Hypertension in relation to Age and Sex in an Indian community
Maharaj Biswas* and Chanchal Kumar Manna
Endocrinology laboratory, Department of Zoology, Faculty of science, University of Kalyani, Kalyani-741235, Nadia, West Bengal, India,
E-mail : maharajabiswasbwn@gmail.com

Abstract
The main aim and objective of this study were to point out the age and sex-wise prevalence and distribution of hypertension within the Scheduled Caste Community of the District Nadia, West Bengal, India. Door-to-door population based survey work was conducted to collect data regarding hypertension like age, sex, weight, height, waist, hip, salt intake, oil intake, heart rate, blood pressure, lipid profile, blood sugar etc. from the studied people (N=2,453). Data were analyzed using the chi-square test at both 1% and 5% levels of significance. Overall crude prevalence of hypertension was 15.85% of the people studied. There was a significant increase of hypertension with increasing age (p<0.001). Male (17.43%) showed a higher hypertensive rate than female (14.35%). The incidence of hypertension was significant in the elderly, and it is slightly higher in male than female.

Keywords: Hypertension, Scheduled Caste Community, blood Pressure, cardiovascular disease and prevalence.

Introduction
Hypertension is a condition related to the abnormal high blood pressure of an individual. When SBP/ DBP ≥ 140 / 90 mmHg, it is called hypertension (JNC VIIth report, 2003). It is a common health problem in developed countries and a major risk factor for cardiovascular disease (Castelli, 1984). Hypertension is an important independent predictor of cardiovascular diseases, cerebrovascular accidents and death (Murray and Lopez, 1997 and WHO, 2001).

Extensive evidence has demonstrated that wall thickening and dilation are the major structural changes that occur in the large elastic arteries during aging (Lakatta and Sollott, 2002, Ferrari, 2002 and Lakatta 1993). Factors that contribute to the increased wall thickening and stiffness in aging include increased collagen, reduced elastin, and calcification. The amount of extracellular matrix increases and becomes particularly rich in glucosaminoglycans. These changes should not be considered “atherosclerotic” even though the factors are associated with this disease process (Homma et al., 2001). When the large arteries become stiffer, there is an increase in systolic arterial pressure, and a widening of the pulse pressure (Lakatta and Levy, 2003).

In the Scheduled Caste community of the District Nadia, West Bengal, India, no such studies were done on the prevalence of hypertension in relation to age, sex and other risk factors. Considering its importance in the present studies were made to point out the current prevalence and distribution of hypertension in relation to age and sex in the studied people whose age ranged
Table - 1. Age and sex-wise prevalence of ISH, IDH, PH and hypertension (HTN) within the Scheduled Caste Community of the District Nadia, West Bengal, India

<table>
<thead>
<tr>
<th>Age and Sex</th>
<th>Number</th>
<th>Normal (%)</th>
<th>Prevalence of hypertension (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>ISH</td>
</tr>
<tr>
<td>Total population surveyed (N)</td>
<td>2,453</td>
<td>50.02</td>
<td>6.48</td>
</tr>
<tr>
<td>Age groups</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-29 years</td>
<td>595</td>
<td>84.03</td>
<td>2.85</td>
</tr>
<tr>
<td>30-39 years</td>
<td>472</td>
<td>71.61</td>
<td>2.75</td>
</tr>
<tr>
<td>40-49 years</td>
<td>624</td>
<td>35.89</td>
<td>6.25</td>
</tr>
<tr>
<td>50-59 years</td>
<td>423</td>
<td>25.53</td>
<td>10.63</td>
</tr>
<tr>
<td>60-69 years</td>
<td>215</td>
<td>20.00</td>
<td>13.95</td>
</tr>
<tr>
<td>70-79 years</td>
<td>124</td>
<td>13.70</td>
<td>12.09</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>1,199</td>
<td>40.07</td>
<td>7.00</td>
</tr>
<tr>
<td>Females</td>
<td>1,254</td>
<td>58.93</td>
<td>5.98</td>
</tr>
</tbody>
</table>

ISH = Isolated systolic hypertension, IDH = Isolated diastolic hypertension, PH = Pre-hypertension and HTN = hypertension

Table – 2. Age-wise distribution of hypertension within the Scheduled Caste Community of the District Nadia, West Bengal, India

<table>
<thead>
<tr>
<th>Age groups</th>
<th>20-29</th>
<th>30-39</th>
<th>40-49</th>
<th>50-59</th>
<th>60-69</th>
<th>70-79</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertensive</td>
<td>24</td>
<td>36</td>
<td>107</td>
<td>127</td>
<td>48</td>
<td>42</td>
<td>384</td>
</tr>
<tr>
<td>Non-hypertensive</td>
<td>571</td>
<td>436</td>
<td>517</td>
<td>296</td>
<td>48</td>
<td>82</td>
<td>2,069</td>
</tr>
<tr>
<td>Total</td>
<td>595</td>
<td>472</td>
<td>624</td>
<td>423</td>
<td>215</td>
<td>124</td>
<td>N=2,453</td>
</tr>
</tbody>
</table>

\( \chi^2 = 105.004, \text{ d.f.} = 5, p < 0.001 \)

from 20 - 79 years. Hope this study will help to recommend a specific life style to regulate blood pressure within this community.

Materials and Methods

Study Population and data collection

A door-to-door community based survey work was conducted to investigate the prevalence of hypertension within the SC community of three selected villages (viz., Chowgachha, Bagula and Priyanagar) of the district Nadia, West Bengal, India. About 2,453 members of households of study areas were interviewed and detailed information (i.e., age, sex, weight and height for BMI, waist and hip for WHR, HR, blood pressure, physical activity, oil intake, salt intake, blood pressure, heart rate, lipid profile, blood sugar, serum and urine electrolytes etc.) regarding hypertension were recorded. Average age of the studied individuals is approximately 41.58 ± 14.25 (range, 20 - 79 yrs). Data were collected from 10.00 am to 4.00 pm. The biochemical analysis was done by a semi-automatic biochemical analyzer (Prietest-easy lab, Robonik India Pvt. Ltd., Mumbai, India). In the present study, age and sex-related hypertension was reported.

Statistical analysis

All the data were analyzed by using Chi-square (\( \chi^2 \)) test at both 1% and 5% levels of significance.

Results

The prevalence of hypertension, according to age and sex in studied people was given in Table - 1. Overall crude prevalence of ISH, IDH, PH and
hypertension were 6.48%, 7.54%, 20.09% and 15.85% respectively in the studied people.

The Chi-square test showed that there was a significant ($\chi^2=105.004$, d.f.=5, p<0.001, Table - 2) association between ageing and hypertension. From the observation of gender-wise distribution of hypertension it was found that the rate of ISH, IDH, PH and HTN in male and female were 7.00%, 10.67%, 24.18%, 17.43% and 5.98%, 4.54%, 16.18%, 14.35% respectively.

There was no doubt that hypertension was associated with ageing, but in this study, it was found that hypertension was suddenly raised (approx 4 to 5 times higher than first two age groups, i.e., 20 - 29 years and 30 - 39 years) just after 39 years of age. It was also found that the rate of hypertension was highly raised in 50 - 59 years (30.26%) and 70 - 79 years (33.87%) of age groups among all six age groups of the people studied.

**Discussion**

The rate of pre-hypertension, hypertension, ISH and IDH increased gradually with increasing age in the studied people. The prevalence of hypertension was found to be raised after 40 years of age, but it was very high after 50 years. From this study it was observed that ageing had the key role in the development of hypertension.

Cross sectional population studies showed that SBP increases throughout life, whereas DBP increases until about 50 years and then declines in men and women and in all racial groups (Burt et al., 1995). It is now widely recognized that the risk of cardiovascular diseases (CVDs) in individuals beyond 50 years of age is best predicted by SBP (Kannel et al., 1971; Izzo et al., 2000; Franklin et al., 2001; JNC, 2003 and Lewington et al., 2002).

The maximum (33.87%) and minimum (4.03%) incidence of hypertension was noticed in the age group of 70 - 79 years and 20-29 years, respectively. In a study it was observed that the prevalence of hypertension was age related, being the highest in those over 50 years (Singh et al., 2000 and Kotchen et al., 1982). Whereas in another study it was found that 60% of the hypertensive groups were above the age of 50 years (Shanthirani et al., 2003).

Hypertension was also found to be higher in male (17.43%) than female (14.35%). Similar results were also found by some other researchers (Jajoo et al., 1993; Joshi et al., 2000 and Biswas and Manna, 2011).

This study leads to resolve that the prevalence of hypertension was associated with ageing, especially after 40 years of age. Care should be taken after this stage of age for the prevention of hypertension.

**Conclusion**

The prevalence and distribution of hypertension in relation to age within the Scheduled Caste community of various blocks of the District Nadia, West Bengal, India, was not studied previously. The present study will emphasize that hypertension after the age of 40 years should be taken care seriously, as there is a tendency to increase the pressure levels after the age of 40 years within the studied people.
Acknowledgement

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References


**Corresponding Author**: Maharaj Biswas, Endocrinology laboratory, Department of Zoology, Faculty of science, University of Kalyani, Kalyani-741235, Nadia, *Email*: maharajabiswasbwn@gmail.com © 2015, *IJALS. All Rights Reserved.*