

Prevalence, Awareness, Treatment and Control of Hypertension among the Elderly Residing in Rural Area of Haldwani Block, in Nainital District of Uttarakhand

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ABSTRACT

Introduction: Raised blood pressure is a major cardiovascular risk factor. If left uncontrolled, hypertension causes stroke, myocardial infarction, cardiac failure, dementia, renal failure and blindness, causing human suffering and imposing severe financial and service burdens on health systems. The objective of the study is to find out the prevalence, awareness, treatment and control of hypertension and also to know the factors influencing hypertension among elderly population. **Materials and Methods:** Community based cross-sectional study was conducted in rural field practice area under the department of Community Medicine in Haldwani block of district Nainital. The study was conducted from November 2013 to October 2014. Elderly, who had completed sixty years of age at the time of study, gave consent and volunteer to participate, were included in the study. A pretested, semi-structured questionnaire was administered to collect data from 440 elderly which was later entered into Microsoft excel and was analyzed using SPSS 16. Chi square test was used to test the association and $p < 0.05$ was considered significant. **Result:** The prevalence of hypertension among the elderly was 38.86%. Awareness, treatment and blood pressure under control was seen among 59.06%, 76.24% and 19.48% respectively. Hypertension was significantly associated with literacy status, employment status, higher socioeconomic status, increased body mass index, and presence of diabetes. **Conclusion:** The prevalence of hypertension was quite high among the elderly while the awareness, treatment and control of blood pressure were low among those who were found to be hypertensive.

Key words: Hypertension, Elderly, Rural, Prevalence, Awareness, Treatment, Control.

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INTRODUCTION

Population growth and improved longevity are leading to increasing numbers and proportions of older people in many parts of the world. As population will age, annual non communicable disease deaths are projected to rise substantially to 52 million in 2030.¹

Cardiovascular diseases are responsible for the largest proportion of non communicable disease deaths and raised blood pressure is a major cardiovascular risk factor. It has estimated to have caused 9.4 million deaths and 7% of disease burden—as measured in DALYS—in 2010.²

Hypertension being considered as an iceberg disease needs immediate attention because by the time it is diagnosed, it has already affected multiple organs especially in case of elderly people thus it was an effort made by us to find out the prevalence, awareness, treatment and control of hypertension among elderly and also to know the factors influencing its causation.

MATERIALS AND METHODS

A community based cross-sectional study was carried out in the villages covered under rural health training centre of the department of Community Medicine in block Haldwani, district Nainital of Uttarakhand. Study period was for one year duration from November 2013 to October 2014. A two stage sampling technique was adopted to select the sample size of 440 which came out after taking a default prevalence (p) of 50% for hypertension and applying the formula of $4pq/d^2$, where d or absolute precision was taken as 5% and considering the non response rate as 10%.

Inclusion criteria: The elderly, who had completed sixty years of age at the time of investigation, were permanent resident and willing to participate were included in the study.

Exclusion criteria: Elderly who were non-co operative, unwilling to participate and not able to contact even after three visits to the house.

A pretested semi structured questionnaire was administered to collect the data, after taking informed consent and ensuring the confidentiality. The data collected was later coded, entered into Microsoft excel sheet and was analyzed using SPSS v 16. Statistical analysis was done using Chi square test and $p < 0.05$ was considered significant. The permission was taken from Institutional Ethical Committee before the commencement of study.

Measurement of Blood Pressure (BP): Blood Pressure was measured in the sitting posture with an appropriate- sized cuff encircling the arm using Welch-Allyn shock resistant BP instrument (air-based). Two readings were taken in a resting patient at a 5-minutes interval, and the average of the two readings was reported.

Hypertension was defined as having systolic blood pressure (SBP) of ≥ 140 mmHg or diastolic blood pressure (DBP) of ≥ 90 mmHg, and/or taking antihypertensive drugs. Awareness of hypertension was defined as previously diagnosed by doctor. Treatment of hypertension was defined as current pharmacological treatment as prescribed by the doctor. Controlled hypertension was defined where, the SBP was < 140 mmHg and DBP was < 90 mmHg after pharmacological intervention, irrespective of his diabetic or any other chronic disease condition.

Diabetes was considered on the basis of prior diagnosis by the doctor and study subject undergoing treatment for the same, verified by doctor's prescription and medication which the elderly were taking.

RESULTS

Among 440 elderly, maximum 262 (59.54%) were in 60-69 years of age group. There was decrease in trend of elderly with increase in age. The number of females 263 (57.5%) outnumbered males. About 263 (59.77%) of the elderly were married and rest widowed. Mostly were Hindus 431 (97.95%) and belonged to general category 312 (70.91%). 264 (60%) of the elderly were illiterate and 94 (21.36%) of the elderly were still working to earn a living. Majority 260 (59.09%) belonged to class III as per modified BG Prasad's classification. Most 407 (92.5%) of them were living in a joint family. 206 (46.82%) of the elderly were financially dependent on other family members while 25.45% were independent (Table 1).

The prevalence of hypertension was 171 (38.86%) among 440 elderly. Among, those hypertensive's 101 (59.06%) were already aware of their condition and among those aware, 77(76.24%) were taking anti-hypertensive drug therapy, but only 15(19.48%) elderly had their blood pressure under control (Figure 1).

Hypertension was not significantly associated with increase in age, any particular sex, marital status and dietary habit of the elderly. There was a significant association between hypertension and literates ($\chi^2=20.4$, $p=0.001$), those who were not working ($\chi^2=5.17$, $p=0.023$), higher socio economic status ($\chi^2=25.9$, $p=0.001$), higher body mass index ($\chi^2=71.0$, $p=0.001$), and presence of diabetes ($\chi^2=10.98$, $p=0.001$) (Table 2).

DISCUSSION

The overall prevalence of hypertension in this study, among elderly was 38.86%. 59.06% were aware about their hypertensive status while among those aware, 76.24% were on treatment and only 19.48% were controlled. The prevalence of hypertension was comparatively similar to that reported by Yadav G *et al*³ (39.5%) in resettlement colony of New Delhi. However, 51.7% were aware of their condition while out of total hypertensive's 39% were on treatment and 14.6% were controlled on taking treatment. Chinnakali P *et al*⁴ observed in rural Puducherry the prevalence of hypertension as 40.5% and out of these 62% were already aware of their condition and among them 98% were taking treatment, while only 13.5% were having their blood pressure under control. Kalavathy MC *et al*⁵ reported from Kerala, that 51.8% of the elderly were hypertensive's and out of these 44.9% already knew about this while 42.7% were on antihypertensive treatment, only 11.2% were under controlled. The study done by Hammami S *et al*⁶ in Tunisia observed higher prevalence of hypertension as 52%, awareness level was also high i.e.81%, treatment was taken by 78.4% while 30.4% were being correctly treated, among overall hypertensive elderly. Hazarika NC *et al*⁷ observed much higher prevalence of 63.63% while awareness was low (26.9%) and though majority of those who were aware were taking antihypertensive, control was very poor (3.36%). The study done in Singapore by Malhotra R *et al*⁸ found that 73.9% of the elderly were hypertensive and 43.1% knew about their condition. Also, the other study in Singapore by Seow LSE *et al*⁹ reported a prevalence of 74.1% and among these 76% was aware of their condition and out of those who were aware 95.8% was taking treatment while 48.9% had their blood pressure controlled. The wide variation in the country itself and outside the country is observed because of varied settings among which the study has been conducted and the difference in the criteria adopted for labeling the elderly as hypertensive.

In the present study, increase in age was not found to have any significant association with hypertension. Similar finding was observed by Yadav G *et al*,³ Chinnakali P *et al*,⁴ Rashid AK *et al*,¹⁰ Mendes TAB *et al*,¹¹ and Hypertension Study Group of WHO.¹² The other researchers^{5,7-9,13-18} observed significant association of hypertension with increase in age

while Gupta P *et al*¹⁹ reported that prevalence of hypertension decrease with age.

The prevalence of hypertension in males was slightly higher than that of females; however, this difference was not significant. This finding is also confirmed in a report² on global status of non- communicable diseases where it has been mentioned that in all WHO regions, men have slightly higher prevalence of raised blood pressure than women. Various researchers^{3,5,7-10,12,14-16,18-19} also reported no significant association of hypertension with particular sex while few others^{6,11,13,17} found significant association with female sex.

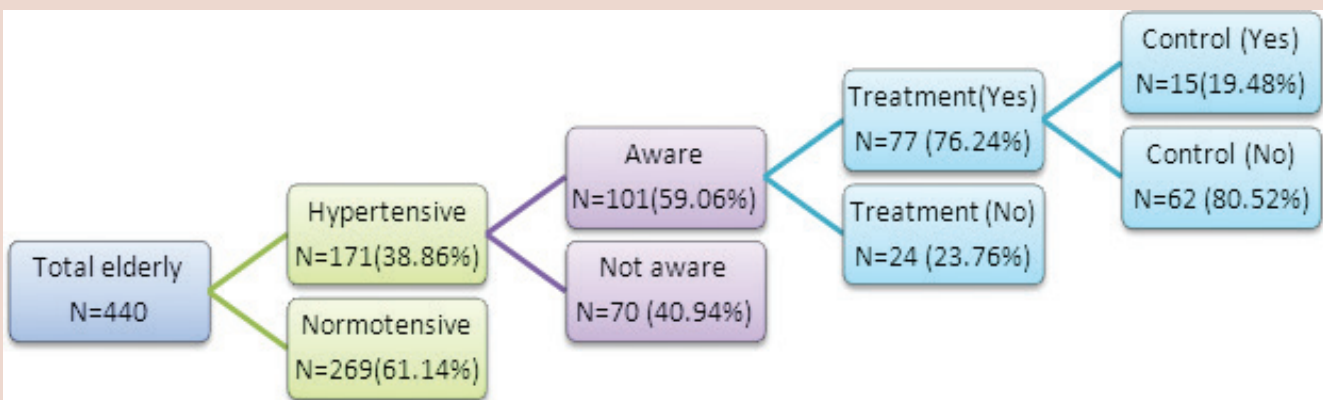
Hypertension was seen more among those who were married than widowed, though this difference was not found significant. Similar observations was made by Hammami S *et al*,⁶ while reverse was seen by Rashid AK *et al*,¹⁰ Mendes TAB *et al*¹¹ and according to WHO study,¹² marital status was not correlated with prevalence of hypertension.

Table 1: Distribution of the elderly according to their socio-demographic profile

Variables	Frequency	Percentage (%)
Age group (years)		
60-69	262	59.54
70-79	129	29.32
≥80	49	11.14
Sex		
Male	187	42.5
Female	253	57.5
Marital Status		
Married	263	59.77
Widowed	177	40.23
Religion		
Hindu	431	97.95
Sikh	09	2.05
Caste		
Others (General)	312	70.91
Schedule caste	125	28.41
Other backward class	03	0.68
Literacy status		
Illiterate	264	60.0
Literate	176	40.0
Employment status		
Currently working	94	21.36
Not working	346	78.64
Socioeconomic status		
Class I	01	0.25
Class II	46	10.45
Class III	260	59.09
Class IV	95	21.59
Class V	38	8.64
Type of Family		
Joint	407	92.5
Nuclear	33	7.5
Financial Dependency		
Dependent	206	46.82
Partially dependent	122	27.73
Independent	112	25.45

Table 2: Association between Hypertension and other variables

Variables	Hypertension			χ^2 p value
	Present (N=171) (%)	Absent (N=269) (%)	Total (N=440) (%)	
Age group (years)				
60-69	100(38.17)	162(61.83)	262 (59.55)	$\chi^2= 5.21$ p=0.07
70-79	58(44.96)	71(55.04)	129 (29.32)	
≥80	13(26.53)	36(73.47)	49 (11.13)	
Sex				
Male	74(39.57)	113(60.43)	187 (42.5)	$\chi^2=0.07$ p = 0.793
Female	97(38.34)	156(61.66)	253 (57.5)	
Marital Status				
Married	112 (42.59)	151(57.41)	263(59.77)	$\chi^2= 3.81$ p = 0.051
Widowed	59 (33.33)	118(66.67)	177(40.23)	
Literacy status				
Illiterate	80(30.30)	184(69.70)	264 (60.0)	$\chi^2=20.4$ p=0.001
Literate	91(51.70)	85(48.30)	176(40.0)	
Employment status				
Currently working	27(28.72)	67(71.28)	94(21.36)	$\chi^2=5.17$ p=0.023
Not working	144(41.62)	202(58.38)	346(78.64)	
Socioeconomic status				
Class I	1(100.0)	0(0)	1 (0.23)	$\chi^2=25.9$ p=0.001
Class II	27(58.70)	19(41.30)	46(10.45)	
Class III	112(43.08)	148(56.92)	260 (59.09)	
Class IV	25(26.32)	70(73.68)	95(21.59)	
Class V	06(15.79)	32(84.21)	38(8.64)	
Body Mass Index (kg/ m ²)				
<18.5	12(10.62)	101(89.38)	113(25.68)	$\chi^2=71.0$ p=0.001
18.5-24.99	93(40.79)	135(59.21)	228(51.82)	
25-29.99	52(65.0)	28(35.0)	80(18.18)	
≥30	14(73.68)	5(26.32)	19(4.32)	
Dietary Habits				
Vegetarian	87(40.65)	127(59.35)	214(48.64)	$\chi^2=0.56$ p=0.45
Non vegetarian	84(37.17)	142(62.83)	226(51.36)	
Diabetes				
Present	34(58.62)	24(41.38)	58(13.18)	$\chi^2=10.98$ p=0.001
Absent	137(35.86)	245(64.14)	382(86.82)	

**Figure 1:** Distribution of elderly according to prevalence, awareness, treatment and control of hypertension.

The prevalence of hypertension among illiterates was less as compared to literates and this difference was found significant, similar finding was observed in WHO Study,¹² Arlappa N *et al*¹³ while in studies done by Seow LSE *et al*,⁹ Mendes TAB *et al*,¹¹ lower education level was associated with hypertension. No association was observed by Madhu T *et al*.¹⁴

The elderly who are currently working are less hypertensive as compared to not working and this difference was significant. Similar findings were observed by Rashid AK *et al*¹⁰ and Mendes TAB.¹¹

In this study, elderly with higher socioeconomic status was significantly associated with hypertension. This finding is in coherent with observation made by Madhu T *et al*,¹⁴ while Mendes TAB¹¹ found that hypertension was seen more in elderly with lower socioeconomic status.

The increase in body mass index was significantly associated with hypertension. This finding was confirmed with other researchers.^{3,6-10,12-14,17,18}

Elderly taking vegetarian diet was more hypertensive than non vegetarian, but this difference was not significant. Bharati D *et al*²⁰ had similar observation and it was significant.

Diabetes among elderly was significantly associated with hypertension. Similar finding was observed by various researchers.^{4,6,8,9,12,15,16,18}

CONCLUSION

The high burden of prevalence of hypertension, along with low proportion of controlled blood pressure inspite of taking medication suggests that there is a need for alternative approach. As recommended by WHO population strategy and high risk strategy can go a long way in preventing the hypertension and its dreaded complication.

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CONFLICT OF INTEREST

The author declare no conflict of interest.

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