

## ORIGINAL ARTICLE

### Evaluation of prevalence of hypertension among obese patients visited in hospital

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#### ABSTRACT

**Background:** Obesity is a common but often underestimated condition of clinical and public health importance in many countries around the world. The mechanisms underlying obesity-associated hypertension or other associated metabolic diseases remain to be adequately investigated. Hence; the present study was undertaken for assessing the prevalence of hypertension among obese patients visited in hospital. **Materials & methods:** A total of 150 obese patients were enrolled in the present study. Patients with body mass index (BMI) of more than or equal to 30 Kg/m<sup>2</sup> were considered as obese. The current definition of hypertension (HTN) is systolic blood pressure (SBP) values of 130mmHg or more and/or diastolic blood pressure (DBP) more than 80 mmHg. Blood pressure was measured using sphygmomanometer. Prevalence of hypertension was recorded. All the results were recorded in Microsoft excel sheet and were analyzed by SPSS software. **Results:** The overall prevalence of hypertension among obese patients in the present study was found to be 42 percent (63 patients). In the present study, out of 96 males, hypertension was found to be present in 33 patients (34.38 percent) while among females, hypertension was found to be present in 55.56 percent of the patients. However; while analyzing statistically, no significant results were obtained while correlating prevalence of hypertension among obese patients divided on the basis of gender. **Conclusion:** Obesity is a significant risk factor for development of hypertension through alteration in tubular re-absorption of sodium ions in the kidneys.

**Key words:** Hypertension, Obesity.

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#### INTRODUCTION

Obesity is a common but often underestimated condition of clinical and public health importance in many countries around the world. Its general acceptance by many societies as a sign of well-being or a symbol of high social status, and the denial by health care professionals and the public alike that it is a disease in its own right, have contributed to its improper identification and management and the lack of effective public health strategies to combat its rise to epidemic proportions.<sup>1-3</sup> Obesity greatly increases risk of chronic disease morbidity—namely disability, depression, type 2 diabetes, cardiovascular disease, certain cancers—and mortality. Childhood obesity results in the same conditions, with premature onset, or with greater likelihood in adulthood. Thus, the economic and psychosocial costs of obesity alone, as well as when coupled with these comorbidities and sequelae, are striking.<sup>4</sup>

Cardiovascular diseases, the leading cause of mortality worldwide, particularly hypertension and diabetes, are the main illnesses associated with obesity. Nevertheless, the mechanisms underlying obesity-associated hypertension or other associated metabolic diseases remain to be adequately investigated.<sup>5,6</sup>

Hence; the present study was undertaken for assessing the prevalence of hypertension among obese patients visited in hospital

#### MATERIALS & METHODS

The present study was conducted in the department of medicine of the medical institute and it included assessment of prevalence of hypertension among obese patients. Ethical approval was obtained from institutional ethical committee and written consent was obtained from all the patients after explaining in detail the entire research protocol. A total of 150 obese patients were enrolled in the present study. Criteria described in the previous literature were used for defining obesity.<sup>7</sup> According to this criteria, patients with body mass index (BMI) of more than or equal to 30 Kg/m<sup>2</sup> were considered as obese. The current definition of hypertension (HTN) is systolic blood pressure (SBP) values of 130mmHg or more and/or diastolic blood pressure (DBP) more than 80 mmHg.<sup>8</sup> Complete demographic details of all the patients was obtained. Routine blood investigations were carried out in all the patients and blood pressure was measured using sphygmomanometer. Prevalence of hypertension was recorded. All the results were recorded in Microsoft excel sheet and were analyzed

by SPSS software. Chi square test was used for assessing the level of significance.

**RESULTS**

In the present study, a total of 150 obese patients were enrolled. Mean age of the patients was found to be 59.86 years. 32.67 percent of the patients belonged to the age group of more than 50 years. 64 percent of the patients were males while the remaining 36 percent were females. The overall prevalence of hypertension

among obese patients in the present study was found to be 42 percent (63 patients). In the present study, out of 96 males, hypertension was found to be present in 33 patients (34.38 percent) while among females, hypertension was found to be present in 55.56 percent of the patients. However; while analyzing statistically, no significant results were obtained while correlating prevalence of hypertension among obese patients divided on the basis of gender.

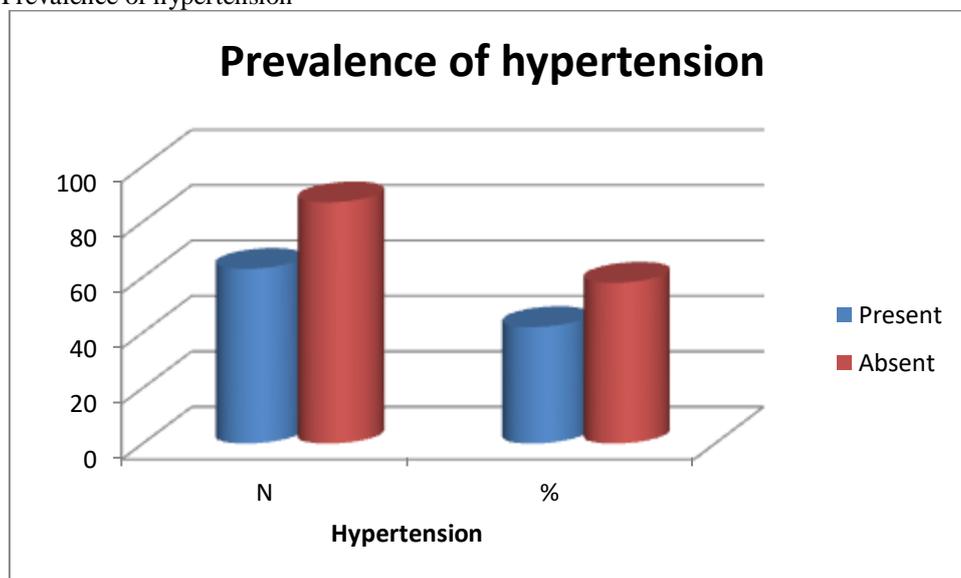
**Table 1:** Age-wise distribution

Age group	Patients	
	N	%
Less than 30	19	12.67
31 to 40	39	26
41 to 50	43	28.67
More than 50	49	32.67
Total	150	100

**Table 2:** Gender-wise distribution

Gender	Patients	
	N	%
Males	96	64
Females	54	36
Total	150	100

**Graph 1:** Prevalence of hypertension



**Table 3:** Prevalence of hypertension among obese patients divided on the basis of gender

Gender	Hypertension			
	Present		Absent	
	N	%	N	%
Males	33	34.38	63	65.62
Females	30	55.56	24	44.44
Chi- square value	2.85			
p- value	0.336 (Non-significant)			

## DISCUSSION

Obesity is defined as a condition of abnormal or excessive fat accumulation in adipose tissue, to the extent that health is impaired<sup>1</sup>. The amount of excess fat in absolute terms, and its distribution in the body - either around the waist and trunk (abdominal, central or android obesity) or peripherally around the body (gynoid obesity) - have important health implications.<sup>4-7</sup>

Obesity is typically defined quite simply as excess body weight for height, but this simple definition belies an etiologically complex phenotype primarily associated with excess adiposity, or body fatness, that can manifest metabolically and not just in terms of body size.<sup>8-10</sup> Hence; the present study was undertaken for assessing the prevalence of hypertension among obese patients visited in hospital.

In the present study, a total of 150 obese patients were enrolled. Mean age of the patients was found to be 59.86 years. 32.67 percent of the patients belonged to the age group of more than 50 years. 64 percent of the patients were males while the remaining 36 percent were females. The overall prevalence of hypertension among obese patients in the present study was found to be 42 percent (63 patients). Colosia AD et al conducted electronic searches of PubMed, Embase, and the Cochrane Library for identifying observational studies of hypertension and/or obesity prevalence in patients with T2DM throughout the world. From a total of 2,688 studies, 92 observational studies provided prevalence rates for hypertension and/or obesity specifically in adults with T2DM. Fifteen studies of specific subtypes of hypertension or subpopulations with T2DM were subsequently excluded, leaving 78 studies (in 77 articles) for inclusion in this article. Of these, 61 studies reported hypertension prevalence, 44 reported obesity prevalence, and 12 reported the prevalence of hypertension with obesity. Most studies had a low risk of bias regarding diagnosis of T2DM (70/78), hypertension (59/69), or obesity (45/47). The continental regions with the most observational studies of hypertension or obesity prevalence were Europe (n = 30) and Asia (n = 26). Hypertension rates typically were high in all regions; most studies presented rates above 50%, and many presented rates above 75%. Obesity rates exceeded 30% in 38 of 44 studies and 50% in 14 of 44 studies, especially those assessing central obesity (based on waist circumference). Among obese adults, hypertension rates were at or above 70% in Asia and above 80% in Europe; rates were lower in North and South America but still above 30%. Around the world, hypertension and obesity, separately or together, are common comorbidities in adults with T2DM.<sup>10</sup>

In the present study, out of 96 males, hypertension was found to be present in 33 patients (34.38 percent) while among females, hypertension was found to be present in 55.56 percent of the patients. However; while analyzing statistically, no significant results

were obtained while correlating prevalence of hypertension among obese patients divided on the basis of gender. Wang SK et al examined the association between obesity and hypertension among middle-aged and elderly people in Jinan city. This cross-sectional study examined 1,870 subjects from the blocks randomly selected from among the 6 communities. The prevalence of general obesity among people age 50 years and older was 21.1% (17.0% for males and 23.1% for females), and the prevalence of central obesity was 77.8% for men and 78.7% for women. For men, compared with a normal BMI, the ORs and 95% CIs for overweight and general obesity were 1.853 (1.252, 2.744) and 3.422 (1.894, 6.182), respectively, after adjusting for age, smoking, alcohol consumption and educational level. Compared with a normal WC, the ORs and 95% CIs for central obesity were 2.334 (1.573, 3.465) and 2.318 (1.544, 3.479), respectively, for men. For women, compared with a normal BMI, the ORs and 95% CIs were 1.942 (1.473, 2.599) and 4.011 (2.817, 5.712), respectively, after adjusting for age, smoking, alcohol consumption and educational level. Compared with a normal WC, the ORs and 95% CIs for central obesity were 2.488 (1.865, 3.319) and 2.379 (1.773, 3.192), respectively, for women. The relationship between hypertension and general obesity was stronger than the relationship between hypertension and either overweight or central obesity in both genders.<sup>11</sup>

The prevalence of HTN in developing countries appears to be on the rise. In the Mediterranean region, HTN affects 26% of the total population. Martins et al. determined the proportion of pre-HTN and HTN among college students in Brazil. The authors reported that the prevalence of elevated BP was 9.7% and was higher among males. Moreover, they showed that the rate of excess weight was 18.2% and that the increase in body mass index (BMI) was associated with an elevation in mean BP. Because HTN is a significant, but modifiable, risk factor for cardiovascular diseases, strategies to achieve even a modest lowering of the levels of BP in the population should be an important public health goal.<sup>12,13</sup>

## CONCLUSION

From the above results, the authors conclude that obesity is a significant risk factor for development of hypertension through alteration in tubular re-absorption of sodium ions in the kidneys. Hence; adequate dietary habits should be maintained for decreasing the prevalence and morbidity of hypertension.

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