



## PREVALENCE OF PRE-HYPERTENSION IN KASHMIR

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**ABSTRACT** **Introduction:** Hypertension is a worldwide health disaster. It is probably the most important public health problem in developed countries.

**Objective:** The purpose of the present study was to estimate prevalence of Pre-hypertension in Kashmiri population.

**Type of study:** A Community based cross sectional study.

**Material and Methods:** A total of 3900 population was taken for study. Blood Pressure was measured 3-4 minutes after the subject was comfortable using correctly sized cuff. Blood pressure was measured twice within an interval of one hour and average of systolic and diastolic blood pressure was taken. Each reading was mean of three BP readings. Pre-hypertension was diagnosed as per Joint National Committee 7 (JNC VII) criteria.

**Results:** Our study showed overall prevalence of pre-hypertension around 24.35% and age has a positive correlation with prevalence of pre-hypertension. Prevalence of pre-hypertension was more common in females (26.67%) as compared to males (22.47%).

**Conclusion:** Prevalence of pre-hypertension is comparable to prevalence of pre-hypertension in most of the developing nations and is ever increasing.

**KEYWORDS :** Pre-hypertension, Blood Pressure, Prevalence.

**INTRODUCTION:**

Hypertension affects million of adults worldwide over and its prevalence is increasing<sup>1</sup>. It is probably the most important public health problem in developed countries<sup>2</sup>. It is estimated that 65 million people in united states are affected with hypertension so it is not surprising that blood pressure measurement is one of the most common reason to visit a doctor<sup>3,4</sup>. Patients with blood pressure <120/80 are Normotensive, those with systolic blood pressure of 120-139 or diastolic blood pressure of 80-89 is Pre-hypertension, systolic blood pressure of 140-159 or 90-99 is stage I Hypertension and systolic blood pressure of >160 or diastolic blood pressure of >100 is stage II Hypertension<sup>5</sup>. Also patients with systolic blood pressure of >140 and diastolic blood pressure of <90 are labeled as having Isolated systolic Hypertension<sup>5</sup>. Hypertension is a worldwide health disaster. It is frequently referred as silent killer and kills 35-40 thousand Americans a year<sup>6</sup>.

The rate of progression of pre-hypertension to hypertension can be relatively rapid particularly in those whose blood pressures lie in upper portion of pre-hypertension range and in elderly individuals. Data from 1999 and 2000 National Health and Nutrition examination survey estimated the prevalence of pre-hypertension among adults in United States was approximately 31%<sup>7</sup>.

**AIMS AND OBJECTIVES:**

The purpose of the present study was to estimate prevalence of Pre-hypertension in Kashmiri population.

**MATERIAL AND METHODS:**

A community based cross sectional study was carried out in the Kashmir valley for a period of 3 years to measure the prevalence of pre-hypertension in Kashmiri population.

The study group included subjects  $\geq 19$  years of age irrespective of gender. A multistage sampling procedure was adopted for the survey. Out of the ten districts of Kashmir, three districts were included in the survey. Srinagar, Budgam and Baramulla, representing the urban, semi-urban and the rural population.

The selected households were visited, the purpose of study was explained to them and consent was taken from them to participate in the study.

A total of 3900 population was taken for study.

Blood Pressure was measured 3-4 minutes after the subject was comfortable using correctly sized cuff. Blood pressure was measured twice within an interval of one hour and average of systolic and diastolic blood pressure was taken. Each reading was mean of three BP readings. Blood pressure was estimated in non dominant arm in sitting position.

Pre-hypertension was diagnosed as per Joint National Committee 7 (JNC VII) criteria.

**Exclusion Criteria:**

1. Subjects aged less than 19 years.
2. Pregnant females.
3. Subjects with Kidney disease.
4. Subjects on antihypertensive drugs or any other drugs that leads to change in blood pressure.

**RESULTS:****Table 1: Distribution of population as per gender**

Sex	Frequency(n)	Percentage(%)
Male	2060	52.82
Female	1840	47.18
Total	3900	100

The data depicted in Table 1 shows proportion of respondents i.e. 52.82% were male and 47.18% were females.

**Table 2: Distribution of population as per residence**

Residence	Males		Females		Total	
	n	%	n	%	n	%
Rural	1172	30.05	1112	28.6	2284	58.52
Urban	738	18.92	878	22.5	1616	41.48
Total	1910	48.9	1990	51.1	3900	100

In our study, 58.52% of participants were rural and 41.48% were urban.

**Table 3: Distribution of BP in the study population as per JNC-7 (VII)**

BP(mmHg)	Males		Females		Total	
	n	%	n	%	n	%
<120	1504	73.00	1249	67.00	2753	70.58
120-139/80-89	463	22.47	487	26.67	950	24.35
>140/90	93	4.51	104	5.65	197	5.05
Total	2060	100	1840	100	3900	100

p value=0.002

In our study, there was statistically significant difference in pre-hypertension regarding sex and pre-hypertension is more common in females than in males. The prevalence of pre-hypertension is observed as 24.35% in the study population as per JNV-7(VII).

**Table 4: Pre-hypertension in various age groups**

Age group	Male	Pre-HTN	%	Female	Pre-HTN	%	Total	Pre-HTN	%
19-29	390	17	4.35	302	21	6.95	692	38	5.49
30-39	460	62	13.47	438	72	16.43	898	134	14.92
40-49	610	143	23.44	520	132	28.38	1130	275	24.33
50-59	370	165	44.59	300	158	52.66	670	323	48.20
60& above	230	76	33.04	280	104	37.14	510	180	35.29
Total	2060	463	22.47	1840	487	26.46	3900	950	24.35

p value=0.001

The above table shows that there is a steep rise in prevalence of pre-hypertension with increase in age and pre-hypertension is maximum in population age between 50-60 years.

**DISCUSSION:**

Our study showed overall prevalence of pre-hypertension around 24.35%. Muneer et al<sup>8</sup> showed a prevalence of pre-hypertension of 25.06%. Eliezer Kitai et al<sup>9</sup> showed a similar prevalence of pre-hypertension 23.25%. Trevor S. Ferguson<sup>10</sup> et al reported prevalence of pre-hypertension 30% among Jamaican adults. Our study showed that the prevalence of pre-hypertension was more common in females (26.67%) as compared to males (22.47%). Eliezer Kitai et al<sup>9</sup> showed a similar trend with females (24.0%) compared to males (22.5%). Deepa M et al<sup>11</sup> showed a similar pattern of pre-hypertension from urban Indian city (Chennai) with females more than males. Age has a positive correlation with prevalence of pre-hypertension. Our study showed a progressive rise in prevalence of hypertension with increase in the age of subjects with prevalence of 5.49% in age group 19-29 and maximum prevalence of 48.20% aged between 50-59 and followed by 35.29% aged 60 years and above. Study by Trevor S. Ferguson et al<sup>10</sup> showed a similar age relationship with maximum prevalence of 36.39% in age group 45-64 years and this fell to 20% among those aged 65-74 years. Study by Deepa.M et al<sup>11</sup> showed a similar pattern of increase in prevalence with increasing age from the study from urban Indian city (Chennai). Study by Eliezer Kitai et al<sup>9</sup> showed a similar increase in prevalence of pre-hypertension with increase in age (13% aged 18-25 Vs 44.8% aged 66-75). In our study we found a strong relationship between place of residence and pre-hypertension with prevalence more in urban than rural areas (60.02% versus 39.78%). Study by S. Yadav et al<sup>12</sup> and Shyamal Kumar et al<sup>13</sup> showed overall higher prevalence of pre hypertension in either study from urban India. Study by M. Janghorbani et al<sup>14</sup> in their study reported higher prevalence in urban than rural population in Iranian population.

**CONCLUSION:**

Our Study concluded that the prevalence of pre-hypertension is comparable to prevalence of pre-hypertension in most of the developing nations and is ever increasing.

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