

Health care Industry - Not the Healthiest: Prevalence of Generalised & Abdominal Obesity among hospital Staff in a tertiary care set up in India

KEYWORDS	Prevalence of Obesity, Tertiary Care Hospital Staff, Body Mass Index, Waist Circumference, Lifestyle Modification & Intervention Program.				
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ABSTRACT Background: Obesity is an important health hazard worldwide including the developing countries. We herewith present study of prevalence of obesity which is part of our project Obesity & related diseases awareness campaign to promote Healthy Living through Lifestyle Modification Interventions program for tertiary care hospital staffers.

Methods: A cross sectional study was undertaken in an urban area of Mumbai during November 2015 to January 2016. Randomly selected 386 staffers of St. George Hospital (part of Grant Government Medical College, Mumbai) of 18-65 years were studied. Anthropometric parameters such as height, weight and waist circumference of subjects were measured and the body mass index calculated.

parameters such as height, weight and waist circumference of subjects were measured and the body mass index calculated. Results: According to Revised Indian Guidelines, Consensus Statement for Diagnosis of Obesity, Abdominal Obesity and the Metabolic Syndrome for Asian Indians and Recommendations for Physical Activity, Medical and Surgical Management were used & we observe that in our study 66.58 % were classified as overweight or obese, amongst which 44.6 % were obese & 22 % were overweight with remaining 33.42 % were classified as Normal (31.09 %) or underweight (2.33%).

Conclusion: Alarmingly high incidence of obesity suggests urgent need for development of immediate & effective mass interventions strategies in the form of integrated Lifestyle modification & Interventions to deal with the problem in hospital staffers & general population.

Introduction:

Obesity is an important health hazard not only in the developed world but also includes developing countries. A study conducted by Marie Ng et al¹ ranked India just behind US and China in the list of top ten countries with highest number of obese people, accounting for 30 million obese individuals in the world population. Obesity is strongly associated with other non-communicable disorders including hypertension, diabetes, hyperlipidaemia and cardiovascular diseases. Obese individuals have higher rate of morbidity and mortality as compared to their counterparts who are not obese.^{2,3} It has also been observed that urban areas show higher prevalence of obesity (almost 65%)⁴ as compared to their rural counterparts.

Several studies have been conducted for assessing prevalence of generalized obesity in health care workers all over the world. ^{5,67,8,9} To our knowledge prevalence of generalized and central obesity in health care workers has not been documented in India.

We thus conducted a cross sectional study to determine actual burden of obesity in our hospital staffers as per Consensus Statement for Diagnosis of Obesity, Abdominal Obesity and the Metabolic Syndrome for Asian Indians and Recommendations for Physical Activity, Medical and Surgical Management using BMI for classification of obesity.¹⁰

This study was a part of our project -obesity & related diseases awareness campaign to promote Healthy Living through Lifestyle Modification Interventions program for hospital staffers.

Materials & Methods:

We conducted a cross sectional study consisting of 386 hospital staff members as a for determining prevalence of obesity as a first step in our project, Obesity & related diseases awareness campaign to promote Healthy Living through Lifestyle Modification & Interventions program for hospital staffers. Institutional Ethics Committee approval was obtained.

All hospital staff employees including male and female resident and consulting doctors working in shifts of ten hours with maximum of six hours of patient contact six days a week, nurses and employees engaged in class III and class IV government jobs working in shifts of eight hours with five hours of patient contact of age 18-65 years were randomly selected to participate in the study. Written informed valid consent was taken from all willing participants prior to their participation in the study.

All the readings taken in accordance with relevant guidelines and regulations as explained below:

Inclusion criteria:

1) Age group (18 to 65 yrs)

2) All hospital staffers willing to participate in study

Exclusion criteria: 1) Persons not willing to participate in study

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2) Pregnant females

Materials used:

- 1) Measuring tape
- 2) Digital weighing machine
- 3) Height scale & wooden ruler

Parameters measured & Calculated:

- 1) Height
- 2) weight
- 3) waist circumference
- 4) Body mass index

Methodology of Waist Circumference (WC) Measurement:

WC measured in centimeter using non-stretchable flexible tape in horizontal position, just above the iliac crest, at the end of normal expiration, in the fasting state, with the subject standing erect and looking straight forward and observer sitting in front of the subject

Methodology of weight measurement:

Each person's weight measured in kilogram on same electronic weighing machine with the subject standing erect on weighing machine with the subjects wearing regular light clothes without shoes.

Methodology of Height:

Each person's height measured by height measuring scale mounted on wall vertically & with the help of wooden ruler, accurate height measured by keeping ruler in horizontal position by the observer with the subject in upright position.

Body mass index (BMI) calculated by standard formula: Body Mass Index = {weight in kg / [height in meter]²}

Definitions as per Consensus Statement for Diagnosis of Obesity, Abdominal Obesity and the Metabolic Syndrome for Asian Indians and Recommendations for Physical Activity, Medical and Surgical Management using BMI for classification of obesity^{10,11}

Definitions:

1) According to **BMI** (based on World Health Organization Asia Pacific Guidelines), **Generalized obesity**,

Overweight: was defined as a BMI $\ge 23 \text{ kg/m}^2$ but $< 25 \text{ kg/m}^2$ for both genders

Obese: defined as a BMI \ge 25 kg/m² for both genders

2) According to Waist circumference,

Abdominal obesity was defined as a waist circumference (WC) $\ge 90 \text{ cm}$ for men and $\ge 80 \text{ cm}$ for women

3) Combined obesity: Individuals with both generalized and abdominal obesity

Observations:

Following observations found in a total 386 hospital staffers according to BMI,

Table 1: Prevalence of obesity according to BMI

Classification	BMI	Number of persons	% Prevalence
Underweight	<18	009	02.33
Normal	18-22.9	120	31.09
Overweight	23-24.9	085	22.02
Obese	>25	172	44.56
Total		386	100

1. Out of total 386 persons under study, 9 individuals (2.23%) found to be underweight (BMI < 18).

2. 120(31.09%) individuals found to be Normal weight (BMI 18-22.9).

3.85(22.02%) individuals were overweight(BMI 23-24.9) 4.172(44.56%) individuals were obese (BMI >25-29.9) 5.45(11.66%) were severely obese (BMI >30)



Diagram 1: Pie chart showing percentage Prevalence of obesity, overweight, Normal & underweight

Table 2: Percentage prevalence according to BMI, in male & female

	BMI	Male	Male	Femal	Femal	Total	Total
			%	e	е %		%
Underweight	<18	4	2.58	5	2.16	9	
Normal	18-22.9	44	28.39	76	32.90	120	
Overweight	23-24.9	31	20	54	23.38	85	
Obese	>25	76	49.03	96	41.56	172	
Total		155	100	231	100	386	

1.69 % Males were either overweight or obese.

2.65% Females were either overweight or obese.

3.49 % Males were obese.

4.42 % Females were obese.



Diagram 2: showing Percentage prevalence of obesity according to BMI, in male & female

Table 3: Percentage Prevalence of obesity according to waist circumference in male & female

	W-C	Male	%	W-C	Female	%	Total
Normal	<90	73	47.1	<80	47	20.35	120
Obese	>90	82	52.9	>80	184	79.65	266
Total		155	100		231	100	386

1.52% Males had abdominal obesity.

2.80% Females had abdominal obesity.



Diagram 3: showing Percentage Prevalence of obesity in Male & females

Results:

A total of 500 hospital staff employees were approached and 386 participants were studied as per the inclusion criteria. These included 30 resident doctors and 13 consulting doctors. A total of 214 nurses (male and female) and 129 employees engaged in class III and class IV government jobs also participated in the study.

In terms of generalized obesity amongst the doctors it was found that 48.83 % were obese and 20.93% were overweight. The prevalence among nurses showed that 42.52% were obese and 23.36% were overweight while 33.64% were within normal limits. In the case of Class III and IV government employees 47.61% were obese and 21.04% were overweight and 31.35% had normal values.

The overall prevalence of obesity can be seen in Table 1 which is depicted as a diagram in Fig 1. Generalized obesity was also studied on the basis of gender and it was found that it wasmore in males (49%) as compared to females (42%) as seen in Table 2 and Fig 2.

In terms of central obesity it was found that amongst doctors 30.23% had abdominal obesity with a male prevalence of 27.90%. For nurses it was seen that 72.42% were having central obesity with a female prevalence of 71.02%. For Class II and IV employees it was seen that 42.85% had abdominal obesity with a male prevalence of 34.92%. The prevalence of overall central obesity was more in females (80%) as compared to males(52%) as depicted in Fig 3 and tabulated in Table 3.

For doctors the study of combined obesity showed that 31.70% had both central and generalized obesity. For the nurses the value was found to be 34.57% and for the government employees it was 24.63%.

Discussion:

The definition for Obesity is excessive accumulation of fat in the human body resulting in adverse effects on health of the individual.¹² The increasing prevalence of overweight and obesity in India has been known to have a direct relation with the increasing prevalence of obesity-related co-morbidities, hypertension, metabolic syndrome, dyslipidemia, type 2 diabetes mellitus (T2DM), and cardiovascular disease (CVD) etc.¹¹

Obesity in turn leads to dysfunction of metabolic processes such as action of insulin on glucose–lipids–free fatty acid metabolism, causing dysglycemia, dyslipidemia, hypertension, and the procoagulant state, known as the metabolic syndrome. Obesity and the metabolic syndrome are immediate precursors of T2DM and CVD.¹³ and the above effects appear from a BMI of just 21 kg/m² which is well under the values for overweight and obesity¹¹

We took decision to study health care workers particularly nurses and employees engaged in class III and class IV government jobs considering two factors: Firstly to our knowledge no study has been conducted to document the prevalence of obesity in these individuals in India and secondly a study conducted by S. Luckhaupt et al¹⁴ and Gu JK et al¹⁵ showed that that within the health care industry, obesity rates were lower for health care practitioners and than they were for health care support occupations (such as nursing assistants), "suggesting that the impact of working conditions on obesity may be especially harmful for lower-income workers".

By applying guidelines given in the consensus statement¹⁰ for diagnosis of obesity, abdominal obesity as provided by Indian experts group, we found significant number (44.56%) of health care providers are victims of obesity, out of which 49% were males & 42% were females. Our study showed an opposite result of male predominance for obesity as compared to a study¹⁶ done in Ahemadabad, obesity was seen in 47.67% males and 49%

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females with the criteria of BMI ≥ 25 kg/m2; also in a study done in Dehradun, by Saxena et al.¹⁷ prevalence of obesity (BMI >25 kg/m2) was 9.5 % in males and 18.9 % in females thus showing a female predominance which was attributed to more physical activity in males as compared to females.

Higher prevalence of overweight & obese in our study suggests that, in spite of working in the tertiary care hospital in a metro city, awareness about the obesity & related diseases was found low, as majority of health care workers found affected by obesity, which is an alarming sign about the overall health status of these individuals.

National Nutrition Monitoring Bureau NFHS-3 (2005-2006) have conducted surveys which highlight the growing problem of the burden of over nutrition which shows that 13% women and 9% men are overweight or obese. There is considerable state to state variation as well. This data should act as a wake-up call for dieticians & nutritionists as well as policy makers. There is a distinct 'awareness and information deficit' about good dietary practices and their linkage with good health even amongst the economically rich sections of the society. This deficit should be narrowed and eliminated by creating awareness by using all traditional as well as modern technological communication¹⁸.

The study is cross sectional in nature and thus does not allow for cause-effect relationship to be studied in terms of the effect of obesity on patients as demonstrated in a study by Vieweg et al in a mental hospital which shows that overweight and obesity may be a greater problem for staff providing care for patients and the authors write that more studies need to be conducted to test the hypothesis that staff obesity may impair staff ability to help obese patients lose weight¹⁹. Similar results maybe found even in a general hospital set up. This is thus a limitation for this study.

Conclusion:

Although being health care providers, doctors found to be leading in terms of obesity, and Class 3 & 4 employees were a closed second.

The rising incidence of obesity in Asian Indians found in other studies also correlates in our study.

The awareness & actual efforts to stay healthy by maintaining ideal body weight was found low, in health sector staffers, suggesting urgent need for mass awareness programs to educate about healthy lifestyle & need for prevention of obesity & thereby its related diseases like type II diabetes ,cardiovascular diseases & cerebrovascular diseases etc. among the health care providers as it affects the patients as well.

Remark: Alarmingly high incidence of obesity suggests need for development of immediate & effective mass interventions strategies to deal with the problem.

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