



A STUDY ON HYPERTENSION AND ITS RISK FACTORS AMONG THE ADULTS OF A RURAL POPULATION IN TEZPUR, ASSAM

Community Medicine

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ABSTRACT

Background: Hypertension, a global public health issue, has shown increased prevalence in rural India. Being an iceberg disease, the actual burden of hypertension has often been underestimated. Worldwide, raised blood pressure is estimated to cause 7.5 million deaths, about 12.8 percent of the total of all deaths. **Objective:** To find out the prevalence of hypertension and to assess the various factors related to hypertension among the adults of a rural population near Tezpur city. **Materials and Methods:** This is a community based cross-sectional study carried out in the Tumuki village situated near Tezpur Medical College and Hospital, Assam. House-to-house survey was conducted in the village and a total of 540 participants were included in the study. A predesigned, pretested semi-structured schedule was used to collect necessary information and the respondents were examined for blood pressure, height and weight. **Results:** The overall prevalence of hypertension was found to be 21.67% (Males-10.55%, Female-11.12%). It was found that 55.55% of hypertensive subjects were current users of tobacco of any type and 10.25% were currently taking alcohol. Among the hypertensive, 30.77% reported of having positive family history and 32.48% reported to be taking extra salt in the diet regularly. From the study it is seen that hypertension is significantly associated with age group, obesity, family history of hypertension, tobacco use and extra salt intake. **Conclusion:** The high prevalence of hypertension among the adults demands an urgent need for awareness for prevention of further complications and lead a healthy life.

KEYWORDS

Hypertension, Adults, Rural, Assam.

INTRODUCTION

Just as mankind started to get a hold on infectious diseases with the help of vaccines and antibiotics, the turn of the twenty-first century brought with it a new global health challenge in the form of non-communicable diseases. Gradually and steadily, NCDs have taken a hold on the morbidity and mortality charts to the point of being termed as an 'invisible epidemic' by the World Health Organization. Of the 56.9 million deaths worldwide in 2016, ischemic heart disease and stroke account for a combined 15.2 million deaths and the scenario has remained the same for the past 15 years.¹ Hypertension may not manifest as a serious problem in itself, but is of great concern mainly due to the complications it leads to, viz. stroke, coronary artery disease, cerebrovascular disease, cardiac and renal failure.

As per NFHS 4 (2015-16), the overall prevalence of hypertension in India was 29.8%.² Hypertension is attributable to 10.8% of all deaths in India and 4.6% DALYs in the country.³ In Assam, the prevalence of hypertension was found to be 33.3%, as per NFHS 4. In rural areas of Assam, prevalence among men was found to be 19.8% whereas prevalence among women was 17.6%. The prevalence of hypertension in the native population of Assam is higher than the national figure of 29.8%. This is of significant importance as the incidence of hemorrhagic stroke in Assam is the highest in the country.

There are several factors which lead to the development of hypertension. Age itself increases the risk of hypertension and related complications. It is estimated that the probability of developing hypertension for a middle-aged or elderly individual in his or her lifetime is about 90%.⁴ Family history is also a major predictor of hypertension. Men are usually more prone than women; however women tend to have more adverse outcomes. Smoking and alcohol are the two most important and most preventable risk factors. Lack of physical activity and unhealthy diet lead to obesity, which further contribute in developing raised blood pressure. The habit of taking extra salt in diet is another important risk factor.

In the beginning, hypertension was considered prevalent only in the affluent sections of the society. However, recent times have shown a rapid increase of NCDs in the rural population as well. Rapid urbanization and modernization have led to dramatic reduction of physical activity, along with increased consumption of fast food, alcohol, tobacco and its products. More notably, the lack of awareness and inaccessible quality healthcare has rendered them vulnerable to such a trend. The present study was carried out with the objective to

estimate the prevalence of hypertension and its associated risk factors among the adults of a rural population.

MATERIALS AND METHODS

This community-based cross-sectional study was conducted in the Tumuki village situated near Tezpur Medical College and Hospital, Assam, which is a field practice area under the Department of Community Medicine, TMCH. This study was a part of student project under the Department of Community Medicine and it was carried out from March 2018 to September 2018 and ethical clearance was obtained from Institutional Ethics Committee.

The entire village was taken up for the study and the study population included adults aged 20 years and above, who were permanent residents of the village. A total of 540 individuals (Male-262 and Female-278) were included for the study. After explaining the purpose of the study, an informed consent was obtained, following which people were interviewed using a predesigned and pretested semi-structured schedule. Interviews were conducted by house-to-house visit. The pregnant women and people who did not give consent were excluded. Those individuals who were not present on two repeated visits were also excluded from the study.

Blood pressure was measured in the right upper arm in the sitting position with a mercury sphygmomanometer by auscultatory method after being asked to be relaxed for at least five minutes. Two readings were taken at an interval of 5 minutes and the mean was considered to be the individual's blood pressure. Hypertension was assessed as per JNC 8 classification.⁵ Height was recorded to the nearest 0.1 cm using a measuring tape and the weight was recorded by using a bathroom type weighing scale after correcting zero error. The BMI was calculated using the formula $\text{weight(kg)} / \text{height(m)}^2$ and assessment was done according to WHO classification.⁶ The socioeconomic status was assessed using Modified BG Prasad classification (2017).⁷ The findings of the study were tabulated and presented as percentages and Chi-square test was also applied. Few operational definitions were taken regarding tobacco and alcohol use:

- Never-user: respondent who has never taken any tobacco/alcohol product in his/her lifetime.
- Ever-user: who has taken any tobacco/alcohol product during his/her lifetime, may continue to take or has given up. This is further classified as current-user and ex-user.
- Current-user: who has been currently using any tobacco/alcohol product during the last 30 days.

- Ex-user: who has taken any tobacco/alcohol product in his/her lifetime, but has given up or has not been using for the last 30 days.
- Non-user: includes both never-user and ex-user.

RESULTS

Table 1 shows the distribution of the respondents as per their socio-demographic characteristics, where 31.67% belonged to 20-29 years age group and 9.26% were of more than 60 years of age. Majority of them were Hindus (97.96%) and hailed from Joint family (60%). As per socio-economic status, most of the villagers fall in Class I (87.59%) while none of them belonged to Class V as per Modified BG Prasad classification.

The overall prevalence of hypertension was found to be 21.67%, whereas 36.67% of the population were pre-hypertensive. It was found that among the hypertensive subjects, the number of females (60) exceeded that of males (57). However in the pre-hypertensive category, majority were males (118), as per Table 2.

The prevalence of tobacco use in life time (ever-user) was found to be 54.07% (292) and among them, 281 respondents are current tobacco users. Similarly, 10.74% of the villagers (58) were ever-users of alcohol and among them, 21 are current-users.

Table 3 shows the different parameters related to hypertension. Highest number of hypertensive individuals (30) were found in the 50-59 years age group, whereas highest proportion (92.3%) were found in >60 years age group. Among the hypertensive, 101 individuals hail from Class I socioeconomic status and 30.77% of the hypertensive had a family history of hypertension. From the study, it was found that the 65 (55.55%) and 12 (10.25%) hypertensive individuals were current users of tobacco and alcohol respectively. Out of the 117 hypertensive individuals, 12 were obese and 38 people gave a history of regular intake of extra salt in diet Table 3 also shows the association of hypertension with different variables and it is found that hypertension is significantly associated with age group, obesity, family history of hypertension, smoking and extra salt intake.

Table 1

Characteristics	Male (n=262)		Female (n=278)		Total (n=540)	
	Number	%	Number	%	Number	%
Age Group (years)						
20-29	84	15.56	87	16.11	171	31.67
30-39	55	10.19	90	16.67	145	26.85
40-49	55	10.19	47	8.7	102	18.89
50-59	38	7.04	34	6.3	72	13.33
≥60	30	5.55	20	3.71	50	9.26
Religion						
Hindu	257	47.6	272	50.3	529	97.96
Islam	5	0.93	6	1.11	11	2.04
Caste						
General	99	18.33	102	18.89	201	37.22
OBC	112	20.74	122	22.59	234	43.33
SC	38	7.03	42	7.78	80	14.81
ST	13	2.40	12	2.18	25	4.58
Socio-economic status						
Class I	230	42.6	243	44.99	473	87.59
Class II	27	5	23	4.26	50	9.26
Class III	4	0.74	9	1.67	13	2.41
Class IV	1	0.18	3	0.56	4	0.74

Table 2

Category	Male (n=262)		Female (n=278)		Total (n=540)	
	Number	%	Number	%	Number	%
Normal	87	16.11	138	25.55	225	41.67
Pre Hypertension	118	21.85	80	14.81	198	36.67
Hypertension Stage I	40	7.4	42	7.78	82	15.18
Hypertension Stage II	17	3.15	18	3.34	35	6.49

Table 3

Parameters	Hypertensive (n=117)	Non-hypertensive (n=423)	p-value
Age Group(years)			

20-29	10	161	
30-39	27	118	<0.05
40-49	26	76	
50-59	30	42	
≥60	24	26	
Socio-economic status			
Class I	101	372	
Class II	11	39	>0.05
Class III	4	9	
Class IV	1	3	
Family History of Hypertension			
Yes	36	73	<0.05
No	81	350	
Duration of Tobacco use			
<5 years	8	44	<0.05
5-10 years	16	86	
>10 years	41	86	
Duration of Alcohol use			
<5 years	1	2	
5-10 years	2	2	>0.05
>10 years	9	5	
BMI			
Obese	12	9	<0.05
Non Obese	105	414	
Extra Salt Intake			
Yes	38	80	<0.05
No	79	343	

DISCUSSION

According to this study, the prevalence of hypertension among the adult population of Tumuki village stands at 21.67% and prevalence of pre-hypertension at 36.67%. Similar rate of prevalence of hypertension (23.5%) has been obtained in a study by Singh N et al (2017) in a rural area of Jorhat, Assam.⁸ However, Choudhury SA et al (2017) found the prevalence of hypertension to be 43.45% in the rural adult population of Kamrup, Assam.⁹ Similar study conducted by Karmakar N et al (2017) in the rural community of Hooghly district, West Bengal found the overall prevalence of hypertension to be 26.1%.¹⁰ The variation in these studies may arise due to different demographic composition as well as socio-cultural differences across regions.

Usually, men tend to show a higher prevalence of hypertension than women. However, in this study, it was observed that the number of hypertensive females (60) exceeded that of males (57). Similar studies conducted in different parts of the country have found women to have higher prevalence viz. Bhardwaj S et al (2012) in Nagpur and Ingale AS et al (2017) in Aurangabad.^{11,12} Higher number of females in the study population might have led to the disparity in results. This study found that 46.15% of the hypertensive were above the age of 50. Gogoi AJ (2019) in rural Dibrugarh, Assam found the highest mean systolic and diastolic blood pressures in the age category of ≥60 years and 40-59 years respectively.¹³ Although the cut-off for age groups with maximum prevalence of hypertension have varied from study to study, a strong association has been seen between increasing age and prevalence of hypertension. With increasing age, arterial walls get stiffened, oxidative stress is increased and inflammatory cascade is set in by endothelium-derived vasoactive mediators, all of which contribute to the underlying pathophysiology for this association.

It was observed that 21.35% of individuals belonging to Class I socioeconomic status were hypertensive. However, Ingale AS (2017) in a study conducted in Aurangabad found that majority of hypertensive fall into Class IV and V socioeconomic status.¹² A positive family history puts one at greater risk of developing hypertension later in life. In this study, 30.77% of hypertensive individuals reported to have a family history of hypertension. A study conducted by Singh N et al (2017) in Jorhat, Assam found 21.27% hypertensive with a positive family history, whereas Das P et al (2016) in Guwahati, Assam found it to be 38.30%.^{8,14}

From the study it was found that 12 out of 21 obese individuals were hypertensive and the association between obesity and hypertension

was statistically significant. Gogoi AJ (2019) in Dibrugarh, Assam and Chandwani H et al(2010) in Gujarat also reported positive association of hypertension with obesity.^{13,15} From the study it was found that 55.55% hypertensive subjects have a history of usage of tobacco and tobacco products and the association between the two was found to be statistically significant. Mahanta TG (2016) in Dibrugarh district and Choudhury SA (2015) in Kamrup district also found a positive association between smoking or usage of smokeless tobacco and hypertension.^{16,9} A contributing factor to this might be the inherent tradition of consumption of areca nut with tobacco in these parts of the country. Along with this, gutkha and cigarettes are also widely consumed. In this study, 10.25% hypertensive individuals had a history of taking alcohol, which is not statistically significant.

Extra intake of salt has shown positive association with hypertension in this study. Out of 117 hypertensive individuals, 38 reported to be taking extra salt regularly with their meals. A study conducted by Singh N et al found extra salt intake to be a major risk factor for hypertension.⁶ Devi P et al conducted a systemic review in 2013 and found intake of extra salt in the diet to be one of the most common risk factors to develop hypertension.¹⁷

CONCLUSION

Prevalence of hypertension and prehypertension were found to be high among the rural population of Tumuki village, Tezpur. Modifiable risk factors like consumption of tobacco, obesity, taking extra salt in diet etc. were also found to be quite prevalent among the hypertensive population of the village. Hence it is imperative to raise awareness among them to adopt a healthy lifestyle. Regular health check-ups should be conducted for early detection of hypertension and necessary intervention must be taken for prevention of its complications.

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