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Research Article

**A CROSS-SECTIONAL TO DETERMINE THE INCIDENCE  
OF HYPERTENSION AND RELATED FACTORS**<sup>1</sup>Dr. Maryam Naeem, <sup>2</sup>Muhammad Shahid, <sup>3</sup>Dr Muhammad Ahmad<sup>1</sup>Allama Iqbal Medical College<sup>2</sup>Jinnah Hospital Lahore<sup>3</sup>Faisalabad Medical University Faisalabad

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**Abstract:****Aim:** To determine the incidence of hypertension / obesity and factors affecting it.**Methods:** This cross-sectional study was held in the Medicine Unit II of Services Hospital Lahore for one-year duration from March 2019 to February 2020. No sample selection was used in this study. The study included people who underwent voluntary blood pressure monitoring (n = 1023). Blood pressure was classified according to JNC-8, and SBP 140 limits were obtained during the assessment, and body mass index limits (BMI kg / m<sup>2</sup>) was defined as BMI <30 and BMI during evaluation greater than 30. SPSS 21 was used to analyze statistical data, and p <0.05 proved to be statistically significant.**Results:** The ratio of people with SBP >140 was 244 (23.9%), and the ratio of people with BMI ≥ 30 was 312 (30.5%). The mean SBP of people with hypertension was 0.22 times (95% CI: 1.16-0.31) higher than that of people without hypertension, and the obesity rate was 0.49 times (95% CI: 0.36-0, 66).**Conclusion:** HT and obesity rates were found to be high in the subjects, and obesity was identified as an important HT risk factor. To prevent HT and obesity, diagnosis is necessary at an early stage to control HT. Awareness of the health risks caused by HT and people should be increased and encouraged to make the necessary changes in lifestyle behavior.**Key words:** awareness of hypertension, obesity, prevalence, HT.**Corresponding author:****Dr. Maryam Naeem,**  
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**INTRODUCTION:**

In all communities, hypertension (HT) and obesity are increasingly seen as health problems that are becoming an increasingly global epidemic. The relationship between hypertension and obesity has been known since 1900. Studies have shown the causes of obesity, along with an increase in heart rate, vasoconstriction and increased blood volume in the development of HT<sup>1-3</sup>. The relationship between body weight and blood pressure varies depending on age, sex and race. Weight gain increases the risk of HT<sup>4</sup>. According to data from the World Health Organization (WHO), he is responsible for the development of overweight and obesity, type 2 diabetes (DM), coronary heart disease and HT in adults in Europe. For this reason, the prevention of obesity instead of treatment has a very important place in the prevention of diseases caused by it. Although the possibility of early diagnosis and treatment of HT has increased in our country, awareness, routine blood pressure measurements and compliance with treatment are not at the desired level<sup>5</sup>.

Nurses play an important role in identifying global health problems associated with hypertension and obesity and reducing potential complications<sup>6</sup>. In international and national research, nurses play an important role in lowering blood pressure in patients at risk of developing chronic diseases; when making changes to your diet; in the recommendation of physical activity; drug compliance and monitoring of diet changes<sup>7</sup>. This study was conducted to determine the prevalence and effective solutions of hypertension and obesity.

**SUBJECTS AND METHODS:**

The cross-sectional survey was held in the Medicine Unit II of Services Hospital Lahore for one-year duration from March 2019 to February 2020. Volunteers were included in the study to control blood pressure (N = 1023). Test data was collected

using a questionnaire developed after a literature review. The questionnaire consists of 12 questions consisting of 3 open questions and 12 closed questions. Researchers checked the blood pressure in the right or left arm of participants after resting for at least 10 minutes. Blood pressure was classified according to JNC-8. SBP 140 breakpoints were obtained when assessing blood pressure (SBP). A scale was used to record weight in kilograms (kg) and a hard tape measure to measure height in centimeters (cm). On a delicate scale up to 0.5 kg, body weights were measured with light clothing, but without shoes. Height was measured by placing feet side by side and head in the Frankfort plane (eye triangle and top of the headphone in the same line). When assessing the body mass index (BMI kg / m<sup>2</sup>), BMI <30 and BMI ≥ 30 limits were obtained.

Data were evaluated in SPSS version 20 and statistical analysis of numbers, means, percentage distribution and standard deviation was calculated. Data compliance with normal dispersion was assessed using the Kolmogorov-Smirnov Z test. Chi-square analysis was performed and analyzed because they did not match the dispersion of nonparametric tests (p <0.05) and the relationship between variables and Spearman's rho test and logistic regression analysis. Analysis of all data showed that p <0.05 was statistically significant.

**RESULTS:**

The average age of those involved in the investigation was 51.74 ± 14.74 years. In the total sample, 1,023 people were examined of which 885 (86.5%) were married, 476 (46.5%) were women, 547 (53.5%) were men. The ratio of individuals with SBP > 140 was 244 (23.9%) and the ratio of those with BMI > 30 was 312 (30.5%). Descriptive characteristics of the study population are shown in Table 1.

**Table-1: Descriptive Characteristics.**

|                           | n (%)      |
|---------------------------|------------|
| <b>Age (years)</b>        |            |
| <24                       | 47 (4.6)   |
| 25-34                     | 89 (8.7)   |
| 35-44                     | 171 (16.7) |
| 45-54                     | 245 (23.9) |
| 55-64                     | 253 (24.7) |
| 65>                       | 218 (21.3) |
| <b>Gender</b>             |            |
| Female                    | 476 (46.5) |
| Male                      | 547 (53.5) |
| <b>Educational Status</b> |            |
| Not Literate              | 123 (12)   |
| Literate                  | 45 (4.4)   |

|                           |            |
|---------------------------|------------|
| Primary School Graduate   | 505 (49.4) |
| Secondary School Graduate | 140 (13.7) |
| High School Graduate      | 161 (15.7) |
| University Graduate       | 45 (4.4)   |
| Postgraduate              | 4 (0.4)    |
| <b>Marital Status</b>     |            |
| Married                   | 885 (86.5) |
| Single                    | 138 (13.5) |
| <b>Body Mass Index</b>    |            |
| BMI < 30                  | 711 (69.5) |
| BMI ≥ 30                  | 312 (30.5) |
| <b>Blood Pressure</b>     |            |
| SBP < 140                 | 779 (76.1) |
| SBP ≥ 140                 | 244 (23.9) |
| <b>HT Diagnosis</b>       |            |
| Yes                       | 336 (32.8) |
| No                        | 687 (67.2) |
| <b>HT Drug Use</b>        |            |
| Yes                       | 306 (29.9) |
| No                        | 717 (70.1) |

In the study group, mean SBP levels were higher in men than 132 (54.1%) and increased with age. The average SBP was higher in people diagnosed with hypertension than in people without HP. Variables such as HT, gender, age and diagnosis are important risk factors for people with HT ( $p < 0.05$ ) Table 2.

**Table-2: Comparison of factors affecting hypertension and obesity.**

| Variables                 | SBP≥140mmHg<br>n (%)   | BMI≥30<br>n (%)  |
|---------------------------|------------------------|------------------|
| <b>Gender</b>             |                        |                  |
| Female                    | 112 (45.9)             | 177 (56.7)       |
| Male                      | 132 (54.1)             | 135 (43.3)       |
| OR (%95CI) *              | 1.52 (1.09-2.12) 0.013 | 0.66 (0.49-0.89) |
| 0.004                     |                        |                  |
| p**                       | 0.013                  | 0.004            |
| <b>Age (years)</b>        |                        |                  |
| <24                       | 3 (1.2)                | 3 (1.0)          |
| 25 - 34                   | 9 (3.7)                | 17 (5.4)         |
| 35 - 44                   | 26 (10.7)              | 60 (19.2)        |
| 45 - 54                   | 58 (23.8)              | 84 (26.9)        |
| 55 - 64                   | 68 (27.9)              | 88 (28.2)        |
| 65>                       | 80 (32.8)              | 60 (19.2)        |
| OR (%95CI) *              | 1.20 (1.06-1.37)       | 1.00 (0.88-1.1)  |
| p**                       | 0.005                  | 0.725            |
| <b>Educational status</b> |                        |                  |
| Not literate              | 44 (18.0)              | 45 (14.4)        |
| Literate                  | 12 (4.9)               | 7 (2.2)          |
| Primary school Graduate   | 109 (44.7)             | 182 (58.3)       |
| Secondary school Graduate | 29 (11.9)              | 29 (9.3)         |

|                       |                  |                  |
|-----------------------|------------------|------------------|
| High school Graduate  | 40 (16.4)        | 42 (13.5)        |
| University graduate   | 7 (2.9)          | 5 (1.6)          |
| Postgraduate          | 3 (1.2)          | 2 (0.6)          |
| OR (%95CI) *          | 0.93 (0.82-1.06) | 0.90 (0.81-1.01) |
| p**                   | 0.27             | 0.075            |
| <b>Marital status</b> |                  |                  |
| Married               | 210 (86.1)       | 282 (90.4)       |
| Single OR             | 34 (13.9)        | 30 (9.6)         |
| (%95CI) *             | 1.08 (0.69-1.70) | 0.57 (0.37-0.87) |
| p**                   | 0.729            | 0.011            |
| <b>HT Diagnosis</b>   |                  |                  |
| Yes                   | 149 (44.3)       | 141 (42.0)       |
| No                    | 95 (13.8)        | 171 (24.9)       |
| OR (%95CI)            | 0.22 (1.16-0.31) | 0.49 (0.36-0.66) |
| p**                   | 0                | 0                |

Obesity is more common in women (177.7%) than in men, and the incidence of obesity is higher in married people. Gender, marital status and diagnosis of HT are important risk factors for the development of obesity ( $p < 0.05$ ) Table 2. A statistically significant relationship between HT and obesity was observed when assessing the relationship between SBP and obesity. ( $r = 0.68$   $p = 0.03$ ).

### DISCUSSION:

Currently, a number of studies on HT and obesity have shown that its prevalence is growing rapidly worldwide. Despite the preventive measures taken, an alarming increase in both hypertension and obesity is observed in developed and less developed countries. According to research conducted in our country, the incidence of HT ranges between 24.2% and 44.0%. The global prevalence of HT, genetic, demographic and socio-cultural differences is extreme (5.2% - 70.7%) due to the different methods used in research<sup>8</sup>. The incidence of HT in this study was 23.9%. Although the incidence of HT in the population varies, the incidence of HT is generally high.

After studying the literature, the incidence of HT was between 14.1–39.8% in men and 29.5–32.3% in women. While various research results suggest that the incidence of HT is higher in women, there are studies that claim to be more common in men<sup>9</sup>. One study found that the incidence of hypertension ranged from 30.2% to 45.8% in men and 23.8% to 40.3% in women. In another study, the incidence of HT was 58.5% in men and 41.5% in women. When the average PAS sex was examined, this study showed that the incidence of HT was higher in men, but no statistically significant difference was found (Table 2). It is reported that the risk of hypertension increases with age<sup>10</sup>. In one study, the incidence of HT was 70% in the age group 60-69 years, 76% in the age group 70-79 years and 79.7% in the age group 80 years and older<sup>11</sup>. This study is in line with the literature on the occurrence of hypertension,

which increases with age in both men and women. The incidence of hypertension increases 3.63 times in women and 2.83 times in men aged 65 years and older. Therefore, it can be said that age is also an important risk factor for hypertension. In our study, the incidence of obesity was 30.5%<sup>12</sup>. According to data from the Nutrition and Health Survey, the prevalence of obesity in Pakistan is 30.3%. According to statistical data, the Statistical Institute of Pakistan is 19.9%. Recently, Pakistan has conducted several studies in various regions related to obesity and according to this study the incidence of obesity ranges from 31.7% to 23.4%.

In a six-year 12-year study by WHO in Asia, Africa and Europe, the incidence of obesity increased by 10-30% in 10 years. Research results show that overweight people are found mainly in countries such as Albania, Bosnia and Herzegovina and England (Scotland), while overweight trends are younger and live in Turkmenistan and Uzbekistan. Other studies have differences in the prevalence of obesity, as is the case in different regions where people's eating habits change. However, the results of these studies unanimously show that the overall incidence of obesity is quite high. When the distribution of obesity by sex is studied in the literature, the incidence of obesity is between 24.5-41% in women and 12.9% -20.7% in men<sup>13</sup>. According to a series of studies on adults in Europe, the propensity for overweight was between 32% and 79% for men and 28% - 78% for women; the incidence of obesity ranged from 5% to 23% in men and from 7% to 36% in women. In our study, the

incidence of obesity in men was 0.6 times higher and was consistent with the literature<sup>14</sup>. It is believed that the higher rate of obesity in women than in men is due to physiological and biological factors such as sedentary lifestyle, fast diet, eating more calories, pregnancy, childbirth, and lactation.

Obesity is considered an important risk factor for the development of HT<sup>15</sup>. Several epidemiological studies between different populations have shown that obesity is an independent risk factor for hypertension. This study examined the relationship between HT and obesity and found that the incidence of HT was 1.4 times higher. The probability of hypertension is 2 to 3 times higher in obese people than in the reviewed literature, and at least 1/3 to 2/3 of people with hypertension are obese. In addition, people who are overweight have 1.8 to 2.0 times more hypertension compared to people with BMI within normal limits, while obese people have 2.2 to 5.1 times more hypertension. Another study showed that the development of HT in obese people increased 2-fold.

### CONCLUSION:

High HT and obesity rates were identified in this study and obesity was identified as an important HT risk factor. Gender and obesity are risk factors for the development of HT, and the incidence of HT and obesity increases with age. In addition, this study found that people who were not diagnosed with HT but who had high average SBP were not aware of the desired level of HT.

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