

A cross sectional study of hypertension among the elderly residing in urban field practice area of S. N. Medical College, Bagalkot, Karnataka

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Abstract

Introduction: Longevity has increased significantly in the past few decades due to demographic transition in India. So there is likely to be a huge burden of chronic non-communicable diseases in the near future. Hypertension is one of the most important treatable causes of morbidity in the elderly. It accounts for a large proportion of cardiovascular diseases in the elderly. Hence this study was done to know the socio-demographic profile and the prevalence of Hypertension among the elderly more than 60 years of age residing in urban field practice area of S.N. Medical College, Bagalkot.

Materials and Methods: A cross sectional community based study was done in urban field practice area of S. N. Medical College, Bagalkot, Karnataka.

According to a previous study done in Karnataka, the prevalence of hypertension among the elderly was 30.7% and sample size was calculated to 627.

Blood pressure measurement was done using the auscultatory method with a standardized calibrated mercury column sphygmomanometer.Data analysis was done using SPSS software version 20.

Result: Out of 627 elderly studied, males were 48.32% and females were 51.67%. Majority (64.27%) of the elderly were in the age group of 60-69 years followed by 28.36% between 70-79 years and 7.6% more than 80 years and above. Overall prevalence of hypertension among elderly is 51.99%. [Males 48.15% and females 51.84%]. Prevalence of overweight and obesity in hypertensives 17.2% and 66.9% in males and 12.4% and 53.3% in females respectively. Consumption of tobacco and alcohol was found to be more among males who are hypertensives. (p < 0.000)

Conclusion: There is increased need of outreach services for adequate health care of the elderly in developing countries like India.

Keywords: Hypertension, Elderly, Urban area.

Introduction

"Ageing is a universal process" in the words of Seneca, "Old age is an incurable disease"

In the words of Sir James Ross, "You cannot heal old age; you protect it, promote it and extend it". Though advancements in modern technologies and medicine have occurred, a greater number of humans are surviving into later life with the potential to reach the age of 120 years. This phenomenon known as the "rectangularization" or "box shaping" of the survival curve of man, suggest that the average life span of man is increasing.¹ The word Geriatrics was coined by Nascher in 1914. The meaning of "gerus and iatra" being "old age and treatment". Senescence is the process of ageing. Changes that are an outcome of a lifelong interaction between two opposing processes:

- 1. One representing evolution/growth, and
- 2. The other involution/atrophy 2

Longevity has increased significantly in the past few decades due to demographic transition in the country. India is going to be having the highest number of Elderly with multimorbidity of non communicable disease in the world by year 2025. Developing countries are thus likely to face a huge burden of chronic non-communicable diseases in the

near future. Of these diseases, hypertension is one of the most important treatable causes of mortality and morbidity in the elderly.³ It accounts for a large proportion of cardiovascular diseases in the elderly.⁴⁻⁶

Hence, this study was done to know the sociodemographic profile and the prevalence of Hypertension among the elderly more than 60 years of age residing in urban field practice area of S.N. Medical College, Bagalkot, Karnataka.

Materials and Methodology

A cross sectional community based study was done during January-December 2018 in urban field practice area of S.N. Medical College, Bagalkot after Ethical clearance. According to a study done during 2010 in rural areas of Davanagere, the prevalence of hypertension among the elderly was 30.7%.⁷ The sample size was calculated to be 627.

According to Census 2011, elderly is 8.1% of total population in India and the population of study area was 18803. Estimated elderly population in the study area was 1523. Thereby, sampling interval calculated to 2.42. Every 2^{nd} elderly individual included in the study.

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Blood Pressure	Systolic (mm of Hg)	Diastolic (mm of Hg)
Normal	< 120	<80
Prehypertension	120-139	80-89
Stage-1	140-159	90-99
hypertensives		
Stage-2	>160	>100
hypertensives		

Table: Definition of hypertension (Based on JNC-VII criteria)⁸

Inclusion criteria

Permanent residents of urban field practice area who were residing for more then 1 year and willing to participate in the study. Written informed consent in the local language was taken from all study subjects, before enrolment in the study. Data was collected by interview technique by house to house survey using predesigned and semi-structured questionnaire.Information regarding socio-demographic factors and type of diet consumed was assessed from the questionnaire.

Hypertension measurement

Using the auscultatory method with a standardized calibrated mercury column type sphygmomanometer and an appropriate sized cuff encircling at least 80% of the arm in the seated posture, with feet on the floor and arm supported at heart level.

Following a standardized protocol, three separate measurements were recorded after proper rest and the average of the three measurements was calculated. Systolic

BP is the point at which the first of 2 or more sounds is heard (phase I) and diastolic BP is the point before the disappearance of sounds (phase 5). Data was compiled and tabulated by M S Excel spread sheet. Statistical software Open Epi was utilized for analysis.

Results

Majority (64.27%) of the elderly were in the age group of 60-69 years followed by 28.36% between 70-79 years and 7.6% more than 80 years and above. Out of 627 elderly 324(51.92%) were females and 303(48.32%) were males. Hindus were maximum (78.14%) in the area, followed by 12.12% Muslims and 9.72% of other religions. Maximum (49.12%) lived in joint family and 31.10% in nuclear family and 19.77% lived alone. Among them 19.75% were single living females and 19.80% were single living males. The education status of study population shows that maximum (55.82%) were illiterates. Majority of the elderly (64.27%) belonged to class V followed by 28.54% to class IV, 3.66% belonged to class III, 2.39% to class II and 1.11% belonged to class I under Modified BG Prasad Classification.

Overall prevalence of hypertension among elderly was 51.99%. [Males – 48.15% and females –51.84%] Among 627 elderly, 29.98% were known hypertensives on treatment. On examination, persistence of higher side of blood pressure (>140/90 mmHg) was found in 120(63.82\%) [Males – 52(43.33%) and females – 68(56.66%)]

Incidence of hypertension among elderly is 42.33% hypertensives. (Table1 and Table2)

Table 1:	Distribution	of the different	t classes	of elderly h	hypertensives a	as per JNC-VII

Blood Pressure (Systolic/ Diastolic mm of Hg)	JNC-VII	Ν	Percentage
< 120/80	Normal	121	19.29
120-139/80-89	Pre-hypertension	180	28.70
140-159/90-99	Stage-1 hypertensives	173	27.59
>160/100	Stage-2 hypertensives	153	24.40

 Table 2: Association between age, gender and JNC scoring of hypertension as per JNC-VII (n=326, male=157, females=169)

	Normal	%	Pre-HTN	%	Stage-I	%	Stage-II	%	\mathbf{X}^2	P-value	
Sex											
Male	61	50.4	85	47.2	95	54.9	62	40.5	7.036	0.71	
Female	60	49.6	95	52.8	78	45.1	91	59.4			
Total	121	100	180	100	173	100	153	100			
Age (in years)											
60-69	72	61.7	113	62.8	114	65.9	62	103	9.453	0.66	
70-79	36	29.7	54	30	48	27.7	39	25.5			
≥ 80	13	10.7	13	7.2	11	6.4	11	7.2			

This study shows that majority of the elderly who had mixed diet had hypertension (51.5%). In the hypertensives, 17.2% males and 12.4% females were Overweight and 66.9% males and 53.3% females were Obese. The association of gender with dietary pattern (p<0.004) and Body Mass Index (p<0.000) was found to be statistically significant (Table 3).

	Male		Female		Total		\mathbf{X}^2	P-value
Dietary Habits	No	(%)	No	(%)	No	(%)		
Vegetarian	65	41.4	57	33.7	122	37.4	11.209	0.004
Non- Vegetarian	8	5.1	28	16.6	36	11.0		
Mixed	84	53.5	84	49.7	168	51.5		
BMI(Asian)	No	(%)	No	(%)	No	(%)		
<18.5	5	3.2	33	19.5	38	11.7	22.680	0.000
18.5-22.9	20	12.7	25	14.8	45	13.8		
23.0-24.9	27	17.2	21	12.4	48	14.7		
≥25.0	105	66.9	90	53.3	195	59.8		

Table 3: Association of elderly hypertensives with gender, dietary habits and Asian Classification of Body Mass Index (Male = 303, Female = 324).

Consumption of tobacco (chewers as well as smokers) and alcoholics were more among hypertensives and was statistically found to be significant (p < 0.000)[Table 4]

Table 4: Association of elderly hypertensives with gender and habits

Habits	Male	%	Female	%	Total	%	\mathbf{X}^2	P-value			
Smoking											
Current Smoker	20	12.7	8	4.7	28	8.6	28.698	0.000			
Ex-addict	41	26.1	14	8.3	55	16.9					
Never	96	61.1	147	87.0	243	74.5					
Alcohol Intake											
Current drinker	12	7.6	4	2.4	16		28.294	0.000			
Ex-addict	31	19.7	10	5.9	41						
Occasional	91	58.0	13	7.7	104						
Never	23	14.6	142	84.0	165						
Tobacco consumption											
Current chewer	44	28.0	22	13.0	66	20.2	24.057	0.000			
Ex-addict	30	19.1	15	8.9	45	13.8					
Never	83	52.8	132	78.1	215	65.9					

Discussion

In our study, majority (64.27%) of the elderly were in the age group of 60-69 years followed by 28.36% between 70-79 years and 7.6% more than 80 years and above. Out of 627 elderly 324(51.92%) were females and 303(48.32%) were males.

Majority of the elderly were in the age group of 60-69 years. More number of females lived longer in age groups 60-69 and 70-79 compared to males.⁹ Kammar et al. observed that 40% of the elderly were illiterate.¹⁰

In the present study, 64.27% elderly belonged to class V followed by 28.54% to class IV, 3.66% belonged to class III, 2.39% to class II and 1.11% belonged to class I under Modified BG Prasad Classification. Manda et al. observed that 27.2% of the elderly subjects were in class V (poor) whereas our study showed 64.27% were in class V.¹¹

Various studies estimated a prevalence rate of hypertension among urban population ranging from 1.24% in 1949 to 36.4% in 2003.¹² The overall prevalence of hypertension among elderly in our study was observed to be 51.99% and a large proportion 28.70% of elderly in the pre-hypertensive group). Similarly a previous study done by Das Shyamal Kumar et al. showed a large proportion of sample population in the pre-hypertensive group.⁸ These participants are of great interest since chance of progression

to hypertension is high. According to the study conducted by Hazarika et al. 3.36% of the hypertensives undergoing treatment were under control.¹³ Similarily, among 29.98% known case of hypertension, 14(7.44%) are under control in our study.

In our study the association of gender with that of dietary pattern (p<0.004) and Body Mass Index (p<0.000) was found to be statistically significant (Table 3).

Similarly the association of hypertension with BMI and dietary pattern have been reported in the past studies showed direct relation with increased blood pressure.^{14,15} The recent increase in overweight and obesity in the United States both in adults and children may explain, in part, the associated increase in hypertension prevalence over the past decade.¹⁶ Based on a review of NHANES III data, the southern region of the United States, which includes the "stroke belt," has dietary patterns that may contribute to the high prevalence of hypertension and cardiovascular disease in that region.¹⁷ Clinical trial evidence also suggested that blood pressure is decreased by diets rich in fruits and vegetables, lower in salt, and high in nonfat dairy products.¹⁸

The consumption of tobacco (chewers as well as smokers) and also alcoholics in our study were more among

hypertensive males than females and was statistically found to be significant (p < 0.000). Prevalence of smoked and smokeless tobacco consumption in India is 20%. It is significantly higher in males than in females (28% in males and 12% in females) and in rural population as compared to urban population.¹⁹ The contribution of alcohol to the prevalence of hypertension attributed to consuming more than two drinks per day has been estimated to be 5% to 7%.²⁰

Public health implications

Hypertension is a major risk factor for heart disease and stroke. Recent data from Eastern Asia demonstrate a stronger association of hypertension with risk of stroke in this part of the world compared to the West.²¹

These findings provide strong support for attempts to detect and treat hypertension in India. These under-score the importance of alerting the public health community to the impending burden of hypertension in the elderly in the near future, with its accompanying clinical and economic consequences. In tandem with a population based strategy to reduce blood pressure, it is important to implement individual-based programe that permit identification and treatment of hypertension in general, and in the elderly in particular.

We recommend formulation of a National Hypertension Programme that investigates environmental factors associated with hypertension, encourages physicians as well as other health care professionals to routinely record blood pressure measurement; build an infrastructure for research and education in high blood pressure. Such a programme could adapt international guidelines keeping in mind local priorities, cultural, economic and social realities. It should evaluate benefits, feasibility and cost-effectiveness of drug treatment, which would be able to target local practitioners more effectively.²²

Conclusion

In our community-based study of elderly subjects in Bagalkot Urban field practice area, we observed that 51.99% of individuals over the age of 60 years had elevated blood pressure. We noted a striking lack of awareness of the condition among the subjects and a suboptimal rate of control among those treated. These findings emphasize the public health importance of hypertension in the elderly in the State, and the likely increase in magnitude of this problem in the country in the near future.

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Conflict of interest

None.

Ethical Approval

The study was approved by the Institutional Ethics Committee

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