



A Study on Undiagnosed Hypertension and Its Associated Factors among Adults Residing in a Rural Area of West Bengal

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Financial Support: None declared

Conflict of Interest: None declared

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How to cite this article:

Chakraborty N, Mandal AK. A Study on Undiagnosed Hypertension and Its Associated Factors among Adults Residing in a Rural Area of West Bengal. Natl J Community Med 2018; 9(1): 60-63.

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Date of Submission: 04-01-18

Date of Acceptance: 29-01-18

Date of Publication: 31-01-18

ABSTRACT

Background: Currently, hypertension is one of the important cause of cardiovascular morbidity and mortality worldwide.

Objective: To estimate the prevalence and determinants of undiagnosed hypertension in a rural area of West Bengal.

Materials and methods: A descriptive, observational, cross-sectional study was conducted in Daspara village of Amdanga Block, Barasat, North 24 Parganas among 166 adults in the age group 20-59 years. Data was collected using a pre-designed and pre-tested schedule and data analysis was done by proportions and Chi-square tests.

Results: Pre-hypertension and hypertension was present in 31.9% and 24.1% of the study population respectively. Prehypertension and hypertension was more common in 40-49 years age group, females, those belonging to nuclear families, people of Hindu religion, people belonging to class 3 socio-economic status as well as people with higher BMI, smoker, alcoholics, high salt intake and absence of physical activity. Significant association was found with age, type of family, socio-economic status, BMI, salt intake, alcohol consumption and smoking. ($p < .005$)

Conclusion: Hypertension is more prevalent in people with higher BMI, smoker, alcoholics. high salt intake and absence of physical activity. Thus lifestyle modification is expected reduce the prevalence of this disease and its associated comorbidities.

Keywords: Hypertension, BMI, Physical Activity

INTRODUCTION

Hypertension has emerged as one of the important causes of cardiovascular disease and death in the recent years. It has become a leading public health problem worldwide. The WHO estimated that every year, at least 7.5 million deaths are due to hypertension¹. According to results of pooled epidemiological studies, the prevalence of hypertension in India have been found to be 25% and 10% in rural and urban population respectively. 57% of deaths due to stroke and 42% of deaths from coronary heart disease can be attributed to hypertension^{2,3}. Early diagnosis, treatment along with lifestyle modification is essential for the management

of hypertension. However, in developing countries like India the prevention and control measures are grossly inadequate, though the prevalence of the disease is very high⁴. Industrialisation, urbanization as well as lifestyle changes seem to be the important contributors of hypertension. It has been seen that hypertension is no longer restricted to elderly and higher socio-economic groups, and the disease is becoming common in younger age groups and lower classes as well^{5,6}.

To highlight the magnitude of the disease, particularly in rural areas, the given study was undertaken with the objective of estimating the preva-

lence of undiagnosed hypertension and its associated factors in a rural area of West Bengal.

MATERIALS AND METHODS

A descriptive, observational, cross-sectional study was conducted in the Daspara village of Amdanga block in Barasat, North 24 Parganas district of West Bengal in February-March 2014. All adults in the age group 20-59 years, and permanent residents of the village, and not on any antihypertensive medication, were included in the study. Sampling was done by total enumeration method. There were 169 adults fulfilling the above mentioned criteria, of which two people were unavailable at the time of interview and another person refused to participate in the study. So the sample size was 166.

After obtaining informed consent from the participants, a pre-designed, pre-tested schedule was used for data collection. Information regarding socio-demographic characteristics such as age, sex, religion, type of family, socio-economic status (B.G. Prasad) were collected.

The criteria laid down by Seventh report of Joint National Committee of Hypertension were used for classification of hypertension⁷. According to the classification, hypertension was said to be present when the Systolic blood pressure was ≥ 140 mm Hg and/or the diastolic blood pressure was ≥ 100 mm Hg. People with Systolic B.P. in the range of 120-139 mmHg and/or diastolic B.P. in the range of 90-99 mm Hg were classified as prehypertensives. Blood pressure was recorded in sitting position twice at intervals of five minutes and average reading calculated.

JNC VII Criteria for Hypertension (HT)

	Systolic BP	and	Diastolic BP
Normal	<120 mm Hg		<80 mm Hg
Pre-HT	120-139 mm Hg	and/or	80-89 mm Hg
Stage 1 HT	140-159 mm Hg	and/or	90-99 mm Hg
Stage 2 HT	≥ 160 mm Hg	and/or	≥ 100 mm Hg

Body Mass index was calculated by the formula weight in kg/height in m². Obesity was classified according to the cut-off level of BMI for South East Asian countries:

Classification	Range
Underweight	<18.50
Normal weight	18.50 - 22.99
Over weight	23.00 - 24.99
Obese	>25.00

Also information regarding smoking, alcohol intake, salt intake and physical activity were noted. Regular physical activity was considered as 30 minutes of moderate intense activity for at least 5

times a week according to WHO guidelines. Regarding salt intake, the cut-off point was taken as 5g/day⁸. For alcohol intake, the cut-off was taken as taking (around 30 ml of ethanol) more than two alcoholic drinks for at least 5 days per week⁸.

The data analysis was done using statistical software SPSS 20. Chi-square tests and proportions were used for data analysis.

RESULTS

Out of 166 study subjects, hypertension was present in 40(24.1%) subjects, while 53(31.9%) of them were prehypertensive and the remaining 73(44%) people had normal blood pressure.

Hypertension and pre-hypertension was found to be present maximally in the age group 40-49 years (40.8%). Again hypertension and pre-hypertension was more commonly observed in females (50.5%), among people belonging to Hindu religion (69.8%), in persons residing in nuclear families (71%), in people belonging to Class 3 socio-economic class (40.8%). (Table 1)

Hypertension and prehypertension were found to have significant association ($p < .005$) with age, type of family and socio-economic status. (Table 1)

Prehypertension and hypertension was found to be more common (50.5%) in those who were overweight (BMI 23-24.99), with salt intake more than 5 g/day (61.3%) among smokers (50.6%), among alcoholics (83.9%) and persons without any physical activity (70.9%) (Table 2).

Hypertension and prehypertension were found to have significant association ($p < .005$) with BMI, smoking, salt intake and physical activity. (Table 2)

DISCUSSION

The prevalence of prehypertension and hypertension was found to be 31.9% and 24.1% respectively in the present study. This finding was similar to a study conducted among West Indian population where the prevalence of hypertension in apparently healthy population was only 26%⁹. Also, similar findings were found in a study conducted in Delhi where the overall prevalence of hypertension was 27.5%¹⁰. The prevalence of prehypertension and hypertension was found to be 32.3% and 32.2% in a study conducted by Yadav et al from Lucknow in the rural Central India¹¹. Similarly the prevalence of hypertension was found to be 25.2% by Kannan et al¹² from rural Tamil Nadu while prevalence of hypertension was 19.04% and prehypertension 18.8% in a study by Prashant R et al¹³ from rural central India.

Table 1: Association of Hypertension and Prehypertension with socio-demographic characteristics

Socio-demographic Characteristic	Normal (%) (n=73)	Prehypertension and hypertension(%) (n=93)	Total (%) (n=100)	P value	OR	95% CI
Age in years						
20-29	37(50.6)	12(12.9)	49(29.5)	<0.001		
30-39	18(24.6)	32(34.4)	50(30.1)			
40-49	12(16.4)	38(40.8)	50(30.1)			
0-59	6(8.4)	11(11.9)	17(10.3)			
Total	73(100.0)	93(100.0)	166(100.0)			
Sex						
Male	20(27.4)	46(49.5)	66(39.8)	0.004	2.594	1.35-4.99
Female	53(72.6)	47(50.5)	100(60.2)			
Total	73(100.0)	93(100.0)	166(100.0)			
Religion						
Hindu	51(69.8)	65(69.8)	116(69.9)	0.997	0.999	0.51-1.95
Muslim	22(30.2)	28(30.2)	50(30.1)			
Total	73(100.0)	93(100.0)	166(100.0)			
Type of Family						
Joint	39(53.4)	27(29.0)	66(39.8)	0.001	2.804	1.48-5.33
Nuclear	34(46.6)	66(71.0)	100(60.2)			
Total	73(100.0)	93(100.0)	166(100.0)			
Socio-economic status						
Class1	2(2.7)	15(16.1)	17(10.2)	<0.001		
Class2	22(30.1)	28(30.1)	50(30.1)			
Class3	12(16.4)	38(40.8)	50(30.1)			
Class4	27(36.9)	6(6.5)	33(19.9)			
Class5	10(13.9)	6(6.5)	16(9.7)			
Total	73(44.0)	93(31.9)	166(100.0)			

Table 2: Association of Hypertension with the following characteristics

Characteristic	Normal (%) (n=73)	Prehypertension and Hypertension(%) (n=93)	Total (%) (n=166)	P value	OR	95%CI
BMI						
18.5-22.99	53(72.6)	12(12.9)	65(39.2)	<0.001		
23-24.99	20(27.04)	47(50.5)	67(40.3)			
≥25	0(0.0)	34(36.6)	34(20.5)			
Salt intake						
≤5 gm/day	63(86.3)	36(38.7)	99(59.6)	<0.001	9.975	4.541-21.911
>5 gm/day	10(13.7)	57(61.3)	67(40.4)			
Smoking						
Smoker	12(16.5)	47(50.6)	107(64.5)	<0.001	0.193	0.092-0.404
Non-smoker	61(83.5)	46(49.4)	59(35.5)			
Alcohol intake(consuming more than 2 alcoholic drinks at least 5 days per week)						
Yes	61(83.5)	78(83.9)	139(83.7)	0.957	1.023	0.446-2.345
No	12(16.5)	15(16.2)	27(16.3)			
Physical activity(30 mins.of moderately intense activity at least 5 times a week)						
Present	55(75.3)	27(29.0)	82(49.4)	<0.001	7.469	3.726-14.974
Absent	18(24.7)	66(70.9)	84(50.6)			

A Study conducted by Das et al, in West Bengal revealed 24.9 percent of hypertension and 35.8 and 47.7 percent pre-hypertension in systolic and diastolic groups respectively¹⁴. In the present study, the prevalence of hypertension is more as the age increases and the association was statistically significant. A study by Desai et al.¹⁵also found hypertension to be more prevalent in higher age groups. However, in this study the prevalence of prehypertension and hypertension was only 11.9% in the age group 50-59 years which may be due to lower number of study subjects in this age group. A higher prevalence of prehypertension and hyper-

tension was found in females(50.5%)compared to males(49.5%) which is consistent with a study by Jajoo (1993) et al conducted in Sevagram¹⁶.The prevalence of prehypertension and hypertension was found to be higher in nuclear families as compared to joint families(71% vs 29%).Similar findings were reported by another study which found the prevalence of hypertension to be more in nuclear families¹⁷.This may be due to more social and economic security in joint families along with division of labour which leads to less stress and thus the risk of developing hypertension is less compared to nuclear families. Though studies¹⁸ have

shown the prevalence of hypertension to be higher in upper socio-economic class, the present study revealed the prevalence to be maximum in people belonging to Class 3 socio-economic status while it was only 16.1% and 30.1% in class 1 and class 2 socio-economic status respectively. This difference may be due to lesser number of subjects belonging to higher classes among the study population.

Prehypertension and hypertension was found to be more in people with higher BMI in this study which is comparable to studies by Jajoo et al.1993¹⁶, Das et al.2005¹⁹, Malhotra et al.1998¹⁸. Also prehypertension and hypertension was found to be more in people consuming more than 5 gm salt per day and people consuming more than two alcoholic drinks at least 5 days per week. Similar findings have been reported by Singh²⁰ and Sadhukhan²¹ in their study. Again, prehypertension and hypertension was found to be more common among smokers and people without any physical activity and the association was statistically significant. These findings are consistent with the study by Malhotra et al.¹⁸

Prevalence of pre-hypertension is also high (31.9%) in this study. Thus initiating prevention and control measures at this stage may prevent the development and complications of hypertension in these people.

CONCLUSION

The overall prevalence of pre-hypertension and hypertension in this study is 31.9% and 24.1% respectively. The prevalence of hypertension was found to be higher in persons with high BMI, high salt intake, smokers, persons consuming alcohol and sedentary activity. Thus controlling the above risk factors by lifestyle modification is necessary for prevention and control of this non-communicable disease as well as its complications.

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