

## **A STUDY OF PREVALENCE OF OBESITY IN ADULT PUNJABI POPULATION**

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### **Introduction :**

Obesity has reached epidemic proportions globally with more than 1 billion overweight, Atleast 300 million of them are clinically obese and is a major contributor to the global burden of chronic disease and disability (1). Long considered a by product of modern life in rich, developed countries, obesity is spreading to developing countries as well. Two critical factors that have influenced this explosion are changes in dietary patterns and levels of physical activity. The latest list of morbidity associated with obesity includes about forty diseases. Though, prevalence of co-morbidities of obesity is quite high among adults in India yet there are relatively less reliable and representative data available. Hence, this study was carried out.

### **Material & Methods :**

It was a community based, cross sectional study conducted in field practice areas at Rural Health Centre (RHC), Pohir and Urban Health Centre (UHC), Kirti Nagar attached to the department of Community Medicine, DMC & Hospital Ludhiana.

Field practice area of RHC is composed of 10 villages serving a total population of 20,450. The Urban health Centre covers ten colonies having a total population of 20,645.

Sample size was calculated by using the formula :

$$n = 4pq / L^2$$

With prevalence of obesity in India as 9% and allowable error as 5%, minimum sample size deduced was 178. But the study included a total sample of 541 subjects out of these 207 subjects were selected from rural area and rest 334 were selected from urban area. Among 207 subjects from rural area, 103 were males and 104 were females. Similarly among 334 subjects selected from urban area, 160 were males and 174 were females respectively.

Proportionate sample of population was taken from each village in rural and every colony in urban area. Among them systematic random sampling was done and adults who had completed 20 years of age till Dec. 31, 2002 were considered for study.

Body Mass Index (BMI) expressed by Kg/m<sup>2</sup> was used for classification of obesity and the subjects were classified as per WHO criteria (2).

<b>Classification</b>	<b>BMI</b>
Under Weight	<18.50
Normal weight	18.50 - 24.99
Over weight	>25.00
Pre-obese	25.00 - 29.99
Obese class-I	30.00 - 34.99
II	35.00 - 39.99
III	>40

A standard weighing machine was used



for measurement of weight. It was regularly standardized by putting a known weight of 20 kg over it. For measurement of height a flexible, non stretchable measuring tape was used.

Observations :

TABLE - 1

BMI wise distribution of subjects

BMI	No. of subjects	%
<18.50	56	10.4
18.50-24.99	240	44.3
25.00-29.99	165	30.5
30.00-34.99	56	10.4
35.00-39.99	19	3.5
>40	5	0.9
<b>Total</b>	<b>541</b>	<b>100.00</b>

TABLE - 2

BMI wise distribution of subjects in relation to area

BMI	Urban	Rural
<18.50	36 (10.8)	20(9.7)
25.00 - 29.99	98 (29.3)	67 (32.4)
30.00 - 34.99	33(9.9)	23 (11.1)
35.00 - 39.99	8(2.4)	11(5.3)
>40	5(1.5)	-
<b>Total</b>	<b>334</b>	<b>207</b>

Figures in parentheses indicate Percentages

Average BMI  $\pm$ SD 24.49  $\pm$  5.45,  $p > 0.58$

TABLE - 3

BMI wise distribution of subjects in relation to sex

BMI	Male	Female
<18.50	38(14.4)	18(6.5)
18.50 - 24.99	114 (43.3)	126(45.3)
25.00 -29.99	73 (27.8)	92 (33.1)
30.00 - 34.99	27(10.3)	29(10.4)
35.00 - 39.99	10 (3.8)	9(3.2)
>40	1(0.5)	4(1.4)
<b>Total</b>	<b>263</b>	<b>278</b>

Figures in parentheses indicate percentages

Average BMI  $\pm$  SD 23.99  $\pm$  5.20, 25.15 $\pm$  5.31,  $p < 0.01$

Results & Discussion :

Among the study subjects, overall prevalence of overweight (BMI 25.00 - 29.99) and obesity (BMI>30) was 30.5% and 14.8% respectively. Other studies by Gopinath et al (3) in urban Delhi adults, Zargar et al (4) in Kashmir valley adults and Sood et al (5) in Simla town, adults reported prevalence of obesity being 27.8%, 15.0% and 21.5% respectively. However, all of the above three studies have used a cut off of BMI > 25 which would suggest that the true prevalence of obesity may be overestimated in these reports.

Estimated prevalence of overweight Class I and Class II obesity was higher in the



rural area being 32.4%, 11.1% and 5.3% as compared to the urban area, which were 29.3%, 9.9% and 2.4% respectively. Also average BMI was slightly higher in the rural area (24.75) than the urban area (24.49) and this difference was not found to be statistically significant ( $p>0.58$ ).

Overweight (33.1%) class I obesity (10.4%) and morbid obesity (1.4%) was more prevalent in females as compared to males being 27.8%, 10.3% and 0.4% respectively. The average BMI in females (25.15%) was found to be higher than that of males (23.99) and this difference was statistically significant ( $p<0.01$ ). The results are in agreement with studies conducted by Gopinath et al (3) and Zargar et al (4).

Among the various morbid conditions, which are continuously crippling the mankind, Obesity is increasing at an alarming rate and the observations of the present study also support this fact. Promotion of healthy diets and improved opportunities for physical activity could be the best solution to the problem.

#### References :

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