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Original Research Article

Prevalence and role of risk factors for hypertension in 18-69 years of age in rural and urban areas of district Amritsar, Punjab, India

Chasham Mitra*, Mohan Lal, Tejbir Singh, S. S. Deepti

Department of Community Medicine, Government Medical College, Amritsar, Punjab, India

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***Correspondence:**
Dr. Chasham Mitra,
E-mail: dr.chashammitra@yahoo.com

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ABSTRACT

Background: Hypertension is a major public health problem in India and its prevalence is high among rural and urban population. All the risk factors of lifestyle are known to cause the early onset and rapid worsening of hypertension.
Methods: A cross sectional study was conducted. 1000 participants (500 rural and 500 urban) between the age group of 18-69 years were selected by systematic random sampling method from 5 villages and 5 urban wards of Amritsar city. Out of total, 500 males and 500 females were selected.
Results: This study shows that 332 (33.2%) participants were hypertensive out of total 1000. The chances of Hypertension are directly proportional to age and shows peak between 50-59 years of age, 86 (59.72%). The prevalence among males and females was 32.4% and 34% respectively. Hypertension is highest in respondents with body mass index (BMI >30) i.e. 53.43%. The prevalence of hypertension was slightly higher among smokers than non-smokers and among vegetarians than non- vegetarians.
Conclusions: Hence, it becomes necessary to adopt a lifestyle with regular physical activity for at-least 30 min a day, for 5 days of the week, to decrease prevalence of obesity and to maintain BMI within normal range. Thus awareness among communities should be raised regarding prevention of the risk factors for hypertension.

Keywords: BMI, Hypertension, Non-communicable diseases, Risk factors

INTRODUCTION

Chronic non-communicable diseases (NCD) are assuming increasing importance among the adult population in both developed and developing countries. The prevalence of chronic diseases is showing an upward trend in most countries, and for several reason this trend is likely to increase.

Hypertension (HTN) or high blood pressure, sometimes called arterial hypertension, is a chronic medical condition in which the blood pressure in the arteries is elevated.[1] Hypertension is one of the diseases of the XX century, with a social dimension. It is also dominating in this century, collecting its victims among heart attack and stroke patients.[2] Hypertension is a classic example of an iceberg phenomenon of disease.

Worldwide, raised blood pressure is estimated to cause 7.5 million deaths, about 12.8% of the total of all annual death.[3] Globally the overall prevalence of raised blood pressure in adults aged 25 years and above was about

40% in 2008. In the South-East Asia Region, approximately 35% of the adult population has hypertension, which accounts for nearly 1.5 million deaths annually; 9.4% of the total deaths are attributable to hypertension.[4] Hypertension, a major public health problem, is directly responsible for 51% of all stroke deaths and 45% of all coronary heart disease deaths in India. According to WHO health statistics 2012, the prevalence of hypertension in India was 23.1% in men and 22.6% in women in equal or more than 25 years age.[5] In Punjab state the prevalence of hypertension is approximately 14.5%in rural and 22.8% in urban areas respectively.[6]

All the risk factors of lifestyle are known to cause the early onset and rapid worsening of the hypertension. Social determinants like urbanization, housing and income adversely affect the behavioral risk factors and therefore influence the development and progression of hypertension. The various risk factors of hypertension are: 1) physical inactivity 2) unhealthy diet consumption 3) tobacco use etc. It is often associated with co-morbidities such as overweight, obesity.

According to the 'Global Burden of Disease study' CAD & CVA will be the leading cause of death worldwide by the year 2020.[7] Thus, it is clear that the biggest health challenge of the 21st century is the hypertension, as it is an enormous public health problem. One of the most common cardiovascular diseases is Hypertension.[8]

The lifestyle of population in Punjab is different in terms of eating and drinking habits, as compared to other states of India. The present study was undertaken in this direction, to estimate the prevalence & role of risk factors for hypertension in 18-69 years of age in rural and urban areas of district Amritsar.

METHODS

The study was done in 5 villages (rural population) and 5 wards (urban population), which are field practice areas attached to the department of Community Medicine, Government Medical College, Amritsar. The study was conducted after approval from institutional thesis and ethics committee and informed consent of the patient was taken. A Cross-sectional study was conducted for a period of one year from 1st January 2015 to 31st December 2015. The list of all villages and wards was collected from Municipal Corporation, Amritsar. 5 villages and 5 wards were selected randomly from the list. From every selected area (village or ward) 100 houses were selected by systematic random sampling method.

Prestructured performa was prepared in vernacular language. After entering into the selected house the purpose of the study was clearly explained in their vernacular language. Assurance was given that the information will only be used for study purpose and it will be kept confidential. Hence a rapport was build. From one selected house, the slips with the name of the eligible males were made and one slip was selected. The name on the selected slip was our participant for the study from that house. Similarly from the next house one female was selected .If eligible male or female was not available, than the immediate next house was selected for the study. Informed written consent was obtained.

Eligible persons in the age group of 18-69 years were included. Persons living in the house for more than 6 months were also included in the study. Members of the household who have mental disability which hinders them from understanding the question and responding back were excluded. For physical disability, selected participants were excluded only if they were unable to participate due to extreme physical disability.

Participants were interviewed as per pretested preforma. The socio - demographic information was included in the first part which included name, age, sex etc. Then the behavioral measurements regarding habits like type of diet, smoking, alcohol etc was asked. Then physical measurements were done immediately after the behavioral measurements. After the participant have rested 15 min, blood pressure was measured first, followed by height, weight and then BMI was calculated by using the formula (BMI= weight(kg)/height(m^2). Digital Blood Pressure monitor , weighing machine and measuring tape were the instruments used during the study. Respondents with SBP ≥140 and/or DBP ≥90 mmHg and respondents already on anti-hypertensive treatment were considered hypertensive according to JNC VII & WHO criteria. BMI was calculated according to Asia Pacific (2004) perspective.

RESULTS

Appropriate tests were applied and result were analyzed statistically using epi-info 7. The association of the categorical variables with outcomes was seen by the Chi Square test. P values less than 0.05 were taken as significant. The overall frequency of hypertension in the present sample is 33.2%. Age-specific distribution of hypertensives (Table 1) suggests that the prevalence of hypertension rises steeply with increase in age. At age 18-29 years, the frequency of hypertension was 4.27% which increases to 59.72% up to age group of 50-59 years, which was the maximum frequency after which it decreases slightly to 56.79%. Out of 500 males, 162 (32.4%) and out of 500 females,170 (34%) were hypertensive. Out of 500 respondents each in rural and urban areas, the percentage of hypertensives were 168 (33.6%) and 164 (32.8%) respectively. Table 2 shows that as the BMI of respondents increases, the percentage of hypertensives increases. i.e. from 4 (5.2%) in respondents with BMI <18.5 to 70 (53.43%) in respondents with BMI>30. Out of total 1000 respondents, 72 were smokers, out of which 25 (34.72%) were hypertensive. From 928 non – smokers, 307 (33.08%)

were hypertensive (Table 2). Out of 1000 respondents, 560 respondents were consuming vegetarian diet, out of which 206 (36.78%) were hypertensive. Out of 440 non – vegeterians, 126 (28.63%) were hypertensive.

Table 1: Socio - demographic variable effecting hypertension.

Socio – demographic variables	Hypertensives	Non-hypertensives	Total (n=1000)
	Age (years)		
18-29	10 (4.27%)	224 (95.73%)	234(23.4%)
30-39	46 (18.8%)	198 (81.2%)	244(24.4%)
40-49	98 (45.37%)	118 (54.63%)	216(21.6%)
50-59	86 (59.72%)	58 (40.28%)	144(14.4%)
60-69	92 (56.79%)	70 (43.21%)	162(16.2%)
Total	332 (33.2%)	668 (66.8%)	1000
	Gender		
Male	162(32.4%)	338(67.6%)	500(100%)
Female	170(34%)	330(66%)	500(100%)
Total	332(33.2%)	668(66.8%)	1000(100%)
	Residence		
Rural	168(33.6%)	332(66.4%)	500(100%)
Urban	164(32.8%)	336(67.2%)	500(100%)
Total	332(33.2%)	668(66.8%)	1000(100%)

Table 2: Risk factors for hypertension.

Variables	Hypertension	Non – hypertension	Total
BMI(kg/m^2)			
<18.5	4(5.2%)	76(94.8%)	80(100%)
18.5-22.9	86(22.6%)	294(77.4%)	380(100%)
23-24.9	54(32.53%)	112(67.47%)	166(100%)
25-29.9	118(48.55%)	125(51.45%)	243(100%)
>30	70(53.43%)	61(46.57%)	131(100%)
Total	332(33.2%)	668(66.8%)	1000
P<0.05			
Smoking status			
Smoker	25(34.72%)	47(65.28%)	72(100%)
Non – Smoker	307(33.08%)	621(66.92%)	928(100%)
Total	332(33.2%)	668(66.8%)	1000(100%)
P>0.05			
Type of diet			
Veg	206(36.78%)	354(63.22%)	560(100%)
Non –Veg	126(28.63%)	314(71.37%)	440(100%)
Total	332(33.2%)	668(66.8%)	1000(100%)
P<0.05			

DISCUSSION

The prevalence of hypertension in this study (33.2%), shows that the trend of hypertension is increasing. Urbanization, changes in lifestyle and changes in diet are the main factors responsible for this rising trend. The similar prevalence of hypertension was reported in a study in Himachal Pradesh with an overall prevalence of 35.89% with 34.8% in males and 33.1% in females.[9] Similar results were obtained in a study in Kerala with overall prevalence of 36.7% with 36 % in males and 37.2 % in females.[10]

The prevalence of hypertension in males and females in this study i.e. 162 (32.4%) and 170 (34%) respectively, which was similar to the above mentioned study in Kerala.[10] Singh A et al in a study on urban Sikh population of Amritsar revealed that the proportion of

hypertension was higher among males (60.1%) compared to that in females (39.9%).[11] Gupta et al reported hypertension in Jaipur in 30% men and 33% women aged ≥20 years and the results are coherent with our study.[12]

In the present study, significant positive association was found between age and prevalence of hypertension. A population based survey by Keil et al (1980) showed a steady and significant increase in blood pressure with increasing age in female Punjabi Indians in Southall and these findings were observed in this study.[13] Mahajan H et al in their study on 340 hypertensive subjects in urban slums of Mumbai stated that majority of patients 158 (46.46%) were in the age group of 51-60 years.[14] Desai et al also stated an increase in the prevalence of hypertension with the increasing age.[15]

A study by Gulati S et al on 400 individuals of 40-60 years of age revealed that 22% of hypertensives are in urban area and 11% in rural area of district Patiala but according to this study the hypertension prevalence in rural areas is a bit higher than in urban areas, which indicates that hypertension prevalence has increased significantly in rural areas.[16] In the ICMR study in 1994 involving 5537 individuals, the prevalence of hypertension among males and females in urban Delhi was 25% and 29% respectively and in rural Haryana it was 13% among males and 10% among females.[17]

Another risk factor in development of hypertension is obesity. In this study, a linear trend was seen between BMI and hypertension and similar observation was stated by Singh RB et al in his study on 25-64 years of adult population of Moradabad, North India.[18] Similar findings was observed in a study by Gupta R which stated that in both men and women, trends of increase in generalized obesity correlated significantly with trends of increase in hypertension.[19]

This study shows that the prevalence of hypertension in smokers in slightly high then non-smokers by only 1.64%.Similar findings were observed by Kannan L and Satyamoorthy TS (2009), which stated that among hypertensives, smoking and tobacco chewers were important risk factor and the difference was statistically significant compared to nonsmokers and non tobacco chewers.[20] However a study by Joseph C. Schoenenberger JC indicated that no evidence was found for a relationship of change in smoking status to change in blood pressure.[21]

In this study, the respondents who consumed non-veg diet were having less prevalence of hypertension as compared to vegeterians and the similar observations were made by Das SK, Sanyal K, Basu A.[22]

CONCLUSION

Hence, it becomes necessary to adopt a lifestyle with regular physical activity for at-least 30 min a day, for 5 days of the week, to decrease prevalence of obesity and to maintain BMI within normal range. Thus awareness among communities should be raised regarding prevention of the risk factors for hypertension.

Recommendations

The increasing prevalence of Hypertension in rural and urban areas is due to population growth, ageing, behavioral risk factors such as unhealthy diet, lack of physical activity, excess weight gain and many more. Creating awareness, improving education status, imparting healthy education and adopting a lifestyle with regular physical activity for at-least 30 min a day, for 5 days of the week are essential measures which should be encouraged early in life to curb the increasing problem of hypertension.

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