

Prevalence of hypertension and its correlates among adult population living in an urban area of West Bengal

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ABSTRACT

Introduction : Non-communicable diseases (NCD) are the leading cause of adult mortality and morbidity worldwide now days. The NCD like hypertension is emerging as a major health problem in India with increasing prevalence significantly in both urban and rural population. Hence, an investigation was undertaken to find out prevalence of hypertension and its correlates among adult population living in an urban area of West Bengal.

Methodology : This community based cross sectional study was conducted in Tangra area of Kolkata. A sample of 100 (45-59 years) individuals was selected by the standard random sampling technique. Chi-square test and multiple logistic regression were employed using SPSS software package.

Results : The overall prevalence of hypertension was 32% and higher among participants of occupation employed/business (22%), regular alcoholic (14%), high BMI (16%). While in the bivariate analysis many of the factors correlate with hypertension, occupation, family history and body-mass index, remained significant in the multivariate analysis. **Conclusions :** The prevalence of hypertension in the study population was found to be on the higher side compared to previous reports from India. Strong public health measures need to be seriously implemented to combat hypertension and its consequences.

Keywords: Awareness, Correlates, Hypertension, Prevalence, West Bengal,

Introduction :

Non-communicable diseases (NCDs) are the leading cause of adult mortality and morbidity globally. Among the NCDs, hypertension is one of the important components which are a major chronic lifestyle disease and most prevalent NCD in India.

Epidemiological studies conducted in many parts of the world have consistently identified an important and independent link between high blood pressure and various disorders, especially coronary heart disease, stroke, congestive heart failure, eye problems and impaired renal function. Many factors like alcohol consumption and smoking also increase the risk.¹

WHO report identifies hypertension, the silent killer, as one of the important risk factors for cardiovascular diseases worldwide. Globally, approximately 40% of adults aged 25 and above had been diagnosed with hypertension; the number of people with the condition rose from 600 million in 1980 to 1 billion in 2008. High salty and fatty diet and body mass index (BMI) have a positive correlation with hypertension whereas physical activity is negatively related.²

The technological and economical developments in the nation have reduced the physical activities of the people to a very large extent and increased the alcohol consumption.^{1,3,4} The prevalence of Hypertension (HTN) in developed countries is 25% among adults⁵ and similar prevalence is also observed in developing countries ranging from 10% to 20% among adults.⁶ Cardiovascular diseases caused 2.3 million deaths in India in the year 1990 and are projected to double by the year 2020.⁴ Hypertension is directly responsible for 57% of all stroke deaths and 24% of all coronary heart disease deaths in India.⁴

In India, more specifically in West Bengal, community based epidemiological studies in the rural areas on the prevalence of hypertension and its associated risk factors are scarce in literature. Hence, an investigation was undertaken in Domjur block of Howrah, West Bengal, to find out the magnitude of the problem and associated risk factors. The above block was selected due to resource constraints and operational feasibility.

Materials and Methods:

Between August and December 2023, this community based cross sectional study was conducted in Tangra area of Kolkata. The main occupation of the urban community was office and labour work.

A sample size of 100 was fixed by considering the study on hypertension among adults in a community of central India, prevalence of hypertension was found to be 19.04%.⁷ All men and women in the age group of 45-59 years except pregnant women were the study

population. The standard systematic random sampling technique was employed for the data collection.⁸ In the each cluster the households were selected randomly to collect the data.

Sampling : A structured schedule was pre-designed, pre-tested and used to collect the data on demographic characteristics,(viz., age, sex, marital status, type of family, etc.), socio-economic characteristics (religion, caste, education and occupation), awareness, system of medicine, life style related information (viz., alcohol consumption, physical activity). Occupation was defined as sedentary (jobs involving desk work, mainly domestic activities); mild as home maintenance activities, (gardening, feeding cattle or livestock, washing linen/clothes by hand, carrying firewood) moderate or greater level of physical activity (agriculture work in fields, pulling a cart or rickshaw, quarry work, cycling, rowing, carpentry, masonry).⁹

Inclusion Criteria : All the men and women in the age group of 45-59 were included in the study.

Exclusion Criteria : Unwilling individuals, pregnant women and moribund patients were excluded from the study.

Statistical analysis : The data were tabulated in Microsoft Excel 2007 and analyzed by using Statistical Package for the Social Sciences (SPSS) version 20.0 software for proportions and chi-square tests as test of significance and binomial logistic regression analysis. Significance of association between hypertension (dependent variable) with the different independent χ variables was analysed by chi-square (χ^2) test. P value less than 0.05 was considered as statistically significant.

The Blood Pressures of each study subject was recorded two times by a doctor having a minute apart by a dial sphygmomanometer as per the standard procedures prescribed by WHO .¹⁰ The average of all the four readings of SBP and DBP (two from the left and two from the right arm). *The lowest values of SBP and DBP were used as the blood pressure of the participant.* Body mass index (BMI) is defined as weight (kg)/height (meter)². BMI was again classified into low weight, normal weight and over weight/obese according to the WHO criteria as less than 18.5 kg/m², 18.5 to 24.99 kg/m² and ≥ 25 kg/m² respectively.¹¹

The hypertension status and blood pressure distribution of the study sample were assessed using standard criteria.¹² Hypertension is an SBP ≥ 140 mm Hg and/or a DBP ≥ 90 mm Hg for those who were not on treatment with anti-hypertensive medication. Those who were already on anti-hypertensive medication were marked as hypertensive. However, their readings on blood pressure were taken, irrespective of whether they are on the medication or not, for the calculation of average SBP and DBP.

The prevalence of hypertension and risk factors for high blood pressure are presented as percentages. The Prevalence according to social-groups, life-style and other factors are compared using chi-square test wherever applicable. The average SBP and DBP were calculated irrespective of whether the subjects were on anti-hypertensive medication or not. Informal consent was obtained from all the respondents before the survey. Information Education and Communication (IEC) and counseling services were provided to all the study subjects and appropriate referral services were also extended to the identified hypertensives.

Results :

The demographic, socio-economic and life-style characteristics of the 100 study individuals aged 45-59 years (64 female and 36 male) were collected in the study area. Among the participants, 28%, 42%, and 30% of them belonged to 45-49, 50-54, and to 55-59 age groups respectively. Majority (80%) of the study group belonged to nuclear family and 48% of them were Illiterate. It was noticed that nearly 14% of them had the habit of tobacco chewing, consuming alcohol and snuffing.

Out of 100 respondents, 32% had hypertension [43.75% among 55-59 yrs old] ($P < 0.01$). The average systolic and diastolic blood pressure levels were [mean + SD] 128 ± 16 and 82 ± 24 respectively. Table-1 shows the details of respondents classified in various grades of their hypertension. About 22% of the respondents of both the sexes fell in the optimal BP category [Table-1].

Figure 2 showed that mean systolic and diastolic blood pressure in five different age groups where mean SBP and DBP increased with the increase in age.

In the table 2 prevalence was found to be more among married (20%), compared to currently unmarried (12%) ($P < 0.05$). Muslims had the highest prevalence (65%) than Hindus (32%) and Christians (31%) ($P < 0.05$). Differences noticed between caste groups were not statistically significant. Analysis among the various types of occupation revealed that the prevalence was high among service / business (22%) ($P < 0.01$). It was less among illiterates (6%) ($P < 0.05$). However, levels of education did not show any association with the prevalence.

Among the respondent who had expressed the family history of existence of hypertension for any of their blood relatives, the prevalence was 75% than those who did not have (25%) ($P < 0.01$). The results of multivariate logistic regression analysis involving all the significant variables listed above revealed that age, BMI and family history were associated with hypertension. Normal BMI and obese/high BMI category respectively had the odds of 2.5

and 4.9 times more risk of being hypertensive than those of low BMI category ($P < 0.01$). Age was also associated with hypertension ($P < 0.05$). It was found to be increasing as the age increased. However, the increase noticed between the first two age groups namely 45-50 years (reference) and 50-55 years was not statistically significant. People in the 55-59 years age group had the higher odds (2.26 times) of having hypertension than the younger age groups ($P < 0.01$). Families with the history of hypertension had nearly 3.1 times higher risk of being hypertensive than those who did not have the history ($P < 0.01$).

Table 1: Distribution of Blood Pressure according to WHO grades (n=100)

Variable	No. of Persons	%
Optimal	22	22
Normal	32	32
High normal	14	14
Grade I	20	20
Grade II	08	08
Grade III	04	04
Total	100	100.0

Figure 1: Trend of systolic and diastolic blood pressure according to age group (n=100).

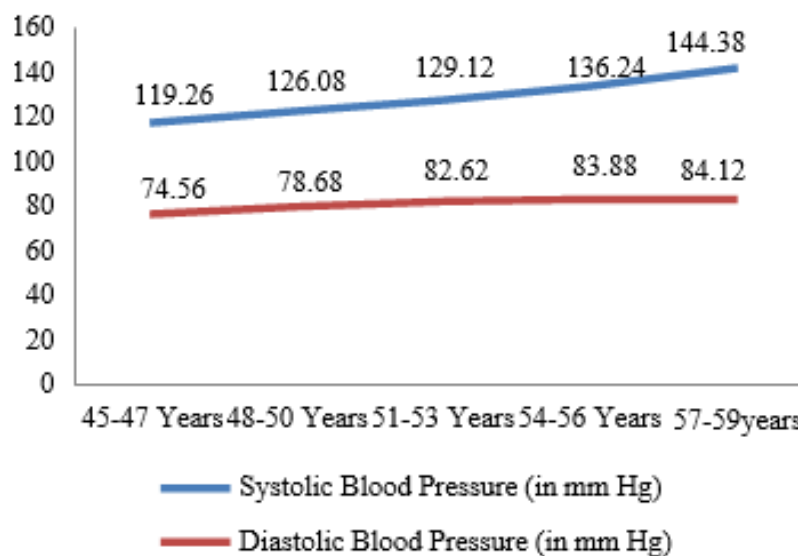


Table-2: Prevalence of hypertension by Demographic, Socio-economic, Alcohol consumption and BMI (n=100)

Characteristics	Variables	HTN	Chi sq.	p-value
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		No.	%		
Age	45 - 49	8	8	7.648	0.024
	50 - 54	10	10		
	55 - 59	14	14		
Gender	Male	18	18	0.684	0.248
	Female	14	14		
Marital Status	Married	20	20	3.648	0.124
	Unmarried	12	12		
Religion	Hindu	10	10	8.284	0.64
	Christian	8	8		
	Muslim	14	14		
Caste	General	16	16	4.020	0.428
	SC/ST	10	10		
	OBC	6	6		
Literacy	Illiterate	6	6	8.320	0.182
	Up to primary	8	8		
	Secondary	12	12		
	Higher secondary and above	6	6		
Occupation	Employed/Business	22	22	13.442	0.000
	Daily Labour	10	10		
Family history of HTN	Present	24	24	26.524	0.000
	Absent	8	8		
Alcohol Consumption	Non alcoholic	6	6	0.046	0.248
	Occasional	12	12		
	Regular	14	14		
Body Mass Index	Low BMI	4	4	36.292	0.000
	Normal	12	12		
	High	16	16		

Discussion :

A higher prevalence of hypertension has been reported in many studies conducted in the middle-aged population of both rural and urban areas of our country.¹³ The findings of the present study provide direct evidence of higher prevalence of hypertension (32%) among the rural population.¹³ An urban community survey in West Bengal has reported a prevalence of 50.25 % in the same age-group.¹⁴ The association of hypertension with age, BMI, education and occupation was reported previously on many occasions.^{10,15} The present study further has

revealed its association with family history of hypertension. It shows that the prevalence of HT in Grade –I, II and III as 20%, 8%, and 4% respectively in contrary to study findings among elderly population (i.e.) 11.4%, 16.9%, 29.8% in Bangladesh and India.¹⁰

Conclusion and recommendation

The study found that more needs to be done to increase knowledge about hypertension among urban populations through health education programs, as well as to emphasize preventive measures like regular exercise, lifestyle modification, and maintaining an ideal body weight among sedentary individuals. It has been shown that regular aerobic exercise is good for the prevention and management of hypertension. BP screening of the population is the only reliable way to diagnose hypertension.

Physicians might encourage opportunistic screening because West Bengal's primary health care system has sufficient capabilities. Once more, training and use of multipurpose health workers—both male and female—is an option for the identification and tracking of hypertension. They can be used to encourage better compliance from their patients and to raise awareness in the community.

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