

A Community Based Study on Prevalence of Hypertension and Correlates among Adult Population Living In a Rural Area of West Bengal

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Abstract:

Introduction: Hypertension is one of the major causes of cardiovascular morbidity and mortality. However, community based studies in the rural areas of India and specifically in West Bengal on the prevalence of hypertension and its associated risk factors is scarce. Hence, an investigation was undertaken with specific objectives. **Objective:** To find out prevalence of hypertension and correlates among adult population living in a rural area of West Bengal. **Methodology :** This community based cross sectional study was conducted in Domjur block of Howrah A sample of 406 (45-59 years) individuals was selected by the standard 30 cluster systematic random sampling technique. Chi-square test and multiple logistic regression were employed using SPSS software package. **Results :** The overall prevalence of hypertension was 33% and higher among sedentary type (41%). While in the bivariate analysis many of the factors correlate with hypertension, only body-mass index, family history and age remained significant in the multivariate analysis. **Conclusions :** Hypertension, considered generally an urban disease, makes its strong foot in the rural community. Early efforts in the identification, effective management and IEC among the rural community through training multipurpose health workers recommended.

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

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I. Introduction

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 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 (HT) 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.

II. Materials and Methods

Between May and September 2017, a community based cross sectional study was conducted in Domjur block of Howrah district with a population of 3,32,812. The main occupation of the rural community was agriculture and related work.

A sample size of 406 was fixed by considering the study on hypertension among adults in a rural 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 30 cluster 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.

III. Results

The demographic, socio-economic and life-style characteristics of the 406 study individuals aged 45-59 years (219 female and 187 male) were collected in the study area. Among the participants, 43, 32, and 25% 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 406 respondents, 33% had hypertension [45% among 55-59 yrs old] ($P < 0.01$). The average systolic and diastolic blood pressure levels were [mean + SD] 130 ± 19 and 83 ± 11 respectively. Table-1 shows the details of respondents classified in various grades of their hypertension. Only about 17 % of the respondents of both the sexes fell in the optimal BP category [Table-1].

The prevalence [Table-2] was found to be more among widowed, divorced or separated (44%), compared to currently married (32%) (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 sedentary persons type (41%)(P<0.01). It was less among illiterates (27%)(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 HT for any of their blood relatives, the prevalence was 61% than those who did not have (27%)(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. The overall prediction of the model was 72.3 %. 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

Variable	No. of Persons	%
Optimal	71	17.5
Normal	129	31.8
High normal	73	17.9
Grade I	82	20.2
Grade II	41	10.1
Grade III	10	02.5
Total	406	100.0

Table-2: Prevalence of HT by Demographic, Socio-economic, Alcohol consumption and BMI

Variables	Values	HTN Status (%)	N	Chi sq.	p-value
Age	45 - 49	28	175	8.619	0.013
	50 - 54	31	131		
	55 - 59	45	100		
Sex	Male	31	187	0.595	0.219
	Female	35	219		
Marital Status	Currently married	32	349	2.829	0.096
	Others	44	57		
Religion	Hindu	32	308	7.957	0.019
	Christian	31	81		
	Muslim	65	17		
Caste	SC/ST	26	80	3.019	.221
	MBC	30	59		
	BC/OC	36	266		
	Joint	34	80		
Literacy	Illiterate	27	194	7.900	0.048
	1-5 yrs.	43	79		
	6-8 yrs.	38	63		
	More than 8th	36	70		
Occupation	Sedentary	41	218	12.918	0.000
	Mild	24	188		
Family history of HT	Present	61	67	27.341	0.000
	Absent	27	287		
Alcohol Consumption	Non alcoholic	33	357	0.019	0.991
	Occasional	33	24		

	Regular	32	25		
Body Mass Index	Low BMI	16	122	35.264	0.000
	Normal	35	207		
	High	56	77		
Total		33	406		

IV. 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 (33%) 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 2.5%, 10.1%, and 20.2% respectively in contrary to study findings among elderly population (i.e.) 11.4%, 16.9%, 29.8% in Bangladesh and India.¹⁰

V. Conclusion and recommendation

The study revealed that there is a need for strengthening the knowledge though health education programs among the rural population, promoting HTN awareness, and emphasizing preventive measures such as lifestyle modification, regular exercises and maintenance of optimal body weight among the sedentary persons. Regular aerobic physical activity has been demonstrated to be beneficial for both prevention and treatment of hypertension. The only effective method for the diagnosis of HTN is BP screening of the population. As the facilities in the primary health care system in West Bengal are adequate, promoting opportunistic screening by physicians is achievable. Again, multipurpose health workers (male & female) can be trained and utilized for the detection and monitoring of HTN. They can be utilized to promote awareness in the community and as well as motivate their patients to improve compliance.

Thus, the findings of this study suggest that hypertension diseases considered as problems in urban areas are setting their foot in the rural areas, which may emerge as a public health problem of higher magnitude if ignored.

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