

## Hypertension in Geriatric Population: Study in a Rural Community, Jamalpur, Bangladesh

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### Abstract

### Original Research Article

**Background:** Hypertension is of great concern due to its role in the causation of coronary heart disease, stroke and other vascular complications. Community-based screen can improve the detection and treatment of Hypertension. As fewer studies have been undertaken in rural Bangladesh, it was decided to assess the prevalence, awareness, treatment, and control of hypertension particularly among the geriatric age group rural dwellers. The aim of this study was to find out the prevalence and awareness of hypertension among geriatric age group to assess the adequacy of hypertension control and treatment, to see awareness and treatment pattern of hypertension among them in a rural area of Bangladesh. **Methods & Materials:** This was a descriptive, cross sectional and observational study. The study period was extended from 10<sup>th</sup> May, 2013 to 10<sup>th</sup>, November, 2013 for a period of 6 months. A total of 200 geriatric people were included in the study from Fazilpur village of Jamalpur district. Categorical variables were reported as percentage and correlation was carried out using the chi-square test (X<sup>2</sup>-test) through determining the association of different variables by SPSS software version-16. Main outcome measure: patients related variables: age, sex, weight, and smoker or not and main outcome variables: prevalence of hypertension, its awareness, visit to registered physician, pattern of prescription follow, BP properly controlled or not. **Result:** Our present study has shown that 42.00% people have hypertension. It is more common among male (22.50%) than female (19.50%), study population was 200 of them male were (95) and female were (105). The ratio of male and female were almost equal. Among HTN patients 48 were preciously diagnosed and 36 was diagnosed during the study as spot diagnosis. Most HTN patients are in the age group of 60-69 years (total 60) and 71.42% of all hypertensive are of this age group. Average BMI of HTN patient is 24.30% in case of male and 22.86% in case of female. Hypertensive were found to be more smokers and consumers of betel nut and tobacco leaf than normal people. Village doctors made 62.50% of diagnoses for hypertension and there high rates (42.85%) of undetected hypertension among the elderly. **Conclusion:** High rate of non detection and non-adherence to treatment was important findings of the study. The reasons for non adherence to treatment among geriatric population, mostly the people of low education need investigation. Screening the elderly for hypertension will benefit this group of people by reducing morbidity and mortality related to it and improves their quality of life. Here lies the room for behavior change communication and create awareness among general people about the importance of proper treatment of hypertension. Ensuring cheap supply of antihypertensive medication will also help persons from lower economic status.

**Keywords:** Hypertension, geriatrics, exploration, prevalence.

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## INTRODUCTION

Aging is an inevitable part of life and brings along two inconvenient events: physiologic decline and

disease state [1]. Hypertension is an important risk factor for cardiovascular morbidity and mortality, particularly in the elderly. It is a significant and often asymptomatic chronic disease, which requires optimal

control and persistent adherence to prescribed medication to reduce the risks of cardiovascular and renal disease [2]. Some disabilities like senile cataract, glaucoma, bony changes affecting mobility, diabetes, hypertension, failure of special senses etc. are inevitable with ageing. Study of these physical and psychological changes which are incident to old age is called gerontology and the care of the aged is called clinical gerontology or geriatrics [3]. More people in both high and low income regions are living longer than ever before. The net increase of older population worldwide is about one million every month, two thirds of them being from the low income countries [4]. Population ageing has grown into a 'defining global issue' and concerns have emerged regarding development policy interventions appropriate for older people, especially in the area of elderly health problems and health care [5]. Bangladesh, with one of the highest population densities (985/km sq) in the world, is projected to experience a dramatic growth in the absolute number of its population aged 60 years or older from the current level of approximately 7 million to 14 million by 2020 [6]. Very little is known about the health of the aged and its problems in Bangladesh. Developing countries, like Bangladesh, are likely to face an enormous burden of Non communicable diseases in future and of these diseases, hypertension is one of the most important treatable causes of mortality and morbidity in the elderly population [7, 8]. Further, high blood pressure (BP) is a modifiable risk factor for cardiovascular disease (CVD). Data, from the Framingham Heart Study showed 12increasing cardiovascular morbidity with increasing systolic or diastolic pressure in those aged 65 and over [9]. One of the cornerstones of the primary prevention of CVDs has been screening for high BP and anti-hypertensive drug treatment [10]. The benefits of anti-hypertensive drug therapy for older persons have been clearly established. Prior studies have shown that anti-hypertensive drug treatment for older hypertensive persons confers highly significant and clinically relevant reductions in cardiovascular morbidity and mortality rates [11]. Nevertheless, a considerable percentage of older persons with hypertension are not detected or are not adequately treated for hypertension [12]. Measures should be taken to diagnose hypertension and prevent or postpone its complications in this age group as the burden of hypertension is bound to increase due to increasing life expectancy rates. However, very few studies have been regarding this issue. So, the current study is carried out to document the prevalence, awareness, treatment and control of hypertension, along with the conception regarding its control, adoption of life style measures and to search for morbidity related to Hypertension among geriatric individuals living in the rural community in selected region of Bangladesh.

## OBJECTIVES

### General Objective

- To study the prevalence and awareness of hypertension among geriatric age group in rural population of Bangladesh.

### Specific Objective

- To assess the level of hypertension in elderly patient.
- To see adequacy of control and treatment of Hypertension.
- To see awareness of the target group regarding effects and importance of control of Hypertension.

## METHODOLOGY AND MATERIALS

This was a descriptive, cross sectional observational study. The study was conducted in a rural community-Fazilpur of Madarganj Upazilla under the district of Jamalpur, Bangladesh. The study was carried out over a period of 6 months from 10<sup>th</sup> may 2013 to 10<sup>th</sup> November 2013. . Prior permission was taken for this study from the Ethical Committee of Mymensingh Medical College Hospital, Mymensingh, Bangladesh. The sample size was determined using following formula.  $n = (Z^2 \times P \times q) / d^2$  where  $Z$  =Standard normal deviate,  $z = 1.96$ ,  $p$ =Prevalence of HTN in Bangladesh. The prevalence of HTN in Bangladesh is not known, the value of prevalence will be considered as 50%. So,  $p$  will be 0.5. So,  $q = (1-p) = 0.50$ , and  $d$  = Desired accuracy or degree of allowable error (here 10% of  $p$ ) =0.05. So,  $n = \{(1.96^2 \times 0.5 \times 0.5) / (0.05)^2$  Or.  $n=200$ . Sampling was done by simple random method. There are about 7000 Population in Fazilpur village, of them about 400 are of geriatric age group. 200 geriatric persons were randomly selected who fulfill the inclusion criteria. Data were collected from the adult people of Fazilpur village of Madaganj Upazilla under Jamalpur district who meet the inclusion criteria through a preplanned questionnaire Cases were interviewed with the aid of Bangla version standardized questionnaire containing - items elicited age, sex and other demographic variable. The Bangla version of standardized questionnaire was translated by standard back translation method from validated standardized questionnaire and it has been followed the steps, that is forward translation, backward translation, pre-testing and final version. The interviewed questions were including data on age, sex, Weight, smoking, tobacco chewing, co-morbid illness. The information was recorded in interviewer-administered questionnaire. All data were entered, checked, rechecked and scrutinized by the principal investigator following standard procedure and was analyzed by SPSS Programme version 20 to ensure the result of this study.

## RESULT

The present study intended to explore the hypertension among geriatric population in rural Bangladesh through collecting data from Fazilpur village under Jamalpur district. Their age frequency 115(57.50%) were from 60-69 years. 65(32.50%) were from 70-79 years 15(7.50%) were from 80-89 years, and 05(2.50%) were 90 years and above. This study was carried on 200 cases. Among them, 95 (47.50%) were male and 105 (52.50%) were female patients. Among the 200 cases 84 (42%) patient were Hypertensive, among them 48(24%) patients were previously diagnosed Hypertensive and 36 (18%) were newly diagnosed. Whereas 116 (58%) were free of hypertension. Among the 84 Hypertensive population 45 (53.57%) was male and 39 (46.43%) was female. Among the 95 elderly male 45 (47.36%) were found Hypertensive and among the 105 elderly female 39 (37.14%) were hypertensive. Among the hypertensive geriatric population most were in the age group of 60-69 years the frequency declined gradually during the subsequent years. Among the HTN patient 53 (63%) were of grade 2 and 10 (12%) were of grade 3. Among all 84 patients were previously diagnosed and 36 were newly diagnosed. Among the 48 known hypertensive 17 were controlled properly and remaining 31 were not adequate controlled. Among the study population of 200 randomly selected people literate was only 35 (17.50%) and 165 (82.50%) was illiterate. Increased body mass index (BMI) is an established important related factor of HTN. This study revealed an average BMI of 23.63 among the hypertensive people which was 24.30 among the male and 22.857 among the female of geriatric age group; whereas among normotensive population the average BMI was found to be 21.50 that was 18.29 among the male and 20.35 among the female normotensive people. Related factor of the HTN were found in the study: Smoking, Taking betel nut, Tobacco leaf chewing and Alcoholism are common habits. Taking betel nut and Tobacco leaf chewing are mostly the provisions of the female group and smoking is totally not, but the male group along with these two bad habits is involved in smoking. Overall 54.76% of the hypertensive was smoker, 60.71% used to take betel nut, and 65.47% was tobacco leaf chewer and nobody was found to be Alcoholic Out of the literate people 13 were previously diagnosed as a case of hypertension and 6 were diagnosed during the study period and a total 19 literate person were Hypertensive. Literate hypertensive people were more

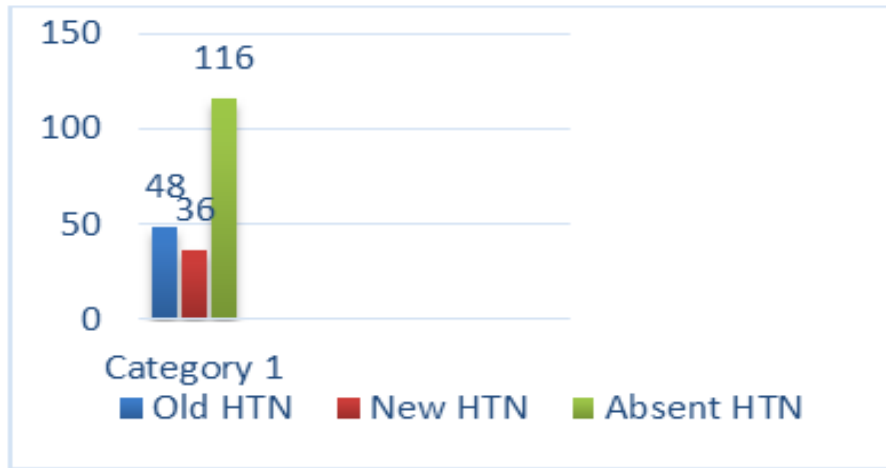
adhere with the antihypertensive medication and the advice given to them by the physician than the illiterate people. Among the 13 literate 8 (61.54%) were adherent to medication, and 5 (38.46%) were not; on the other hand out of 35 illiterate hypertensive only 5 (14.29%) were adherent to medication and the rest 30 (85.71%) were totally not adhere.. Among 200 study population a total 95 (47.50%) People were found to know previously something about blood pressure, among them 90 (45%) gave history of blood pressure measurement previously. 48 (53.30%) persons were diagnosed as HTN patient through those measurement. 33 (68.75%) people gave history of taking measure for their Hypertension but as high as 15( 31.25%)were totally ignorant about its management. out of 33 hypertensive 29 (60.41%) receiving some prescriptions for their Hypertension of which 11 (22.91%) prescription was done by registered physician, and 18 (37.5%) was prescribed by village doctors or quack. 4 people gave the history of taking alternative or herbal remedy for HTN. 21 (72.41%) people was provided advice by the prescriber regarding life style modifications. Interestingly the total 48 persons who were found to be hypertensive previously; 30 were found to be diagnosed by village doctors and 18 were diagnosed by qualified physician. The hypertensive patients were advised in a haphazard manner to adopt life style like stopping smoking, stopping tobacco chewing, salt restriction, avoiding excess fat in diet, to have walk or mild to moderate exercise daily, to meditate or pray and avoiding stress and also some unauthentic advice like taking citrus fruits or tamarinds as traditional belief. Adherence to drugs was a major concern of this study.

**Table-1: Demographic characteristics of the studied population (n=200)**

Age	n	(%)
60-90	115	57.5
70-79	65	32.5
80-89	15	7.5
90 <	5	2.5
Male	95	47.5
Female	105	52.5
Literate	35	17.5
Illiterate	165	82.5
<b>BMI</b>		
Male	24.3	
Female	22.86	

**Table-2: The habitual status of the geriatric population (n=200)**

Sex	Habit	Frequency	%
Male	Smoking	66	73
	Taking betel nut	50	52
	Tobacco leaf chewing	45	47.36
	Alcoholism	0	00
Female	Smoking	0	00
	Taking betel nut	95	90.40
	Tobacco leaf chewing	85	80
	Alcoholism	0	00



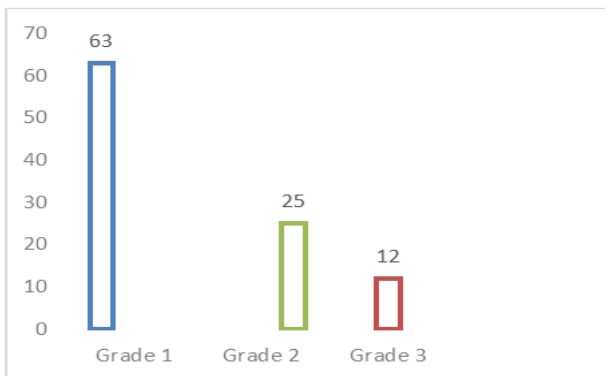
**Fig-1: Status of blood pressure of the studied population (n=200)**

**Table-3: Male and female distribution among hypertensive (n=200)**

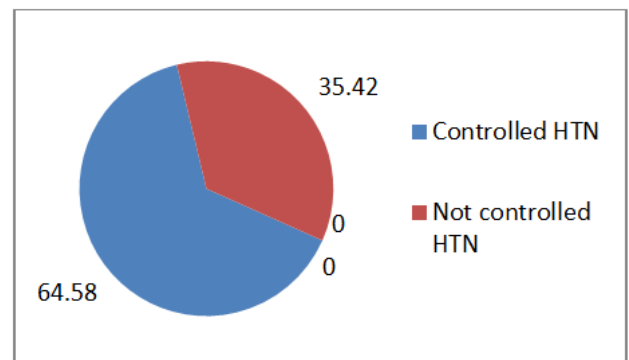
Sex	n	%
Male	45	53.57
Female	39	46.43

**Table-4: The HTN at different age group of irrespective of sex (n=200)**

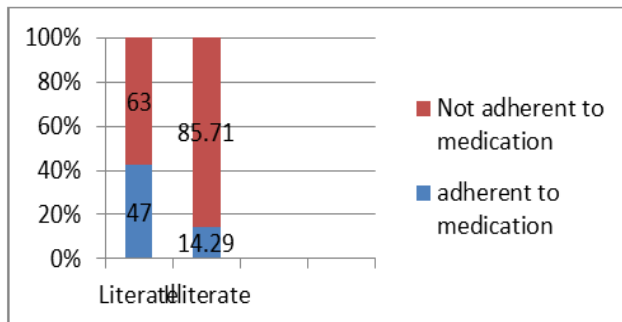
Age in years	Frequency	% of the total HTN patients	% of the total study population
60-69	60	71.428	30
70-79	19	22.62	9.5
80-89	5	5.95	2.5
90 and above	00	00	00



**Fig-2: The percentage of the severity of HTN (n=200)**



**Fig-3: Showing proportion of controlled and uncontrolled HTN (n=200)**



**Fig-4: Proportion of medication adherence among literate & hypertensive population (n=200)**

**Table-5: The level of HTN diagnosis.(n=200)**

Level of diagnosis	n	%
At village doctor level	30	62.5
At qualified physician level	18	37.5

**Table-6: The associated co morbidity among the geriatric population (n=200)**

Co-morbidity	n	%
IHD	14	29.16
Heart failure	4	8.33
CKD	3	6.25
Stroke	9	18.75
Obesity	8	16.6
RHD	3	6.25
DM	13	27.08

**Table-7: Status of life style advice given among the hypertensive (n=200)**

Advice	n	%
Stopping smoking?	33	100
Stopping tobacco chewing?	25	75.75
Adopting salt restriction?	20	60.60
To avoid excess fat in diet?	25	75.75
To have walk or mild to moderate exercise daily?	12	36.36
To avoid alcohol, if you are alcoholic?	--	--
Meditation or pray and avoiding stress	20	60.60
Others, like taking citrus fruit or tamarinds	15	45.45

**Table-8: Adherence to drug treatment by the previous known hypertensive (n=200)**

Manner of adherence	n	%
People not taking the drug at all	19	39.58
People taking the drug regularly?	13	27.09
People taking the drug irregularly?	16	33.33

## DISCUSSION

In the present study, out of 200 individuals examined 84 individuals (including 48 old hypertensive cases) were found to be suffering from hypertension and over all prevalence rate of hypertension was found to be 42% among both sexes. However the prevalence of hypertension was 53.57% among males (45 cases in 95 males) and 43.43% among females (39 cases in 105 females). This study indicates high prevalence of hypertension (42%) among elderly population. This is much higher than 16.34% as described by Gurav RB, Kartikeyan S [13] and even higher than 37.5% found by Khokkar A et al., [14] However our finding was corroborative with Swami et al., [15] and 48% by Prakash et al., [16]. There was minimum male female difference in prevalence of hypertension which was 53.57% in male and 46.43% in female elderly people. In this study about 47.37% of the males and 37.14% of the females were hypertensive in the elderly age group but among all the hypertensive 53.57% were males and 46.43% were female. This gives minimum gender biased information in the elderly population. It is known that prevalence of hypertension increases with age [17]. Our study also found the same result. During analysis excluding persons 80 years and above resulted

in more significance of association. This finding probably indicates that after attaining a certain age the rising tendency of prevalence of hypertension reaches a plateau. However this finding cannot be generalized due to small number of persons over 80 years. People of the Indian subcontinent and Bangladesh are genetically more prone to suffer from cardiovascular diseases and hypertension is already an established risk factor of it. Thus high prevalence of hypertension doubles the dilemma over aging population. Proper treatment of hypertension and keeping the blood pressure under control reduces the risk of cardiovascular diseases. The present study revealed that though 68.75 % population with HTN took some sort of measures taking HTN as a problem or disease that might hamper their lives but as high as 31.25% of hypertensive were not adhere at all to its management. Although 60.42% hypertensive people received some kind of prescriptions for their Hypertension, most of which obviously were not quality assured because most of the prescriptions were made by unqualified village doctors which was almost 54.55% of all HTN patients and 37.5% of the total prescriptions made. Moreover the warning aspect of this study was that as high as 39.58% of hypertensive was not taking any sort of medications for hypertension. Most of the people (39.58%) not taking any medication

thinking that it would not pose any serious problem to them. A certain number of 08.33% people were on herbal remedy for their pressure control. It is to mention that 33.33% of hypertensive didn't take medications regularly. So many factors run by hands for not taking drugs or taking in a useless irregular manner. Unawareness, unavailability, financial constrains and forgetfulness are the main factors to mention. The practice of taking medication was significantly higher among literate persons. Low awareness among illiterates indicates the need for behavioral change communication activity. However another revelation was that a large group of people from lower income group were not taking medication. Thus not only lack of awareness, financial constrains is also an important reason. Besides most of the elderly population are tendency of prevalence of hypertension reaches a plateau. However this finding cannot be generalized due to small number of persons over 80 years. Peoples of the Indian subcontinent and Bangladesh are genetically more prone to suffer from cardiovascular diseases and hypertension is already an established risk factor of it. Thus high prevalence of hypertension doubles the dilemma over aging population. Proper treatment of hypertension and keeping the blood pressure under control reduces the risk of cardiovascular diseases. The present study revealed that though 68.75% population with HTN took some sort of measures taking HTN as a problem or disease that might hamper their lives but as high as 31.25% of hypertensive were not adhere at all to its management. Although 60.42% hypertensive people received some kind of prescriptions for their Hypertension, most of which obviously were not quality assured because most of the prescriptions were made by unqualified village doctors which was almost 54.55% of all HTN patients and 37.5% of the total prescriptions made. Moreover the warning aspect of this study was that as high as 39.58% of hypertensive was not taking any sort of medications for hypertension. However another revelation was that a large group of people from lower income group were not taking medication. Thus not only lack of awareness, financial constrains is also an important reason .Significant association of hypertension with cardiovascular diseases, cardiovascular accident and obesity was also documented. Actually hypertension, cardiovascular diseases, cardiovascular accident, diabetes mellitus, CKD and obesity are under the same umbrella of modern non communicable diseases (NCD). This study also revealed rheumatic heart disease (RHD) as the associated problem in the geriatric population along with Hypertension as RHD prophylaxis and awareness was not of concern at the childhood period of these senior citizens. Association of hypertension with the social health is the new domain of the present study. The inability to do normal day to day work for self maintenance often indicates the inability of the person to live rest of his/her life with at least minimum comfort. Respondents had subjective feeling of dissatisfaction that indirectly reflects the quality of life

of the helpless elderly persons. Thus hypertension imparts a bigger impact on the quality of life. Increased morbidity associated with hypertension affects not only physical health but also the social health of the elderly persons. In our study sample, 68.75% of People took measure for their Hypertension. However, only 35.42% of them had their blood pressure adequately controlled (SBP <140 mmHg and DBP <90 mmHg) through adopting all measures like lifestyle and proper medication. About 42.85% of the respondents were newly diagnosed with hypertension. Although these proportions are dissimilar to those reported from other developing countries [18]. In European countries, these levels range from 52.7% in Germany to 70% in Sweden. In Canada and USA the awareness rate is 83% and 87.3% respectively [19, 20]. In these studies, the degree of awareness of hypertension was higher (81 %) than those reported by the India study [21]. Among treated hypertensive individuals in this study, about 35.42% had blood pressure controlled. These data are also similar to those reported by Liau *et al.*, This study focused on some special points like the habits of the rural population and their increased association among the hypertensive patients, as it was found that overall 54.76% of the hypertensive were smoker, 60.71% used to take betel nut, and 65.47% were tobacco leaf chewer. Advice provided by the health care providers was also an important aspect of this study and it revealed that salt restriction is not given so much emphasis although smoking, tobacco chewing, avoiding fatty food was emphasized though the rural people believe that taking citrus fruits and tamarinds may help control their Hypertension.

## LIMITATIONS OF THE STUDY

This study was conducted over a limited period of time. Only the entitled patient's got opportunity participated in the study. So, the limited sample size, short duration, and a limited study area were the limitations of this study. So, with a large sample, vast area and large span of time, the study may be further conducted

## CONCLUSION AND RECOMMENDATIONS

High rate of non detection and non-adherence to treatment was important findings of the study. The reasons for non adherence to treatment among geriatric population, mostly the people of low education need investigation. Screening the elderly for hypertension will benefit this group of people by reducing morbidity and mortality related to it and improves their quality of life. Here lies the room for behavior change communication and create awareness among general people about the importance of proper treatment of hypertension. Ensuring cheap supply of antihypertensive medication will also help persons from lower economic status.

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