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Research Article

**INCIDENCE AND TREATMENT OF OBESITY ASSOCIATED
HYPERTENSION**¹Dr Aqeela Jabeen, ²Dr Anam Azam, ³Dr Muhammad Mudassar Sattar¹Rawalpindi Medical University²Rawalpindi Medical University³UNIV College of Medicine and Dentistry, University of Lahore, Lahore

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Abstract:

Background: Obesity is a serious health problem and its increasing rate raises important issues specific to the coexisting development of related diseases, especially hypertension. This study looked at the prevalence of obesity-related hypertension, identifying the optimal treatment regimen for an obese hypertensive patient, and determining the relationship between hypertension and obesity by using body mass index and waist circumference.

Methodology: A question-based study was conducted in outpatient department of Medicine Unit-II of Holy Family Hospital, Rawalpindi for one-year duration from August 2019 to August 2020. Interviews were conducted with 150 patients. The sampling technique was convenient random sampling.

Results: A total of 150 respondents to this study were 40% male and 60% female. With a mean body mass index (BMI), 48% of respondents were overweight and 33% were obese class I. The average waist circumference is greater in women (more than 88 cm) than in men (less than 102 cm). Most of the prescribed drugs are (22%) NSAIDs, (18%) statins, (11%) beta blockers, (11%) nitrates, (11%) ARBs, and calcium channel blockers, loop diuretics, platelet inhibitors, benzodiazepines and tricyclic antidepressants were less prescribed.

Conclusion: Obesity-related hypertension is more common among women, and there is a positive correlation between body mass index (BMI), waist circumference, and hypertension.

Key words: obesity, hypertension, body mass index, waist circumference.

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INTRODUCTION:

The prevalence of obesity and obesity-related hypertension is increasing worldwide. The World Health Organization (WHO) estimates that half of the entire population was overweight and obese, including over 1.4 billion overweight adults. The prevalence of obesity in 2007–2008 was 32.2% among adult men and 35.5% among adult women. . Obese people are 3.5 times more likely to develop hypertension; 60% of adults with hypertension are > 20% overweight. It has been estimated that 60–70% of cases of hypertension in adults may result, in particular, from obesity.

Being overweight and obese are factors that increase the risk of high blood pressure. Hypertension was characterized by a systolic blood pressure of at least 140 mm Hg and / or a diastolic blood pressure of at least 90 mm Hg. Overweight or obesity has a body mass index (BMI) greater than 30 kg / m². (BMI = weight in pounds x 703 / height in inches). Hypertension can lead to overweight. The WHO BMI cut-off points for the Asian population were used for grouping according to the following results: Underweight - BMI less than 18.5 kg / m²; Normal weight - BMI 18.5 to 23 kg / m²; Overweight - BMI 23 to 27.5 kg / m²; and obese - BMI 27.5 kg / m² or more.

Abdominal obesity is characterized by a waist circumference greater than 102 cm for men and 88 cm for women. Obesity-related hypertension can cause the following signs and symptoms: severe headache, confusion, nausea, blurred vision, seizures, breathing problems (eg, resting apnea, chronic obstructive pulmonary disease), coronary artery disease. Lifestyle modifications include: weight loss, dietary hypertension management (DASH), salt restriction, behavioral changes, and increased physical activity. Adopting a robust lifestyle promotes weight loss, increases your ability to respond to antihypertensive medications, and has free, helpful consequences for heart-threatening factors. Losing weight is the most important step in reducing high blood pressure and improving your quality of life.

ACE inhibitors are expected to be the most appropriate drug to control cardiovascular stress in obese hypertensive patients. Beta-blockers may be more effective in reducing the burden on the circulatory system in obese people than in people with lean hypertension. But β -blockers may be associated with weight gain and the negative effects of glucose digestion. The use of beta-blockers as first-line physicians has been discussed in light of the fact that their effect on stroke confidence does not contrast positively with other antihypertensive operators. Despite the fact that calcium channel blockers do not induce adverse metabolic reactions and α -blockers are associated with increased insulin sensitivity and lipid digestion, there is no convincing motivation for their use as first-line medications for weight-related hypertension.

MATERIAL AND METHODS:

A question-based study was conducted in outpatient department of Medicine Unit-II of Holy Family Hospital, Rawalpindi for one-year duration from August 2019 to August 2020. 150 patients were interviewed. The sampling technique was convenient random sampling. A questionnaire-based questionnaire was used to analyze the relationship between body mass index (BMI), waist circumference (WC), and hypertension, which also included information on demographic, medical, personal, family health history, knowledge about obesity related to hypertension; lifestyle management and patient treatment.

Admission Criteria:

- Patients diagnosed with obesity-related hypertension.
- People who communicated with doctors.

Exclusion criteria:

- Patients who have been diagnosed with other heart conditions.
- Patients who refused to attend.

RESULTS:

A total of 150 of the respondents to this study were 40% male and 60% female. (Table 1) showed the demographic characteristics of the respondents.

Table: 1 Characteristic of patients:

Parameters	Variables	Frequency n=150	Percentage
Sex	Male	60	40%
	Female	90	60%
Age	30-40years	14	9%
	40-50years	58	39%
	50-60years	45	30%
	60-70years	30	20%
	70-80years	3	2%
Marital status	Married	142	95%
	Unmarried	8	5%
Educational status	Illiterate	55	37%
	Primary school	35	23%
	Secondary school	30	20%
	Skill institute	10	7%
	College/university	20	13%
Family history	Yes	27	18%
	No	123	82%
BMI Ranges	Under weight	0	0%
	Normal weight	1.5	1%
	Over weight	72	48%
	Class I obesity	49.5	33%
	Class II obesity	7.5	5%
	Class III obesity	19.5	13%
Patients knowledge about obesity related hypertension	Yes	13.5	9%
	No	136.5	91%
Patients consider themselves obese	Yes	57	38%
	No	93	62%
Patients compliance	Yes	145.5	97%
	No	4.5	3%
Sign and symptoms	Severe headache	49.5	33%
	Confusion	7.5	5%
	Nausea	4.5	3%
	Visual disturbance	10.5	7%
	Seizure	0	0%
	Breathing disorder	49.5	33%
	Coronary artery disease	3	2%
	Depression	25.5	17%

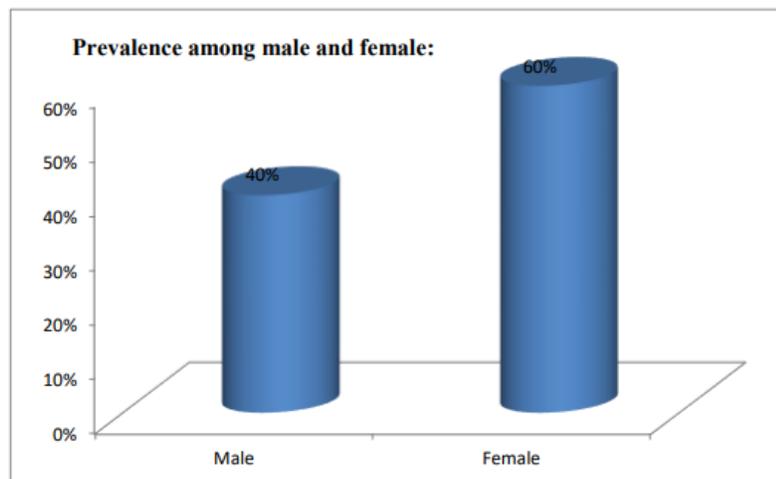
Most of the respondents (69%) are people aged 40-60. Most of them were married (95%), not single or divorced. As for education, most of them (80%) had a low level of education only up to high school, therefore most patients (91%) do not know about obesity-related hypertension, and most (62%) do not consider obese. Most of the subjects had signs and symptoms of severe headache (33%) and respiratory distress (33%). Most of the 123 patients (82%) had no family history of hypertension. With a mean body mass index (BMI), 48% of the respondents were overweight, 33% were class I obesity, and 13% were class III obesity (Fig. 3). The average waist circumference is greater in women (more than 88 cm) than in men (less than 102 cm).

Only 50% of the respondents eat fruit and vegetables, (45%) of the respondents sleep for five to seven hours, (36%) sleep less than 5 hours, and (55%) the respondent does not perform any physical activity (Table 2).

Table 2: Patients habits and management

Parameters	Variables	Frequency n=150	Percentage
Foods that patients eat most often	Fast food	1.5	1%
	Salty snacks	6	4%
	Baked goods	1.5	1%
	Sweets	1.5	1%
	Ice-cream	15	10%
	Fruits and vegetables	75	50%
	Cheese or yogurt	49.5	33%
Sleeping duration	Less than 5 hours	54	36%
	Five to seven hours	67.5	45%
	Eight hours or more	28.5	19%
Physical activity	Aerobic workout	0	0%
	Bicycling	0	0%
	Swimming	0	0%
	Walking	66	44%
	None	84	56%
Advice given by doctors	Advice to reduce salt intake	45	30%
	Advice to lose weight	46.5	31%
	Advice to stop smoking	6	4%
	Advice to do more exercise	52.5	35%
Prescribed medications	NSAIDs	33	22%
	Statins β	27	18%
	blockers	16.5	11%
	Nitrates	16.5	11%
	ARBs	16.5	11%
	Calcium channel blockers	9	6%
	ACE inhibitor	9	6%
	Loop diuretics	7.5	5%
	Platelets inhibitor	6	4%
	Benzodiazepines	4.5	3%
	Tricyclic antidepressants	4.5	3%

Most of the patients, 65%, were recommended more exercise and salt restriction. Most of the prescribed drugs are (22%) NSAIDs, (18%) statins, (11%) β -blockers, (11%) statins, (11%) ARBs, while calcium channel blockers, ACE inhibitors, loop diuretics, platelet inhibitors, benzodiazepines, and less commonly prescribed tricyclic antidepressants. (Figure 4).

**Figure 1**

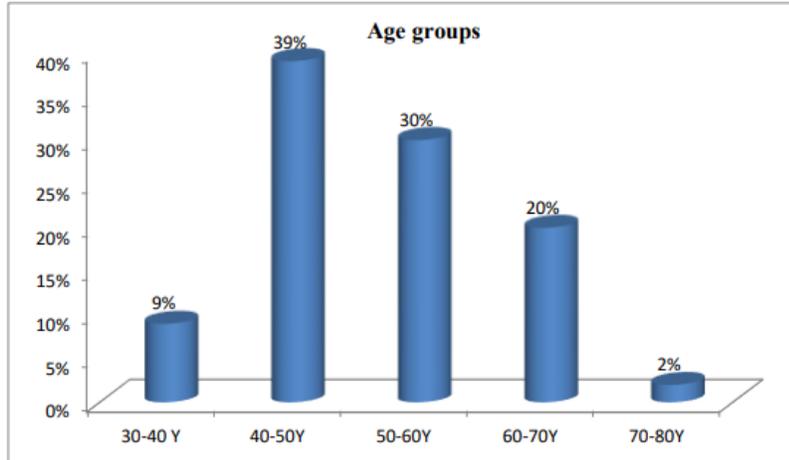


Figure 2

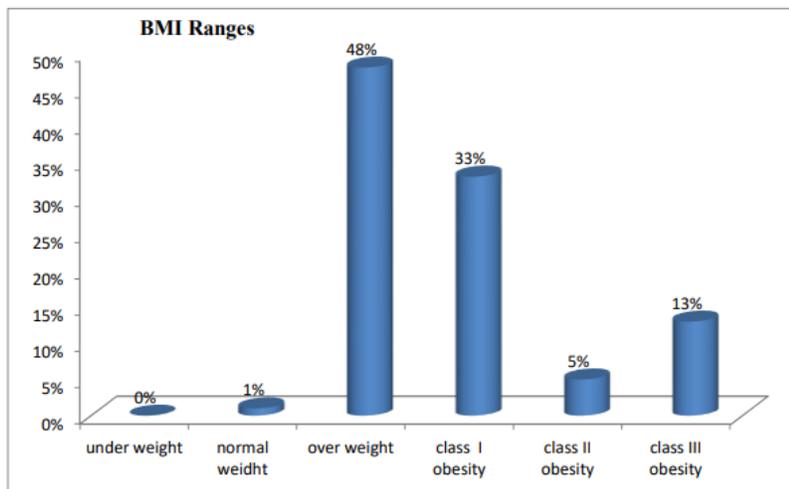


Figure 3

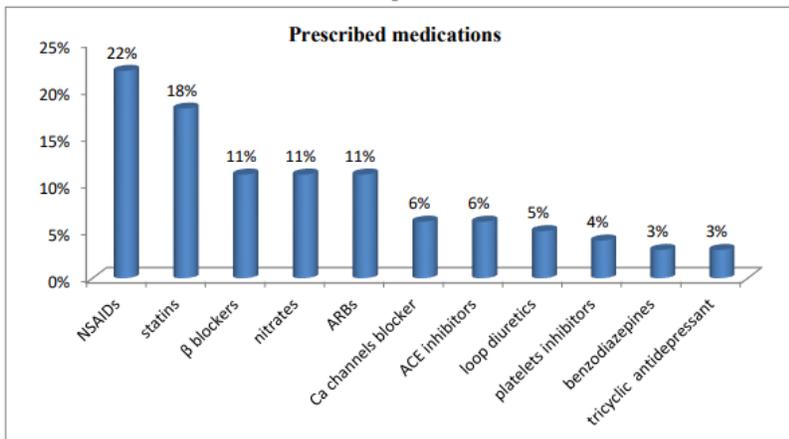


Figure 4

DISCUSSION:

This study showed that the prevalence of obesity-related hypertension is higher in women (60%) than in men (40%). This is irrelevant, confirming almost the same frequency as reported in other studies. This difference may be due to the difference in the studied population. However, some other studies have shown that obesity is more prevalent among women than men, and the 2013 Pakistan Health Demographic Survey has also confirmed the study. It has been found that the prevalence of obesity-related hypertension is higher in middle-aged and older people than in younger people. This may be because people with hypertension in the younger age group were less likely to be aware of increased blood pressure, while older people pay more attention to their health, resulting in a higher treatment rate.

Most of the patients were married (95%). This study shows a different result from a previous study in Malaysia which found that a person who divorced or split up was at greater risk of developing high blood pressure. The prevalence of obesity-related hypertension may increase due to the lower level of education, most patients (80%) were educated only to the middle class. Previous studies have shown that lower education levels are associated with a higher risk of developing high blood pressure and obesity, and these patients did not do better at keeping blood pressure under control. Due to the low educational status, most patients (91%) did not know about their disease, and most of them (62%), who did not consider themselves obese, are satisfied with their weight despite being overweight.

The main aim of the study was to interpret the relationship between hypertension and obesity in terms of body mass index and waist circumference. According to the values provided by WHO (World Health Organization), obese people have been divided into different classes. 48% of people were in the overweight group with BMI (25-29.9 kg / m²), 33% of patients in obesity class I with a BMI range of approximately (30-34.9 kg / m²). 5% were in the 2nd class with a BMI of about (35-39.9 kg / m²), and 13% in the 3rd class with a BMI > 40 kg / m². There was a positive correlation between BMI and hypertension. Earlier studies also confirmed a link between high blood pressure and obesity, as an increase in body mass index contributes to an increased incidence of hypertension. Average waist circumferences are larger in women (over 88 cm) than in men (under 102 cm). The most common symptoms were severe headache, breathing difficulties and depression.

A large proportion of the patients were obese and had high blood pressure due to environmental factors (eating habits, exercise, sleep habits). 82% of patients have no family history of hypertension. Only 50% of the respondents eat fruit and vegetables. 36% of respondents sleep less than 5 hours. Only a few patients exercised, most of them 56% did not do any physical activity or exercise because of the lack of time and laziness. Previous research in Pakistan has shown that a sedentary lifestyle contributes to increased obesity and to underlying diseases such as hypertension.

Various preventive strategies have been used in the treatment of obesity-related hypertension. Weight loss was the first line of therapy, as suggested by previous studies. Patients were advised to exercise more and reduce their salt intake (65%) and quit smoking. The general principles of pharmacotherapy in obese patients do not differ from those in healthy patients. Most of the prescribed drugs are (22%) NSAIDs, (18%) statins, (11%) β -blockers, (11%) statins, (11%) ARBs, while calcium channel blockers, ACE inhibitors, loop diuretics, platelet inhibitors, benzodiazepines, and less commonly prescribed tricyclic antidepressants.

The overall result suggests that obesity is an important risk factor for hypertension, as hypertension is more common in obese people than in others. The study is limited as only three hospitals were visited to collect the data, so the result might be roughly closer to the actual prevalence rate if each hospital were approached.

CONCLUSION:

Obesity-related hypertension is more common in women, and there is a positive correlation between body mass index (BMI), waist circumference, and hypertension. Weight loss is the first treatment option for obesity-related hypertension, and antihypertensive drugs and statins are also prescribed. Patient counseling can also have a positive impact on improving the patient's quality of life.

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