

Prevalence, treatment and control of hypertension among the elderly people in a rural community of Bangladesh

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Abstract

Background: Hypertension is a worldwide challenge. The prevalence of hypertension among the adult (≥ 15 years) and the elderly people (≥ 60 years) in Bangladesh are 13.5% and 65% respectively. **Objective:** To measure the prevalence of hypertension and its associated factors among the people over 50 years in a rural community of Puthia Upazila, Rajshahi. **Methods:** This was a cross-sectional descriptive type of study conducted among the rural people over fifty years in different villages of Puthia Upazila, Rajshahi, Bangladesh. Total 412 participants over 50 years were included in this study. Data were collected with the help of semi-structured interview schedule by face to face interview. Blood pressure of the respondents were measured by sphygmomanometer and stethoscope. Data were analyzed in computer using SPSS program. Association between variables were conducted applying Chi-square. Multiple logistic regression analysis was used to identify the risk factors of hypertension. **Results:** The prevalence of hypertension among the people over 50 years in the rural community was 44.4%, among them, more than 43% did not received treatment. Only 15.3% of the hypertensive patients controlled their blood pressure. Female, lower monthly family income and diabetes mellitus were identified as important risk factors of hypertension. **Conclusion:** Country-specific guidelines of hypertension based on local competing health care priorities and economic realities is needed to be formulated in Bangladesh. Opportunistic screening at individual level during routine visits in different health care centers in order to identifying patients at high risk of cardiovascular diseases should be encouraged in Bangladesh.

Key words: hypertension, risk factors, Bangladesh.

Introduction

Although blood pressure is easily measurable it has taken several decades to realize that hypertension is a frequent world wide health disorder.¹ Hypertension is a worldwide challenge because of its high prevalence in the adult population and the concomitant increase in risk of stroke, myocardial infarction (MI), congestive heart disease (CHD), sudden cardiac death, peripheral vascular, cerebrovascular and end-stage renal disease.^{2,3} The prevalence of hypertension is showing an upward trend in most countries.⁴ Near the beginning of the twenty-first century, it is estimated that nearly one billion people are affected by hypertension worldwide, and this figure is predicted to increase to 1.5 billion by 2025.⁵ Several community-based investigations have served to emphasize that hypertension is rapidly emerging as a major public health problem also in developing countries. The prevalence of hypertension among the elderly people (≥ 60 years) in Bangladesh and India is 65%.^{6,7} A meta-analysis, covering studies between 1995 and 2009 on the prevalence of hypertension, reported a prevalence of 13.5% in the adult (≥ 15 years) population of Bangladesh.⁸

Risk factors for hypertension include older age, female gender, smoking, alcohol consumption, unemployment, low education level, stress, family history, insufficient physical activities, bad dietary habits, obesity, presence of high systolic (and sometimes diastolic) blood pressure (BP), elevated total (and sometimes LDL) cholesterol, and diabetes mellitus (DM).⁹⁻¹⁰ The main factors responsible for this rising trend are changing life styles, obesity, and behaviour pattern of people etc.⁴

However, only a few of these studies included elderly people, and fewer still have focused exclusively on this segment of the population. The objectives of the present investigation were to evaluate the prevalence, treatment and control of hypertension among elderly individuals living in the community in selected regions of rural Rajshahi. We also examined the impact of socio-demographic characteristics and known risk factors for high blood pressure on the prevalence in the elderly population.

Methods

This was a cross sectional type of descriptive study carried out in the different villages of Puthia

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Upazila of Rajshahi District with a view to find out the prevalence of hypertension and to identify the associated factors of hypertension among the people above 50 years in a rural community. All people above 50 years residing in different villages of Puthia Upazila constituted the study population. Total 410 people were selected as sample unit purposively. Data were collected by 4th year medical students of Barind Medical College with the help of a pretested semi structured interview schedule by face to face interview. Blood pressure of the respondents were measured by sphygmomanometer and stethoscope. The interview schedule was designed to record the socio-demographic characteristics, physical activities, smoking habits and history of Diabetes mellitus. Obtaining informed consent of the respondents and maintaining all confidentiality and privacy, the students conducted an interview session and data were recorded in the questionnaire. The blood pressure of the respondents were measured during the course of the interview. Blood pressure measurements were obtained after the subject had rested for at least 5 min in a seating position. The hypertension status and blood pressure distribution of the study sample were assessed using standard criteria formulated by WHO-International Society of Hypertension (WHO-ISH)¹¹ and the US Sixth Joint National Committee on Detection, Evaluation and Treatment of Hypertension (JNC-VI).¹² Hypertension was defined as either an SBP ≥ 140 mm Hg, and/or a DBP ≥ 90 mmHg, and/or treatment with antihypertensive medication.^{11,12} Data were entered in the computer and processed using SPSS for windows. Descriptive analytical techniques involving frequency distribution, computation of percentage, mean, SD etc. were applied. However, association between variables were conducted applying Chi-square. Multiple logistic regression analysis was used to identify the risk factors of hypertension.

Results

Of the total 412 respondents, 251 (60.2%) were male and the rest 163 (39.8%) were female. More than 65% of the respondents were in the age group of 51 to 60 years, educated only up to Class V, having monthly family income Tk.10000.00 or less and led sedentary life style. More than 31% of the respondents were smoker. Sixteen percent of the respondents having diabetes mellitus (Table 1).

Table 1 Socio-demographic and clinical characteristics of the study subjects. N=412

Characteristics	Number N (%)
Age of the patients	
51 – 60 years	293 (71.1)
61– 70 years	83 (20.2)
>70 years	36 (8.7)
Gender	
Male	251 (60.9)
Female	161 (39.1)
Educational Status	
Up to Class V	279 (67.7)
Class VI – XII	107 (26.0)
>Class XII	26 (6.3)
Monthly family income	
Up to Tk. 10000/-	325 (78.9)
Above Tk. 10000/-	87 (21.1)
Life style	
Sedentary	270 (65.5)
Active	142 (34.5)
Smoking	
Smoker	129 (31.3)
Non smoker	283 (68.7)
Diabetes mellitus	
Present	66 (16.0)
Absent	346 (84.0)

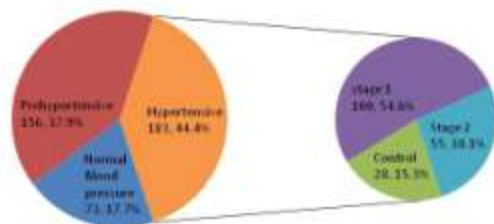


Figure 1. Blood pressure status of the study subjects

A total of 412 adult rural people, 183 (44.4%) were hypertensive ($\geq 140/90$ mmHg), 156 (37.9%) were pre-hypertensive (120-139/80-89 mmHg) and the rest only 73 (17.7%) were normotensive ($<120/80$ mmHg). Out of 183 hypertensive patients, 104 (56.8%) were received treatment and the rest 79 (43.2%) were not received treatment. Only 28 (15.3%) hypertensive people controlled their BP, 100 (54.6%) people had BP at the Stage 1 (140-159/90-99 mmHg) and the rest 55 (30.1%) people had BP at the stage 2 ($>160/100$ mmHg) (Figure 1).

Table 2. Factors associated with hypertension. n = 4

Factors	Blood pressure status		p-value
	Normotensive N (%)	Hypertensive N (%)	
Age of the patients			
51 – 60 years (n=293)	168 (57.3)	125 (42.7)	0.522
61– 70 years (n=83)	43 (51.8)	40 (48.2)	
>70 years (n=36)	18 (50.0)	18 (50.0)	
Gender			
Male (n=251)	149 (59.4)	102 (40.6)	0.034
Female (n=161)	80 (49.7)	81 (50.3)	
Educational Status			
Up to Class V (n=279)	166 (59.5)	113 (40.5)	0.041
Class VI – XII (n=107)	53 (49.5)	54 (50.5)	
>Class XII (n=26)	10 (38.5)	16 (61.5)	
Monthly family income			
Up to Tk. 10000/- (n=325)	194 (59.7)	131 (40.3)	0.001
Above Tk. 10000/- (n=87)	35 (40.2)	52 (59.8)	
Life style			
Sedentary (n=270)	145 (53.7)	125 (46.3)	0.290
Active (n=142)	84 (59.2)	58 (40.8)	
Smoking			
Smoker (n = 129)	79 (61.2)	50 (38.8)	0.119
Non smoker (n = 283)	150 (53.0)	133 (47.0)	
History of diabetes mellitus			
Present (n=66)	28 (42.4)	38 (57.6)	0.019
Absent (n=346)	201 (58.1)	145 (41.9)	

Chi-square test applied

The prevalence of hypertension was significantly higher among females, the people having higher educational and economical status, and diabetes people (Table 2). Age, life style and smoking habit of the study subjects were not significantly associated with hypertension. Diabetes mellitus was identified as the most important risk factor of hypertension. Diabetes people had a 1.84(95% CI 1.07 – 3.17) times greater chance to have hypertension than the patients without diabetes. Other risk factors of hypertension identified in this study were lower monthly family income {RR:1.82 (95% CI 1.07 – 3.1), } and female {RR:1.61(95% CI 1.05 – 2.44)}. Lower educational status was not identified as a significant risk factor of hypertension (Table 3).¹²

Table 3. Multiple logistic regression analysis: Risk factors of hypertension.

Variables	Adjusted odds ratio [95% confidence interval (CI)]	p-value
Gender		0.026
Male (n=251)*	1.00	
Female (n=161)	1.61(1.05 - 2.44)	
Educational status		0.202
Up to Class V (n=279)*	1.00	
Class VI – XII (n=107)	1.44 (0.9 – 2.30)	
>Class XII (n=26)	1.81 (0.72 – 4.57)	
Monthly family income		0.026
Up to Tk. 10000/- (n=325)*	1.00	
Above Tk. 10000/- (n=87)	1.82 (1.07 – 3.10)	
History of diabetes mellitus		0.028
Present (n=66)	1.84 (1.07 – 3.17)	
Absent (n=346)*	1.00	

*Reference group

Discussion

Hypertension is a worldwide challenge because of its high prevalence in the adult population. The prevalence of hypertension among older adults over 50 years in low and middle-income countries ranged from 32% to 78%.¹³ Hypertension is a major public health problem in the Indian subcontinent including Bangladesh as well. The prevalence of hypertension among the elderly people (≥ 60 years) in Bangladesh and India is 65%.⁶ In a recent study among the elderly people in the Matlab Health and Demographic Surveillance Area, prevalence of hypertension was 50% among the elderly people but only 26% had control of their blood pressure.¹⁴ The present study findings consistent with these findings and also suggest that hypertension is a striking health problem among the elderly population in rural Bangladesh.

Only 63.8% of the hypertensive patients in this study adhere to antihypertensive treatment. In developed countries, adherence among patients suffering from non-communicable diseases averages 50%.¹⁵ In the United States, 65% of hypertensive individuals received treatment.¹⁶ In Indian subcontinent and China, only 40% and 43% of patients with hypertension adhere to their antihypertensive

medication regimen, respectively.^{7,17} In developing countries, the magnitude of poor adherence is assumed to be higher given the scarcity of health resources and difficulties in access to health care.¹⁸ Comparing the adherence to treatment of hypertension between the developed and developing countries suggests that the magnitude of the poor adherence in rural Bangladesh is not only due to the scarcity of health resources and difficulties in access to health care, but also some other factors, it is needed to investigate.

In this study, prevalence of hypertension was higher for women than for men. It may be due to the menopause.¹⁹ The consistency of this finding is at odds with other studies which show varied gender effects.^{20,21} This study suggested that Prevalence of hypertension increased with age in the rural community of Bangladesh. This is in keeping with the findings of the other studies in Bangladesh and other countries.^{8,13,22} The association of higher educational and economic levels with increased odds of hypertension is in contrast to findings from developed countries, where risk factors for cardiovascular diseases, including hypertension, are more pronounced among the less educated and economically weak groups.^{23,24} But it was inverse in developed countries, when cardiovascular diseases emerged as the modern epidemic at the beginning of twentieth century. It was the disease of the higher social classes in the most affluent societies in the early stages of epidemiological transition. This pattern reverses in the later stages of epidemiological transition, with the burden of chronic disease (including hypertension) and risk factors shifting to the lower social classes (less educated and economically poorer groups).^{25,26} However, it is important to note that the communities surveyed in this study are at an early stage of epidemiological transition. That is why the present study findings is inversed with that of the developed countries. In this study there was no difference between regular physical activity and hypertension although the positive effect of physical training in both primary and secondary prevention of hypertension has been confirmed.²⁷ Thus, further studies are required. This study did not reveal any difference of hypertension between cigarette smokers and cigarette non-smokers. This result is not consistent with that of other researches, i.e. smokers have a significantly higher BP than non-smokers.^{28,29} It may be due to the effect of non cigarette tobacco used. In rural Bangladesh, there are so many cigarette non-smoker used other form of tobacco rather than cigarette. The

association of hypertension with diabetes mellitus has been reported previously on numerous occasions.^{30,31} The present study also agreed with these.

The results of this study have certain public health implications. The present study findings suggest, the problem of hypertension among the elderly people poses a major economic challenge to health care systems in rural Bangladesh. The different guidelines have recommended different approaches towards the cost of treating hypertension, all with good reason. While Canadian hypertension treatment guidelines specifically exclude economic considerations,³² US and WHO guidelines lay the onus for cost considerations on the individual treating physician.^{11,12} The British Hypertension Society guidelines relate the risk level at which treatment is recommended to the availability of resources.³³ We believe it to be crucial that health planners, clinicians, community representatives, and public health practitioners in developing countries formulate country-specific guidelines based on local competing health care priorities and economic realities. These regional guidelines should identify realistic goals, such as the thresholds for treatment, the "desirable" level of blood pressure control, the "affordable" degree of hypertension control, the "acceptable" extent of hypertension control (based on a balance between aspiration for the ideal and what is feasible and achievable), and the likely strategies for achieving these targets. While controversy has raised over the dangers of applying economic considerations in the management of hypertension and the need for social justice and equity, we agree with Swales that the treatment of the hypertensive patient has to take place in the real world of constrained health care systems.³⁴ Consequently, it is important to assess the resources available for detecting and treating hypertension in the rural Bangladesh, given that nearly two-thirds of elderly individuals have elevated blood pressure levels. While mass screening of the elderly population is neither feasible nor sustainable, the existence of a nationwide infrastructure of community health centres offers a unique possibility in the rural Bangladesh. At present, these health centers focus on communicable diseases and family planning programs but they could also be used to promote "opportunistic screening" during routine visits in order to identifying patients at high risk of cardiovascular diseases. The development of affordable screening programs should be accompanied by an evaluation of the efficacy,

acceptability and affordability of low cost treatment regimens. At the individual level, it is important to target for treatment individuals with an increased absolute risk of cardiovascular disease¹¹. These individual level strategies must be combined with population level efforts directed at reducing the average blood pressure of the population (primary prevention of hypertension).

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