

How to Cite:

Shukla, R. K., Surlya, B. K., Publishing, A., & Dhone, P. G. (2022). Hypertension in geriatric population: A prospective study. *International Journal of Health Sciences*, 6(S3), 9568–9575. <https://doi.org/10.53730/ijhs.v6nS3.8267>

Hypertension in geriatric population: A prospective study

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Abstract---Introduction: Hypertension (HTN) is known to have significant effects on cardiovascular (CVD) outcomes such as heart failure, myocardial infarction, and stroke. Hypertension is a major health problem that is common in older adults. Arteries get stiffer, causing blood pressure to go up. If high blood pressure isn't controlled with lifestyle changes and medication, it can lead to serious health problems, including cardiovascular disease such as heart disease and stroke, vascular dementia, eye problems, and kidney disease. Materials and Methods: This is a community-based cross-sectional study was carried out in rural field practice area of the tertiary care Teaching Hospital. Elderly persons (age 60 years and above) residing in the study area for at least 6 months were included in the study. Elderly individuals who were critically ill and unable to comprehend questions were excluded. Results: Socio-demographic characteristics of participants, A total of 180 elderly individuals were included in the study. Nine elderly were not included in the study as they were difficult to trace or houses were locked on two successive visits. Mean age of study participants was 66 years (SD \pm 6.9). About three-fourths (76%) of study subjects were females. About 65% of the participants were illiterate and 25% had completed primary education. More than half of the elderly (52.4%) had lost their spouse. Conclusion: Hypertension is an important risk factor for cardiovascular morbidity and mortality, especially in the elderly. Multiple trials have been

shown that not only is it safe to treat hypertension in the elderly, but also that will decrease stroke, HF, myocardial infarction and all-cause mortality. Hypertension treatment also reduces the incidence of cognitive impairment and dementia in the elderly. The adoption of a healthy lifestyle is one of the cornerstones of hypertension management.

Keywords---elderly, hypertension, prevalence, community-based study.

Introduction

High blood pressure, or hypertension, is a major health problem that is common in older adults. Arteries get stiffer, causing blood pressure to go up. High blood pressure, sometimes called "the silent killer," often does not cause signs of illness that can see or feel. ⁽¹⁾ Though it affects nearly half of all adults, many may not even be aware they have it. If high blood pressure isn't controlled with lifestyle changes and medication, it can lead to serious health problems, including cardiovascular disease such as heart disease and stroke, vascular dementia, eye problems, and kidney disease. ⁽²⁾

HTN is known to have significant effects on cardiovascular (CVD) outcomes such as heart failure, myocardial infarction, and stroke. The asymptomatic quality of systemic hypertension can delay diagnosis and prompt initiation of optimal therapies. ⁽³⁾ As with many conditions, HTN increases with age, with its prevalence increasing from 27% in patients aged younger than 60 years to 74% in those aged older than 80 years. The Framingham Heart Study showed that more than 90% of the participants with a normal blood pressure (BP) at age 55 years eventually develop HTN. Approximately 60% of the population has HTN by 60 years of age and about 65% of men and 75% of women develop high BP by 70 years. By the year 2060, the projected number of people living age 65 years or older will comprise 25% of the United States (US), of which nearly 20 million will surpass the eighth decade of life. Up to 50% of the people born in the US today will reach their 100th year. With this rapidly aging population, the prevalence of HTN can only be expected to rise. ⁽⁴⁾

Interestingly, several studies that focused on guiding screening and management of HTN traditionally excluded older adults, particularly those over the age of 80 years. Treating elevated BP in older adults has, therefore, remained controversial. However, recent data demonstrates CVD benefits in treating HTN in older adults. This emanates from several key studies, including the UK Prospective Diabetes Study (UKPDS), the Systolic HTN in the Elderly Program (SHEP), SPRINT, the Systolic HTN in Europe trial (Syst-Eur), Medical Research Council Working Party, and the HTN in the Very Elderly Trial (HYVET). Thus, recognition and appropriate treatment of HTN in older adults should be a priority for physicians. ⁽⁵⁾

There are specific underlying mechanisms of HTN in older persons, including mechanical hemodynamic changes, arterial stiffness, neurohormonal and

autonomic dysregulation, and the aging kidney. Aging results in several structural and functional changes in the arterial vasculature. Over time, the arteries stiffen, with fracturing of the elastic lamellae and intimal hyperplasia is seen in the aorta. ⁽⁶⁾The stiffened arteries have decreased capacitance, and limited recoil, with subsequent difficulty to accommodate volume changes throughout the cardiac cycle. Both systolic BP (SBP) and diastolic BP (DBP) increase with age, however, after the age of 60 years, the central arterial stiffness predominates, and as a consequence, SBP continues to rise while the DBP declines thereafter. This results in isolated systolic HTN and a widened pulse pressure. The latter increases with age independently of mean BP or any other determinant factors. ^(7,8)

Materials and Methods

This is a community-based cross-sectional study was carried out in rural field practice area of the tertiary care Teaching Hospital. Elderly persons (age 60 years and above) residing in the study area for at least 6 months were included in the study. Elderly individuals who were critically ill and unable to comprehend questions were excluded. A pretested, structured interview schedule was used to collect data on demographic characteristics, health seeking behaviour and expenditure on treatment for hypertension (in previously diagnosed cases). BP measurement was done as per the standard guidelines, i.e. using mercury sphygmomanometer in right arm in the sitting position with feet kept firmly on ground and arm kept at the level of the heart. BP was measured on two separate occasions with a minimum interval of at least 5 minutes between the two measurements. Care was taken on the day of measurement that the participants did not smoke or take caffeine half an hour before the measurement of BP. BP measurements were not done for participants with any acute painful condition like dental pain or joint pain. BP was measured in subsequent visits. A systolic BP of ≥ 140 mm Hg and/or a diastolic BP of ≥ 90 mm Hg measured on two separate occasions with a minimum interval of at least 5 minutes between the two measurements OR a self-reported history of taking anti-hypertensive medications is defined as hypertension.

Statistical analysis

Data were entered in Microsoft Excel spreadsheet. Descriptive statistics like mean, median and proportions were calculated using Statistical Package for the Social Sciences (SPSS) version 25.0. About 95% confidence intervals were calculated for proportions.

Results

A total of 180 elderly individuals were included in the study. Ten elderly were not included in the study as they were difficult to trace or houses were locked on two successive visits. Mean age of study participants was 66 years (SD ± 6.9) [Table 1].

Table 1
Distribution of Age of study participants

Variables (n=180)	Values (%)
Age (in years)	
Mean±SD	60±6.9
Median	59

Table 2
Distribution of gender

Gender	
Male	39(23)
Female	131 (77)

In table 2, about three-fourths (77%) of study subjects were females.

Table 3
Distribution of Literacy

Literacy	
Illiterate	102(60)
Literate	68 (40)

Table 4
Distribution of Socio-demographic participants

Widow	
Lost their Spouse	99(55)
Economic Dependency	
Dependent	47 (26)
Occupational Status	
Currently employed in some work	92 (51.2)
Smoking Status	
Ever Smoker	88 (49)
Current Smoker (at least for a month)	13 (7.2)
Smokeless tobacco user	61 (33.9)
Diabetes	
Yes	25 (14)

About 65% of the participants were illiterate and 25% had completed primary education. More than half of the elderly (55%) had lost their spouse. About one-fifth of study subjects (21%) were living alone. One-fourth of subjects (26%) were economically dependent on other family members. Nearly half (49.5%) of the elderly were not engaged in any occupation during the study period while one-third (33%) were engaged in agriculture and agriculture-related works. Around half (51%) of participants never used tobacco in their life time. Seven percent were 'current smokers' (smoking at least for a month) and 33% were 'current smokeless tobacco users. Thirteen percent (24 out of 180) of the participants reported that

they were taking treatment for diabetes mellitus. Breathing problems, joint pains, and sleeplessness were the other complaints among the study population.

Health seeking behaviour and adherence to treatment

Among the previously diagnosed cases of hypertension, 56.1% were diagnosed at government health facilities either at primary health centres or a government hospital whereas 43.9% were diagnosed by private providers. About 81.1% of diagnosed cases of hypertension had 'giddiness' or 'fainting' for which they sought care and were subsequently diagnosed as hypertensives. About 66.1% were taking their anti-hypertensive medications from primary health centres and 31% were taking their medications from chemist shops. On an average, the elderly hypertensives were visiting the doctor once in a month (Mean±SD: 27.1 ± 19.2 days). Seventy-five percent of the hypertensives had their BP checked once in 21 days on an average. Forty-eight percent reported that they had missed at least one dose of anti-hypertensives in the last 3-month period. Fifteen percent had reported that they skipped anti-hypertensives for a week and more. 'Went to relative's home' and 'forgot to take medicine' were the commonly told reasons for poor adherence to medication. About 33.3% reported that they had made changes in their diet pattern, like reduction in the consumption of oily foods and reduced salt intake after the diagnosis. When asked about the expected duration of treatment for hypertension, 91.5% of the elderly hypertensives reported that medications have to be continued for life time. About 81.5% of the elderly were satisfied with their treatment.

Table 5
A Comparison of Blood Pressure Thresholds and Targets between ACC/AHA, ACP/AAFP, and ESC/ESH Guidelines

	ACC/AHA 2017	ACP/AAFP 2017	ESC/ESH 2018
Definition of Older Patients	≥65 years	≥60 years	Elderly 65-79 years Very Old ≥80 years
BP Threshold for Initiation of Pharmacotherapy	≥130/80 mmHg	SBP ≥150 mmHg	Elderly ≥140/90 mmHg Very Old ≥160/90 mmHg
Blood Pressure Target	<130/80 mmHg	SBP <150 mmHg	SBP 130-139 mmHg DBP 70-79mmHg

Table 6
Classification of blood pressure for adults according to JNC-7

Classification	SBP (mmHg)	DBP (mmHg)
Normal	≤ 120	And ≤ 80
Prehypertension	120-139	Or 80-89
Stage 1 hypertension	140-159	Or 90-99

Stage 2 hypertension	≥ 160	Or ≥ 100
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Discussion

Our findings provide evidence of high burden of hypertension in the elderly age group in a tertiary care Teaching Hospital. The prevalence of hypertension in our study was similar to a study done in rural areas. ⁽⁹⁾ The prevalence reported by Kalavathy *et al.* was 45%. Our study findings were also similar to a study done in the elderly in rural and urban areas, South India where they reported a prevalence of 44.1% in rural elderly population. However, other studies done in Assam, north-eastern India and a multi-centric study in Bangladesh and India had reported higher prevalence of hypertension. However, a study in rural part of Karnataka reported prevalence of hypertension among 60-69 years population to be about 30.5% and 32% in above 70 years population. ⁽¹⁰⁾ Moreover, a study done in Kolkata, eastern India among the elderly in urban areas reported prevalence of 54.4%. The difference in prevalence levels may be due to different geographical factors and may be due to differences in dietary pattern.

Though 60% of the study participants were illiterate, 63% of all who were found to be hypertensive were already aware of their hypertensive status. This finding reflects the better health seeking behaviour and well performing health system (both public and private) in this part of country. ⁽¹¹⁾ Proximity of the study area to the primary health center (PHC) and availability of 24 × 7 services in the PHC might have contributed toward better health seeking behavior. In the study by Kalavathy *et al.*, only 35% were aware of their hypertensive status. About half of hypertensives had been diagnosed by private practitioners. This finding shows the preference toward private practitioners and that the elderly were spending money from their pocket for diagnosis and as well as treatment of hypertension. Awareness has to be created that diagnosis and treatment of hypertension are carried out routinely in the PHCs. Barriers for geriatric care at PHCs have to be identified and rectified so that more elderly would seek care for their morbidity. ⁽¹²⁾

About half of the hypertensives had reported 'missing at least one dose of anti-hypertensive drug'. Health workers during home visits should be able to recognize the hypertensive patients and advise them to be compliant to the treatment. The study was carried out in the community and sample was selected by a random method which adds to strengths of the study. Findings of this study cannot be generalized to state or national level since the study sample is confined to a limited geographical area but it offers an insight into the burden of the problem and puts forward the need to introduce mechanism for early diagnosis and management of hypertension in the elderly. Information regarding caffeine intake, alcohol intake, non-steroidal anti-inflammatory medication use, body mass index, and dyslipidaemia were not collected and would have given better insight. ⁽¹³⁾ Estimates of expenditure on treatment for hypertension and adherence to anti-hypertensive medication were based on smaller sample of individuals.

As the elderly population is likely to increase in future, and there is definite shift in the disease pattern, i.e. from communicable to non-communicable, it is high time that the health care system gears itself to growing health needs of the elderly

in an optimal and comprehensive manner. ⁽¹⁴⁾ Responding to the needs of the ever-increasing number of older people, the Government of India (GOI) announced the National Policy on Older Persons (NPOP) in 1999 and National Policy for Senior Citizens in 2011. The National Programme for Health Care of the Elderly (NPHCE) being implemented in India would be expanded to all states. Under this programme, it is proposed that special screening of the 80+ population of villages and urban areas will be carried out recognizing the increase of NCDs in the country. ⁽¹⁵⁾

Conclusion

Hypertension is an important risk factor for cardiovascular morbidity and mortality, especially in the elderly. Multiple trials have been shown that not only is it safe to treat hypertension in the elderly, but also that will decrease stroke, HF, myocardial infarction and all-cause mortality. Hypertension treatment also reduces the incidence of cognitive impairment and dementia in the elderly. The adoption of a healthy lifestyle is one of the cornerstones of hypertension management. Evidence indicates that several classes of antihypertensive drugs are effective in preventing cardiovascular events, but usually no single drug is adequate to control BP in most elderly with hypertension. Individualization of the treatment should be guided by the presence of concomitant cardiovascular risk factors. The assessment of subclinical cardiovascular organ damage resulting to an earlier onset of antihypertensive therapy leads to a reduction of the total cardiovascular risk. For all those aforementioned reasons, physicians should treat hypertension in their patients regardless of their age.

References

1. Meyer J. Age: 2000. Census 2000 Brief. Washington, DC: US Dept of Commerce, Economics and Statistics Administration, US Census Bureau; 2001.
2. Fields LE, Burt VL, Cutler JA, Hughes J, Roccella EJ, Sorlie P. The burden of adult hypertension in the United States 1999 to 2000: a rising tide. *Hypertension*. 2004; 44:398-404.
3. Dahlöf B, Lindholm LH, Hansson L, Schersten B, Ekbom T, Wester PO. Morbidity and mortality in the Swedish Trial in Old Patients with Hypertension (STOP-Hypertension). *Lancet*. 1991; 338:1281-1285.
4. Prevention of stroke by antihypertensive drug treatment in older persons with isolated systolic hypertension: final results of the Systolic Hypertension in the Elderly Program (SHEP). *JAMA*. 1991; 265:3255-3264.
5. Gueyffier F, Bulpitt C, Boissel J-P, et al. Antihypertensive drugs in very old people: a subgroup metaanalysis of randomised controlled trials. *Lancet*. 1999; 353:793-796.
6. Hansson L, Lindholm LH, Ekbom T, et al. Randomised trial of old and new antihypertensive drugs in elderly patients: cardiovascular mortality and morbidity the Swedish Trial in Old Patients with Hypertension-2 study. *Lancet*. 1999; 354:1751-1756.
7. Staessen JA, Fagard R, Thijs L, et al. Randomised double-blind comparison of placebo and active treatment for older patients with isolated systolic hypertension. *Lancet*. 1997; 350:757-764.

8. Liu L, Wang JG, Gong L, Liu G, Staessen JA. Comparison of active treatment and placebo in older Chinese patients with isolated systolic hypertension: Systolic Hypertension in China (Syst-China) Collaborative Group. *J Hypertens*. 1998; 16:1823-1829.
9. Coope J, Warrender TS. Randomised trial of treatment of hypertension in elderly patients in primary care. *BMJ*. 1986; 293:1145-1151.
10. Burt VL, Culter JA, Higgins M, et al. Trends in the prevalence, awareness, treatment, and control of hypertension in the adult US population: data from the health examination surveys, 1960 to 1991. *Hypertension*. 1995; 26:60-69.
11. Kalavathy MC, Thankappan KR, Sarma PS, Vasana RS. Prevalence, awareness, treatment and control of hypertension in an elderly community-based sample in Kerala, India. *Natl Med J India* 2000;13:9-15.
12. Bharati DR, Pal R, Rekha R, Yamuna TV, Kar S, Radjou AN. Ageing in Puducherry, South India: An overview of morbidity profile. *J Pharm Bioallied Sci* 2011;3:537-42.
13. Hazarika NC, Biswas D, Mahanta J. Hypertension in the elderly population of Assam. *J Assoc Physicians India* 2003;51:567-73.
14. By Y, Mr NG, Ag U. Prevalence, awareness, treatment, and control of hypertension in rural areas of davanagere. *Indian J Community Med* 2010;35:138-41
15. Pratim DP, Bhaswati S, Nilanjan G, Ashique FK, Subhasis C, Arpita D, et al. Hypertension and related morbidity among geriatric population of Eastern India. *Mat Soc Med* 2012;24:29-33.