

## Original Research Article

# A study to assess prevalence of obesity among government employees of medical college in Madhya Pradesh, India

Rakesh Mahore<sup>1</sup>, Ranjana Tiwari<sup>2\*</sup>, Manoj Bansal<sup>2</sup>, Vikrant S. Chouhan<sup>2</sup>,  
Vikash Sharma<sup>2</sup>, Sakshi Tiwari<sup>3</sup>

<sup>1</sup>Department of Pharmacology, Bundelkhand Medical College, Sagar, Madhya Pradesh, India

<sup>2</sup>Department of Community Medicine, G.R. Medical College, Gwalior, Madhya Pradesh, India

<sup>3</sup>Intern, Gandhi Medical College, Bhopal, Madhya Pradesh, India

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### \*Correspondence:

Dr. Ranjana Tiwari,

E-mail: [drranjana.tiwari50@gmail.com](mailto:drranjana.tiwari50@gmail.com)

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## ABSTRACT

**Background:** Obesity has become a major chronic disorder affecting the larger population more than any other disease in the world. Objective was to determine the prevalence of obesity among the government employees of G.R. Medical College, Gwalior.

**Methods:** The present study has been undertaken among government employees of G.R. Medical College, Gwalior in which all the employees were interviewed by a predesigned, pre-tested and pre-validated structured Questionnaire. Anthropometric data regarding weight and height was taken. The data was collected and analyzed using statistical software and chi square and other statistical tests were applied.

**Results:** The study shows that among total 215 employees. 35 (21.21%) males and 21 (42%) females were found overweight and obese with the criteria of BMI more than 25 kg/m<sup>2</sup>.

**Conclusions:** It was concluded from the present study that obesity is a chronic illness. Early detection and appropriate intervention could prevent various complications associated with it. BMI plays a crucial role.

**Keywords:** BMI, Government, Obesity, Overweight

## INTRODUCTION

Obesity is one of the most neglected and pervasive health problems worldwide affecting all ages, socioeconomic classes and ethnicities. It is rightly referred as "Globesity", as it has emerged as a global non-communicable epidemic.<sup>1</sup>

Overweight and obesity are the fifth leading risk factor for global deaths. Once considered a problem of developed country, overweight and obese are now on the rise even in the developing countries, particularly in urban settings. The WHO recognizes obesity as the greatest health threat of 21<sup>st</sup> century.<sup>2</sup>

According to World Health Organization in 2014, more than 1.9 billion adults aged 18 years and older were obese. Overall, about 13% of the world's adult population (11% of men and 15% of women) were obese. A 30% of adults aged 18 years and over (38% of men and 40% of women) were overweight. The worldwide prevalence of obesity more than doubled between 1980 and 2014.<sup>3</sup> According to National Family Health Survey-4 (NFHS-4) in India overweight and obesity are nearly two times higher in urban areas than in rural areas and more common in women. A 20.7% of women and 18.9% of men are overweight or obese.<sup>4</sup> According to National Family Health Survey-4 (NFHS-4) 13.6% women (23.8% in urban and 9.1% in rural) and 10.9% men (17.6% in urban and 7.8% in rural) are overweight and obese in

Madhya Pradesh.<sup>5</sup> Many factors have been implicated in the increasing burden of overweight and obesity including nutrition transition following urbanization, adoption of western life styles and demographic transition and low consumption of fruits and vegetables and increased consumption of non-alcoholic sugar sweetened beverages. Likewise, biosocial factors influencing overweight and obesity have identified to include age, gender, marital and socioeconomic status, urban residence, dietary intake and physical activity.<sup>6-12</sup> Considering all these aspects the present study has been undertaken.

**METHODS**

The present study has been undertaken in all the government employees of G.R. medical college Gwalior. In the college there are 7 departments of the teaching discipline as anatomy, physiology, biochemistry, pathology, pharmacology, microbiology and community medicine/PSM. There is Administrative staff of the college in various sub sections as- establishment section, accounts, autonomous, MCI cell, library, students section UG and PG, dean’s secretarial staff, and inward and outward section of the college. It was a cross sectional study done for a period of 8 months from October. 2016 to May 2017. In each teaching department there is faculty of Doctors, Lab technician, office clerk and class IV employees, while in the other sections there are class II, class III and class IV employees. Verbal consent from the Head of the department was taken explaining the type and the purpose of the study. The informed consent from each of the participant was taken regarding the participation in the study before asking the questions of the questionnaire and for performing necessary measurements of obesity. All the questions were asked serially. And their responses were noted simultaneously.

A predesigned, pre-validated and pre-tested interview-based questionnaire was used for data collection from different participants. The questionnaire catered general information as age, sex, marital status, type of family, educational status, cadre in the job, religion, and socio-economic status. Anthropometric measurements were made i.e. height and weight were recorded utilizing the standard equipment’s and methodology.

Height was measured with a tape to the nearest cm. The participants were requested to stand upright without shoes with their back against the wall, heels together and eyes directed forwards.

Weight was measured with a spring balance that was kept on a firm and smooth horizontal surface. Subjects wore light clothing, stood upright without shoes and weight was recorded to the nearest 0.5kg. The scale was calibrated with the standard weights. BMI was calculated based on the above measurements using the formula- BMI=weight in kg/height in m<sup>2</sup>. WHO BMI classification was used as following

- Underweight: BMI <18.50 kg/m<sup>2</sup>,
- Normal Range: BMI 18.5-24.99 kg/m<sup>2</sup>,
- Overweight: BMI 25.00-29.99 kg/m<sup>2</sup>,
- Obesity: BMI 30.00 and above kg/m<sup>2</sup>.

**RESULTS**

As shown in Table 1, the total number of participants were 215, in which 165 (76.74%) were males and 50 (23.26%) were females. The maximum percentage of the employees was in the age group of 35-44 years among both males and females i.e. 44.85% and 38% respectively. Table 2 shows the various socio-demographic features of the participants.

**Table 1: Showing the age and sex distribution of the participants.**

Age in Yrs	Total No. of Males		Total No. of Females		Total No. of Participants	
	No.	%	No.	%	No.	%
25-34	26	15.75	13	26	39	18.14
35-44	74	44.85	19	38	93	43.25
45-54	50	30.30	13	26	63	29.30
55 and above	15	9.09	05	10	20	9.30
Total	165	100.00	50	100.00	215	100.00

In the present study, the BMI of the study participants was classified according to WHO classification. In the present study, overall prevalence of overweight and obesity in both the sexes was seen in 56 (26.04%). 35 (21.21%) males and 21 (42%) females were found overweight and obese with the criteria of BMI more than

25 kg/m<sup>2</sup> and their is gender wise significant difference (p value 0.0072) (Table 3). Out of total over weight and obese participants of both the sexes, majority were belonging to the age group of 35-44 years with prevalence of obesity among males 15 (42.86%) and 10 (47.62%) among females (Table 4).

**Table 2: Showing the Socio-demographic Profile of the Participants.**

Variables	Males (N=165) No. (%)	Females (N=50) No. (%)	Total (N=215) No. (%)	Chi square value
<b>Type of Cadre</b>				
Class I	57 (34.54)	23 (46.00)	80 (37.21)	$\chi^2$ value: 5.049 p value: 0.1682 df = 3
Class II	01 (0.60)	01 (2.00)	02 (0.93)	
Class III	46 (27.88)	17 (34.00)	63 (29.30)	
Class IV	61 (36.97)	09 (18.00)	70 (32.55)	
<b>Type of Family</b>				
Nuclear	132 (80.00)	45 (95.00)	177 (82.32)	$\chi^2$ value: 2.637 p value: 0.1044 df = 1
Joint	33 (20.00)	05 (5.00)	35 (16.28)	
<b>Religion</b>				
Hindu	160 (96.97)	42 (84.00)	202 (93.95)	$\chi^2$ value: 7.614 p value: 0.2221 df = 2
Muslim	04 (2.42)	05 (10.00)	09 (4.18)	
Christian	01 (0.60)	03 (6.00)	04 (1.86)	
<b>Marital Status</b>				
Unmarried	02 (1.21)	00 (0.00)	02 (0.93)	$\chi^2$ value: 0.458 p value: 0.7953 df = 2
Married	161 (97.57)	48 (96.00)	209 (97.20)	
Widower	02 (1.21)	02 (4.00)	04 (1.86)	
<b>Educational Status</b>				
Primary	05 (3.03)	10 (20.00)	15 (6.97)	$\chi^2$ value: 21.441 p value: 0.0002 df = 4
Middle	40 (24.25)	15 (30.00)	55 (25.58)	
Higher Secondary	15 (9.09)	04 (8.00)	19 (8.84)	
Graduate	60 (36.36)	08 (16.00)	68 (31.63)	
Postgraduate	45 (27.27)	13 (26.00)	58 (26.98)	

**Table 3: Showing the status of BMI of the participants.**

BMI (Kg/m <sup>2</sup> )	Males (N=165) No. (%)	Females (N=50) No. (%)	Total (N=215) No. (%)	Chi square value
Less than 18.5	28 (16.97)	11 (22.00)	39 (18.14)	$\chi^2$ value: 12.985 p value: 0.0046 df = 3
18.50-24.99	102 (61.81)	18 (36.00)	120 (55.81)	
25.00-29.99	20 (12.12)	15 (30.00)	35 (16.29)	
30 and above	15 (9.09)	06 (12.00)	21 (9.76)	

**Table 4: The BMI classification in relation to age and sex.**

Age (Yrs)	Under weight		Normal weight		Over weight		Obese		Chi square value
	M (%)	F (%)	M (%)	F (%)	M (%)	F (%)	M (%)	F (%)	
25-34 (n=39)	10 (25.64)	05 (12.82)	11 (28.20)	04 (10.25)	03 (7.69)	3 (7.69)	2 (5.12)	1 (5.12)	$\chi^2$ value: 1.05 p value: 0.789 df = 3
35-44 (n=93)	09 (9.67)	03 (3.22)	50 (53.76)	06 (6.45)	08 (8.60)	8 (8.60)	7 (7.52)	2 (2.15)	$\chi^2$ value: 12.02 p value: 0.0072 df = 3
45-54 (n=63)	08 (12.70)	03 (4.76)	32 (50.79)	7 (11.11)	06 (9.52)	2 (3.17)	4 (4.35)	1 (1.58)	$\chi^2$ value: 0.562 p value: 0.905 df = 3
55 and above (n=20)	01 (5.00)	00 (0.00)	9 (45.00)	1 (5.00)	3 (15.00)	2 (10.0)	2 (10.0)	2 (10.0)	$\chi^2$ value: 1.267 p value: 0.7369 df = 3
Total (n=215)	28 (13.02)	11 (5.11)	102 (47.44)	18 (8.37)	20 (9.30)	15 (6.97)	15 (6.97)	6 (2.80)	

## DISCUSSION

A total of 215 employees were included as study participants. In the present study the obesity was seen in 35 (21.21%) males and 21 (42%) females with the criteria of BMI more than 25 kg/m<sup>2</sup> (Table 3).

In a study done at Dehradun by Saxena et al, the prevalence of obesity (BMI >25kg/m<sup>2</sup>) was 9.5 % in males and 18.9% in females which shows that prevalence of obesity among females was approximately double than in the males the finding are similar to the present study.<sup>13</sup>

Another study done by Sharma SK et al, which shows that 26.2% adults were overweight/ obese in Miraj, this finding is almost similar to present study (26.04%).<sup>14</sup>

The prevalence of obesity in the study of Nigeria was 9.1% and that of overweight was 26.2%. It was more prevalent in females than males and also more prevalent in the younger age group than the older age group.<sup>15</sup> In this context also, it is similar to the present study.

## CONCLUSION

It can be concluded from the present study that obesity and overweight are quiet prevalent among the employees of both the sexes. BMI is a simple and effective way to screen to prevent the progression and complications associated with it. Because of sedentary work, increasing age, obesity is a problem.

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