Original Article

PREVALENCE OF HYPERTENSION AND IT'S CORRELATES IN ELDERLY POPULATION OF COASTAL KARNATAKA

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ABSTRACT

Background: Hypertension is becoming an important public health problem worldwide. It exhibits iceberg phenomena were unknown morbidity exceeds the known morbidity. The prevalence of hypertension is rapidly increasing in developing countries and is said to be one of the leading causes of death and disability among the elderly.

Objective: To determine the prevalence and factors influencing hypertension among geriatric population living in the rural community of coastal Karnataka.

Methodology: A cross-sectional community-based study was conducted among elderly population aged 60 years and above residing in the rural community in the field practice area of A.J. Institute of Medical Sciences & Research Centre. A total of 330 subjects aged 60 years and above were randomly included by simple random sampling technique from a list of elderly subjects being maintained at the rural health training center. Using a structured questionnaire, the basic information and history regarding diagnosis and treatment of hypertension was collected. Blood pressure, height and weight were recorded.

Result: Among the study population, the prevalence of hypertension was detected to be 58.5%. Among the 184 non-hypertensive subjects, 47 (25.5%) subjects were newly diagnosed as hypertensive. With logistic regression, hypertension cases were associated with age more than 70 [OR 1.754 95% CI 1.056-2.913] and occurrence of diabetes [OR 2.40 95% CI 1.286-4.510).

Conclusions: Findings of this study emphasize the public health importance of hypertension in the elderly. There is a definite need for screening the elderly, especially diabetics for early diagnosis followed by regular treatment of hypertension to reduce the associated complications.

Key words: Hypertension; Prevalence; Geriatric Population; Rural.

INTRODUCTION

Hypertension is becoming an important public health problem worldwide. It exhibits iceberg phenomena where unknown morbidity exceeds the known morbidity. Hypertension is a threat to life at all ages and in both sexes. The prevalence of hypertension is rapidly increasing in developing countries and is said to be one of the leading causes of death and disability among the elderly.[1] Prevalence of hypertension in India, for the last three decades has increased by about 30 times among urban residents and by about 10 times among rural residents.[2]

Average life span of people around the world has been increasing dramatically.[3] Age associated increase in hypertension prevalence is due to changes in arterial structure and function accompanying aging process. Subjects with poor blood pressure control are known to have higher risk of developing coronary artery disease (CAD), congestive heart failure, cerebrovascular disease and stroke.[4] To emphasize the old age problems World Health Organization celebrated World Health Day 2012 with "Good health adds life to years" as slogan and 2013 theme is focusing on hypertension with the slogan "Control your blood pressure".[5]

The elderly population in India is second largest in the world. According to 2011 censes 8.1% are of the age 60 years and above.[6] Three-fourth of the elderly population live in rural areas.[7] This study was done with the objective to determine the prevalence and factors in-

fluencing hypertension among geriatric population living in the rural community of coastal Karnataka.

METHODOLOGY

A cross-sectional community-based study was conducted among elderly population aged 60 years and above residing in the rural community in the field practice area of A.J. Institute of Medical Sciences & Research Centre. The sample size was estimated to be 328, by taking prevalence as 55%[8] and an allowable error of 10%. Ethical approval was taken from Institution's Ethics Committee. A total of 330 subjects aged 60 years and above were randomly included by simple random sampling technique from a list of elderly subjects being maintained at the rural health training center of A.J. Institute of Medical Sciences by using random number table. The study was conducted over a period of one year. Hypertension was defined according to 7th report of "Joint National Committee for detection and evaluation of BP" or already diagnosed and taking antihypertensive medication.[9] The basic information and history regarding diagnosis and treatment of hypertension was collected on a structured questionnaire through personal interviews during house to house visits. Blood pressure (BP) was measured by the first author twice using same mercury sphygmomanometer in the sitting position. Average of the readings was noted. If the first two readings differed by more than 5 mmHg, additional reading was taken and average of the three readings was noted. Height and weight were also measured.

Following **Operational Definitions** were used in the present study:

Obesity was defined as Body Mass Index ≥ 25 kg/m^2. Diabetics were defined as those already diagnosed and were taking anti-diabetic medications. Ischaemic heart disease was defined as those who were previously diagnosed by a clinician to have signs and symptoms. Cerebrovascular accident was defined as partial weakness or complete weaknesses which were assessed by symptoms, signs and previous health records**.** Current tobacco users were those who used any form of tobacco products at least once in the last 30 days. Among the non-users, ex-users and never used were combined. Alcohol user was defined those who consumed any amount of alcohol in the last 30 days.

Statistics

All the data was entered into Microsoft Excel and analyzed using SPSS (trial version 16) computer software. The statistical significance level was fixed at $p<0.05$. Logistic regression analysis was done using hypertension as the dependent variable and the various risk factors identified as independent variables.

RESULTS

Table 1 shows the socio-demographic profile of the study population. Among the study population, the prevalence of hypertension was detected to be 58.5%. Self reported hypertensives were 146 (44.2%) of which 134 (91.7%) were on regular medications. Among the 184 non-hypertensive participants, 47 (25.5%) participants were newly diagnosed as hypertensive, of which isolated systolic BP of ≥140 mmHg was seen in 32 (17.4%) individuals, isolated diastolic BP ≥ 90 mmHg in 5 (2.7%), and 10 (5.4%) had both systolic and diastolic hypertension. Prevalence of self reported diabetes and obesity was 20.3% and 22.1% respectively.

Table 1: Characteristics of the study sample

Variable	Total Sample (n=330)	Men (n=113)	Women (n=217)
Age in years (%)			
60-69	63.9	62.8	64.5
70-79	30.9	29.2	31.8
≥80	5.2	8.0	3.7
Mean±SD	67±6	67±7	66±6
Education (%)			
Literate	33.6	54.0	23.0
Illiterate	66.4	46.0	77.0
Marital status (%)			
Married	55.3	92.9	36.4
Alone*	44.7	7.1	63.6
Employment status (%)			
Employed	29.7	29.2	30.0
Unemployed	70.3	70.8	70.0
Type of family (%)			
Nuclear	32.4	54.9	20.7
Joint family	67.6	45.1	79.3
Ration card (%)			
Below poverty line	61.5	45.1	70.0
Above poverty line	38.5	54.9	30.0

* Includes unmarried, divorced, separated, widow, widower

Table 2 shows that by logistic regression analysis, risk of hypertension was 1.75(CI =1.056-2.913) times higher among age ≥ 70 years compared to age <70 years and those with diabetes had 2.4 (CI 1.286-4.510) times higher risk compared to those without diabetes.

Proportion of hypertension was similar among both men and women (58.5%). Proportion of hypertension was almost similar among married (58.2%) and alone (58.9%). Though the proportion of hypertension was higher among literates compared to illiterates [OR 1.585 (0.987-2.546)] and among obese compared to non obese [OR 1.733(0.998-3.009)], the relationship was not statiscally significant.

When the association between hypertension was compared with ischaemic heart disease(IHD) and cerebrovascular accident (CVA), the proportion of IHD was 9.8% among hypertensives compared to 3.6% among non hypertensives (p value= 0.03) and the proportion of CVA was 5.7% among hypertensives compared to 0.7% among non hypertensives (p value= 0.017).

Table 2: Determinants of hypertension cases by logistic regression

Variable	Total (n=330)	Hypertensive	Normotensive	Univariate OR (95%CI)	Adjusted OR (95% CI)
Age in years (%)					
60-69	211	116(55.0)	95(45.0)	1	1
70 and above	119	77(64.7)	42(35.3)	1.501(0.944-2.387)	1.754(1.056-2.913)
Sex (%)					
Female	217	127(58.5)	90(41.5)	1	1
Male	113	66(58.4)	47(41.6)	0.995(0.627-1.579)	0.823(0.443-1.530)
Educational Status (%)					
Illiterate	219	120(54.8)	99(45.2)	1	1
Literate	111	73(65.8)	38(34.2)	1.585(0.987-2.546)	1.580(0.937-2.666)
Marital Status (%)					
Married	184	107(58.2)	77(41.8)	1	1
Alone	146	86(58.9)	60(41.1)	1.031(0.664-1.603)	0.924(0.522-1.638)
Body Mass Index in kg/m² (%)					
<25	257	143(55.6)	114(44.4)	1	1
≥25	73	50(68.5)	23(31.5)	1.733(0.998-3.009)	1.604(0.895-2.875)
Current tobacco consumption*(%)					
No	165	104(60.0)	61(40.0)	1	1
Yes	165	89(53.9)	76(46.1)	0.687(0.442-1.067)	0.812(0.510-1.294)
Alcohol consumption (%)					
No	298	175(58.7)	123(41.3)	1	1
Yes	32	18(56.2)	14(43.8)	0.904(0.433-1.886)	0.872(0.376-2.020)
Self reported diabetes (%)					
Non Diabetic	263	143(54.4)	120(45.6)	1	1
Diabetic	67	50(74.6)	17(25.4)	2.468(1.353-4.503)	2.409(1.286-4.510)

*Tobacco consumption both smoke and smokeless forms; Figures in parentheses are percentages.
Adjusted with age, gender, education status, marital status, body mass index, current tobacco consumption, current alcohol consumption and self reported diabetes.

DISCUSSION

Hypertension is an important cause of morbidity and mortality in the elderly population and is a risk factor for many other diseases. The overall prevalence of hypertension in this study was 58.5% which indicates the increasing burden of hypertension among the elderly population. A multicentric study done in India showed the prevalence of 55% among rural Kerala (adjacent state) elderly population.[8] A study done by Lena A et al. showed a prevalence of 59.1% in Udupi (adjacent district) which is similar to the present study.[10] Prevalence of hypertension was similar for both men and women as in the multicentric study[8] and subjects over 60 years in CURES 52 study.[11] However various studies in different parts of the country showed a higher prevalence among women.[10,12,13] Association of hypertension with increasing age, diabetes were significant and similar findings were revealed in a study done in eastern India by Pratim D P et al.[14]

CONCLUSION

Increasing life expectancy is expanding the geriatric population which in turn is increasing the burden of social and medical problems associated with them. Hypertension appears to be one of the major medical problems as shown in this study. There is a definite need for screening the elderly, especially diabetics for early diagnosis followed by regular treatment of hypertension to reduce the associated complications.

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