	12.8	Overweight
30.0-34.9	41	8.2	13	2.6	Obese I
35.0-39.9	9	3.8	7	1.4	Obese II
≥ 40.0	4	0.8	–	–	Obese III

Table 1 presents the distribution of all subjects according to BMI classification *(WHO, 1998).* Out of 500 urban males, only 16 (3.20%) are underweight, 321 (64.2%) are normal and 99 (19.8%) are overweight while 41 (8.2%) are in obesity grade I, 9 (3.8%) in grade II and 4 (0.8%) are in obesity grade III. On the other hand, out of 500 rural males, 46 (9.2%) are undernourished and 370 (74.0%) are normal while 64 (12.8%) are overweight and 30 (14.0%) are obese. In other words, the overall combined prevalence of overweight and obesity in urban and rural males is 32.6% and 16.8%, respectively. It is also apparent from Table 1 that urban males show higher prevalence rate of overweight and obesity than rural males.

Table 2. Classification of adult urban and rural males of Amritsar according to WHO (2000) criteria of BMI

BMI	Urban males		Rural males		Nutritional status
	N	% age prevalence	N	% age prevalence	
< 18.5	16	3.2	46	9.2	Under nourished
18.5-22.9	205	41.2	272	54.4	Normal
23.0-24.9	126	25.2	98	19.6	Over weight

25.0-29.9	99	19.8	64	12.8	Obese I
≥ 30.0	54	10.8	20	4.0	Obese II

On using the lower cut-off values of BMI recommended by *WHO (2000)* for Asians, percentage prevalence of overweight and obesity becomes 55.8% in urban males and 36.4% in rural males (Table 2). But, on the other hand, percentage prevalence of normal individuals decreases to 41.0% and 54.4% in urban and rural males, respectively.

It is evident from the present study (Tables 1, 2) that the overall prevalence of overweight and obesity among Punjabi adult men, according to *WHO (1998)* classification, is 24.7%, but according to *WHO (2000)* classification it becomes 46.1%. The changed perception about body mass index (BMI) classification has drawn a drastic situation in this study. The prevalence of obesity in terms of number of people almost doubled according to new classification. This has not only of statistical significance but also is alarming for the health planners.

Table 3. Comparison of prevalence of overweight and obesity in urban and rural males of Amritsar

Area	N	Prevalence of overweight and obesity			
		WHO (1998)		WHO (2000)	
		N	%age prevalence	*N*	%age prevalence
Urban	500	163	32.6	279	55.8
Rural	500	84	16.8	182	36.4
Total	1000	247	24.7	461	46.1

Further, it is also observed from the present data (Table 3) that in terms of both the criteria *(WHO, 1998, 2000),* urban males show high incidence of obesity (32.6% and 55.8%) than the rural ones (16.8% and 36.4%). The Chi-square test was also employed to note the urban and rural differences in the prevalence of overweight and obesity. Urban males show significantly (χ^2=33.48, 37.84; $p < 0.001$) higher prevalence estimates than the rural counterparts. Urban-rural differences in the prevalence of overweight and obesity are also evident in other parts of Asia *(Ge, 1997; Martorell et al., 2000; WHO/FAO, 2002).* The possible reasons for higher rate of incidence among urban males might include the resultants of their sedentary lifestyle and changes in dietary practices. In urban Punjab, the traditional diet of coarse grains and millets has given way to refined wheat and rice as the staple cereal, leading to a substantial reduction in fibre content and possibly micronutrients in diet. This shift has resulted in Punjabi urban affluent consuming more fat, oils and western-style fast foods. The variety of fast foods available in the market today has also contributed to the problem of obesity. This is coupled with physical activity and availability of advances in technology and transportation. As a result, there is a network of these factors which play an important role in the development of present state of obesity. On the other hand, rural males of the present sample are mainly engaged in manual labour and fairly high level of physical activity. But now-a-days, labour-saving devices have eliminated many of the back-breaking tasks of agricultural and industrial sector occupations and reduced the time it takes to complete them. That is why the present sample shows higher prevalence of overweight and obesity in rural males than the other rural populations of India. The underweight prevalence in the present sample is about three times higher in rural areas than in urban areas.

The data on prevalence of overweight and obesity in various studies

(Gopinath et al., 1994; Visweswara Rao, 1995; Gopalan, 1998; Zargar et al., 2000; Mishra et al., 2001; Shukla et al., 2002; Reddy et al., 2002; Sidhu and Sandhu, 2005) in India are shown in Table 4.

Table 4. Prevalence rate of overweight and obesity in India

Reference	Place	Area	Obesity criteria of BMI	% age prevalence of overweight and obesity
Sidhu and Sandhu (2005)	Amritsar	(Urban)	≥ 23	51.5
Reddy et al. (2002)	New Delhi	(Urban)	> 25	35.0
		(Rural)		8.0
Shukla et al. (2002)	Mumbai		> 25	19.0
Mishra et al. (2001)	New Delhi	(Slum)	> 25	13.0
Zargar et al. (2000)	Kashmir Valley	(Combined)	≥ 27	7.0
Gopalan (1998)	Delhi	(Combined)	> 25	29.2
Visweswara Rao (1995)	Hyderabad	(Urban)	≥ 30	2.1
		(Rural)		0.8
Gopinath et al. (1994)	Delhi	(Combined)	≥ 25	21.3
Present study	Amritsar	(Urban)	≥ 25	32.6
		(Rural)		16.8
		(Urban)	≥ 23	55.8
		(Rural)		36.4

However, the extent of overweight and obesity reported in these studies is not strictly comparable because of the variation in the criteria of BMI cut-off points used and variation in age and socio-economic status of the subjects. It is discernible from Table 4 that the prevalence rates of overweight and obesity in Punjabi adult males are slightly higher than in other populations of India but are slightly less than what has been reported for Europe or USA *(WHO, 1998; Flegal et al., 2002).* This comparative profile of incidence of overweight and obesity clearly indicates that the men in Punjab are at an increased risk of malnutrition in the form of overweight and obesity. If the present trends continue, the situation can get worse even within a decade, and overweight can emerge as a single most important public health problem in adults. Overweight/obesity might not be considered as a specific disease, but it is certainly the 'mother' of various degenerative diseases in adult life. Obesity also increases a person's number of unhealthy life years, work disability, hospitalization due to cardiovascular disease and need long-term medication. The social and economic cost of the diseases is so high that a country, like India, can ill-afford to spend its paltry resources on the co-morbidities which are strongly influenced by obesity. Prevention and control of this problem must, therefore, claim priority attention.

Conclusion

This is the first and the only comprehensive study on the prevalence of overweight and obesity among urban and rural adult males of Amritsar. This study has revealed that the overall prevalence of overweight and obesity in urban and rural males is 55.8% and 36.4%, respectively, according to new classification of BMI. This shows that the burden of this disease is substantial in both urban and rural population. Notably, there was far more occurrence of overweight than underweight among adult men of Punjab. Not only the appropriate precautionary measures to prevent further progression of the problem into an epidemic are urgently required, but also there is a strong need for prospective epidemiological studies to better understand the causes and consequences of this growing obesity epidemic in Punjab. Therefore, multicentric approaches and research are needed with reference to this

epidemic in those populations which are undergoing such nutritional transition.

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