



A Cross Sectional Study on Hypertension And its Association With Smoking Among Elderly In Urban Area of District Jhansi (U.p.)

Swati Singh

Department of Community Medicine, Maharani Laxmi Bai Medical College, Jhansi (UP)

A.K.Malhotra

Department of Community Medicine, Maharani Laxmi Bai Medical College, Jhansi (UP)

ABSTRACT

Most diseases of elderly are chronic in nature. Of these diseases hypertension is the most important preventable cause of mortality and morbidity in elderly population. Smoking causes increase in blood pressure. The present study was conducted to assess the prevalence of hypertension and the relationship between tobacco smoking and hypertension among Elderly persons. It is a Community based cross-sectional study. A total of 100 elderly persons residing in urban areas of Jhansi formed the study population; simple random sampling technique was adopted for the study. Hypertension was assessed by using a standard sphygmomanometer apparatus. The data collected was entered in M.S Excel and analyzed in SPSS 16 trial version. The study showed the prevalence of 27% of hypertension among elderly. Hypertension was more prevalent in females as compared to males. Early identification of chronic geriatric morbidities like hypertension should be ensured through periodic screening and regular health checkups.

KEYWORDS

elderly, hypertension, smoking

Introduction

Ageing is a universal process. The World health Organization defines 'Elderly' as 'any person above the age of 60 years. According to the census of India 2011, the population of elderly is 103.2 million representing 8.6% of total population. Most diseases of elderly are chronic in nature. Of these diseases hypertension is the most important preventable cause of mortality and morbidity in elderly population.

Hypertension is the commonest cardiovascular disorder and now regarded as major public health problem.⁽¹⁾ It is a precursor to major diseases like myocardial infarction, stroke, renal failure etc. Overall 26.4% (972 million) of the adult world population was estimated to have hypertension in the year 2000, a figure that is projected to increase to 29.2% (1.56 billion) by the year 2025.⁽²⁾ Globally, the prevalence of hypertension is 25%.⁽³⁾ The overall worldwide magnitude of hypertension was estimated to be 972 million (26.4%) of the adult world population, with 333 million (34.26%) in developed and 639 million (65.73%) in developing countries.⁽⁴⁾

Overwhelming evidence supports the conclusion that cigarette smoking causes various adverse cardiovascular event^(5,6) and acts synergistically with hypertension and dyslipidemia to increase the risk of coronary heart disease.⁽⁷⁾ Smoking causes an acute increase in blood pressure (BP) and heart rate and has been found to be associated with malignant hypertension.⁽⁸⁾ Nicotine acts as an adrenergic agonist, mediating local and systemic catecholamine release and possibly the release of vasopressin.⁽⁹⁾ Paradoxically, several epidemiological studies have found that BP levels among cigarette smokers were the same as or lower than those of nonsmokers.^(10,11) Thus, the present study was conducted to assess the prevalence of hypertension and to assess the relationship between tobacco smoking and hypertension among elderly persons.

Material and Methods

This was a community based cross-sectional study. The study was conducted during October 2014 to December 2014 in selected urban areas of Jhansi city in Uttar Pradesh. A total of 100 elderly persons residing in urban areas of Jhansi in Shivaganagar and Civil lines formed the study population. A simple random sampling technique was adopted for the study. The

purpose of visit was explained to the family members and their co-operation sought. The verbal consent was obtained from every participant. People who did not give their verbal consent or who were not resident of the village, but visiting were excluded from the study. The study was conducted by making house to house visits, interviewing and examining all the eligible individuals in the family with a pre-designed pre-tested detailed questionnaire which included information on demographic characteristics (e.g. age, sex, marital status, religion, caste, education, occupation, socio economic status), diet, personal and family medical history, information on life-style habits such as smoking.

The criteria of diagnosis and method of blood pressure measurement for each participant were followed as per JNC VII recommendation.⁽¹²⁾ Auscultatory method with a standardized calibrated mercury column type sphygmomanometer (regularly inspected and validated) was used. Two separate measurements were obtained on the left arm of the seated subject using a cuff of an appropriate size and the average BP reading was recorded. Systolic blood pressure (SBP) is the point at which the first of two or more Korotkoff sounds is heard (onset of phase 1), and the disappearance of Korotkoff sound (onset of phase 5) is used to define diastolic blood pressure (DBP). The average of the readings of SBP and DBP was taken as the BP of the participant. Both the blood pressure measurements were obtained after the subject had rested for at least five minutes in a seated position. It was made sure that the subjects had not consumed any hot beverages, such as tea or coffee or smoked/ chewed tobacco or undertaken vigorous physical activity within the 30 min preceding the interview. If they had, then the measurements were postponed by 30 min.

After getting through literature, where prevalence of hypertension in elderly was 48%.⁽¹³⁾ The sample size was calculated using the formula:

For prevalence the formula is

$$n = 4pq/L^2 \text{ (14), where}$$

n= sample size,

p= proportion in the population processing the characteristic of interest.

L=absolute error

$$q = (1-p)$$

Considering 95% confidence interval prevalence of hypertension to be 45% ("p" of 45%) and taking "L", absolute error in the estimate of "p" as 10%, the sample size was calculated, a total of 100 elderly persons were selected for this study by simple random sampling.

Statistical Analysis: The data collected was entered in M.S Excel and analyzed in SPSS 16 trial version. Yates Chi-square test was used for comparing the proportion and statistical significance was taken at P value <0.05.

Results

In the current study, the demographic characteristics of the participants are summarized in Table 1. Out of the 100 study participants 76% are males and 24% females. The majority of study participants (42%) were in the age group of 60-69 years of age. The mean age study participants is 72.7 years of age. More than half (55%) of the study participants have completed their schooling till secondary and higher secondary. Most of the study participants (44%) are having nuclear or three generation family. The majority of study participants about 73% are not working.

Distribution of study subject according to gender and prevalence of hypertension is shown in Table 2. The study showed the prevalence of hypertension as 27% among the elderly in urban Jhansi. Hypertension was more prevalent among females as compared to males. Females have the prevalence of hypertension as 29.16%, compared to males who have the prevalence of 26.31%.

Table 3 is showing the distribution of study subject according to gender and smoking habit. Smoking is more prevalent in males, of the study participants 30.26% males and 4.16% females are smokers.

Table 4 is showing the distribution of study subject according to hypertension and smoking habits. In this table we can see that systolic hypertension was more prevalent in smokers than non-smokers. Significant association between smoking and systolic hypertension is seen (p value 0.000).

Discussion

Hypertension is the commonest cardiovascular disorder and now regarded as major public health problem.⁽¹⁾ High blood pressure is estimated to cause 7.1 million deaths annually accounting for 13% of all deaths globally.⁽¹⁵⁾ It is being recognized that high blood pressure is an important public health problem in developing countries.⁽¹⁶⁾ In the present study the prevalence of hypertension was 27%. Similarly, study done among elderly in Chandigarh showed the prevalence of hypertension as 41.6%.⁽¹⁷⁾ A study done on Morbidity pattern among the elderly population in the rural area of Tamil Nadu, India found that the prevalence of hypertension 14%.⁽¹⁸⁾ On Morbidity profile of geriatric population in Kashmir showed that the prevalence of hypertension was 56%.⁽¹⁹⁾

In our study hypertension was more prevalent among females as compared to males. Females have the prevalence of hypertension as 29.16% compared to males who have the prevalence of 26.31%. A Study done among the elderly people in rural community in Tamil Nadu, found the prevalence of hypertension among males 7.71%, and among females is 10.6%.⁽²⁰⁾ Another study done on health and social problems of elderly in Udupi taluk, Karnataka, found the prevalence of hypertension 59.1% in males and 57.6% in females.⁽²¹⁾

Many studies have been performed for the effect of smoking on hypertension, but the effect of cigarette smoking on

blood pressure and development of hypertension is still unclear.⁽²²⁾ Mutually incompatible results have been obtained from wide-ranging, prospective studies.^(23,24) Chronic cigarette smoking was shown to lead to endothelial dysfunction in a study by Li et al.⁽²⁵⁾, to atherosclerotic plaque formation in a study by Sharrett et al.⁽²⁶⁾ It has been suggested that chronic cigarette smoking increases blood pressure and the incidence of hypertension through these mechanisms. In present study smoking is more prevalent in males, of the study participants 30.26% males and 4.16% females are smokers. In the study we can see systolic hypertension is more prevalent in smokers than non-smokers, significant association is seen between smoking and systolic hypertension is seen. In a study involving only male participants showed that smoking increased the risk of systolic hypertension in cases aged 60 and over that continued to smoke.⁽²³⁾ In a study reported high systolic and diastolic blood pressure and prevalence of hypertension in smokers compared to non-smokers in a study of 1780 patients⁽²⁷⁾. In a study it was found that 25.2% of study subjects had isolated systolic hypertension, and they found out age, smoking and BMI as significant determinants of hypertension.⁽²⁸⁾

Conclusions

Hypertension is on rise in India and must be regarded as a major public health issue. Our study showed the prevalence of hypertension among elderly is 27%. The prevalence of hypertension shows a gradual increase with increase in age. Hypertension was more prevalent in females as compared to males. Smoking is seen to be more prevalent among males than females. Despite many studies performed, the effect of cigarette smoking on blood pressure and the development of hypertension are uncertain. In our study systolic hypertension is significantly associated with smoking.

Recommendations

Cessation of tobacco smoking can still slow down the incidence of high blood pressure and is used as primary preventable measure in control of hypertension. People who stop smoking are less likely to develop vascular disease. Those with vascular disease decrease the chance of further complication when they stop smoking. At worst their chance of developing cancer and several important vascular diseases will be reduced when they stop; at best there may be additional protection from malignant-phase hypertension, a particularly lethal form of vascular disease.

Tables

Table-1: Socio-demographic determinants of study subjects

Variables	Number (%)	Number of Participants
Gender		
Male		76 (76)
Female		24 (24)
Age range (in years)		
60-69 (Young old)	Male	33 (33)
	Female	9 (9)
	Total	42 (42)
70-79 (Old old)	Male	27 (27)
	Female	12 (12)
	Total	39 (39)
80 & more (Very old)	Male	16 (16)
	Female	3 (3)
	Total	19 (19)
Mean – 72.7, SD - +/-7.3		
Total		100 (100)
Education		
No formal education		10 (10)
Primary		17 (17)
Secondary		26 (26)
Higher secondary		29 (29)
Graduation		15 (15)
Above graduation		3 (3)
Type of Family		

Single	18	(18)
Nuclear/3 generation family	44	(44)
Joint family	37	(37)
Don't have family	1	(1)
Marital status		
Currently married	60	(60)
Separated	4	(4)
Widowed	34	(34)
Divorced	2	(2)
Type of Occupation		
Private job	4	(4)
Agricultural worker	3	(3)
Business	20	(20)
Not working	73	(73)
Total	100	(100)

Table -2: Distribution of study subject according to gender and prevalence of hypertension

	Male		Female	
	(N)	%	(N)	%
Only Systolic Hypertension	12	15.79	5	20.83
Only Diastolic Hypertension	2	2.63	0	0.00
Both	6	7.89	2	8.33
Total	20	26.31	7	29.16

Table -3: Distribution of study subject according to gender and smoking habit

	Male		Female	
	Number (%)		Number (%)	
Non smokers	53	(69.73)	23	(95.83)
Smokers	23	(30.26)	1	(4.16)

Table -4: Distribution of study subject according to hypertension and smoking habits

	Smokers	Non-Smokers	Chi-square	P-value
Only Systolic Hypertension	11	6	16.01	0.000*
Only Diastolic Hypertension	0	2	0.001	0.97
Both	1	7	0.131	0.71

*-Statistically significant

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