ORIGINAL ARTICLE

Prevalence of Hypertension and Risk Factors associated with it in Subjects attending Health Camp in Rishikesh, Uttarakhand

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Abstract

Background: One of the most important causes of death in the world is hypertension and its epidemic seems to be growing. By the year 2025, around 1.5 billion adults will be living with hypertension. **Aim & Objectives**: To find prevalence of hypertension in subjects attending a health screening camp at SPS government hospital, Rishikesh and to identify various risk factors related to hypertension. **Material & Methods**: A cross-sectional study was conducted among subjects attending a health screening camp at SPS Government hospital, Rishikesh. The camp was conducted for seven days period, from 11th October- 17th October, 2017. All subjects that attended the health camp and were either 30 years old and/or above were included in this study. An informed written consent was taken from all subjects that consented to participate in this study after explaining to them the purpose of the study. A questionnaire that was predesigned, pretested, structured was used to obtain demographic data, personal data and history of hypertension in the family, behavioural aspects, including, use of tobacco, alcohol and dietary habits. Blood pressure (BP) and anthropometric measurements were also recorded in this study. Total of 207 people attended the health camp, from which 196 agreed to participate in study. **Results**: Out of total of 207 people that attended the camp, 196 people gave their consent to participate in the study. In this study, out of 196 subjects 66 (33.7%) were found to be hypertensive. Risk factors like increasing age, family history of hypertension, increased BMI and waist hip ratio, use of tobacco and alcohol and increased blood sugar levels were found to be associated significantly with hypertension. **Conclusion**: There is high prevalence of hypertension in Rishikesh. Efforts are required to regularly screen for blood pressure at the community level to help tackle this iceberg disease.

Keywords

Introduction

Hypertension is one of the most important causes of premature death worldwide and the problem is growing; in 2025, an estimated 1.56 billion adults will be living with hypertension (1). Hypertension (HTN) is a rising public health problem in both developed

and developing nations alike. As per World Health Organization report, about 40% of people aged more than 25 years had hypertension in 2008 (2). Increased blood pressure is one of the major risk factors for occurrence of coronary heart disease and ischemic as well as hemorrhagic stroke. Blood pressure levels have been shown to be positively related to the risk for stroke and coronary heart disease (3). Complications of raised blood pressure also include heart failure, renal impairment, peripheral vascular disease, visual impairment and retinal haemorrhage. Hypertension is an iceberg disease, a silent killer because it often has no warning signs or symptoms, and many people are unaware of it, until the end organ damages have occurred; that is why it is important to get blood pressure checked regularly. Thus, with the aim of benefitting people attending the health camp, this study was conducted to screen them for hypertension and various risk factors associated with it.

Aims & Objectives

- To find prevalence of hypertension in subjects attending a health screening camp at SPS government hospital.
- To identify the risk factors associated with hypertension.

Material & Methods

A cross-sectional study was carried out among the subjects attending a health screening camp at SPS Government hospital, Rishikesh. The camp was conducted for a period of seven days, from 11th October- 17th October, 2017.All subjects that attended the health camp and were aged 30 years and above were included in the study. An informed written consent was taken from all participants after explaining to them the purpose of the study. A predesigned, pretested, structured questionnaire was used to obtain demographic data, personal and family history of hypertension, behavioural aspects, including, tobacco use, alcohol use and dietary habits. Blood pressure (BP) and anthropometric data was recorded. A total of 207 people attended the health camp, out of which 196 agreed to participate in this study. Inclusion criteria: The individuals aged 30 years and above attending the health camp and who consented to participate in the study organized by department of Community& Family Medicine, AIIMS Rishikesh. Exclusion criteria: The individuals of below 30 years and pregnant females of any age group were not included in this study.

Anthropometric Measurements Height - measured to the nearest centimetre using a wall mounted measuring tape with the subject standing erect and barefoot. Weight- measured using a Bathroom weighing scale. Body Mass Index (BMI) - calculated as body weight in kilograms (kg) divided by square of the height in meter (m^2). Waist circumference (WC) measured using a non-stretchable measuring tape. Subjects were instructed to stand erect with both feet together. WC was measured at the smallest horizontal girth between the costal margins and the iliac crest. Hip circumference (HC) - measured at the level of greater trochanters with a subject in standing position. Waist to Hip ratio (WHR) - calculated with the values of waist and hip circumference respectively. Blood Pressure (BP) - BP was measured using mercury sphygmomanometer in sitting posture with an appropriate- sized cuff encircling the arm. Two readings were taken in a resting patient at a 5-minutes interval, and the average of the readings was reported. Blood sugar: Under aseptic conditions, blood samples were taken from patients after obtaining their consent in writing and then using a glucometer, samples were measured for levels of random blood glucose. For screening purpose, random blood glucose level of ≥140mg/dl was taken as abnormal (4).

Operational Definitions: Tobacco users - who at the time of survey were using tobacco products in any form either daily or occasionally for at least last one year. Alcohol users - who were consuming alcohol either daily or occasionally for at least past one year. Dietary Habits- Vegetarian was defined as those who consume cereals, pulses, vegetables, fruits, nuts, milk and milk products. Mixed diet includes eggs, meat in addition to fruits and vegetables.

BMI– Individuals were classified into four groups: Normal (BMI = 18.5-22.99kg/m2), Overweight (BMI = 23-24.99kg/m2) and Obese (BMI = ≥25kg/m2) according to the BMI classification given by the Committee of the Regional office for Western Pacific Region of WHO, the International Association for Study of Obesity and the International Obesity Task Force proposed the appropriateness of the classification of obesity in Asia in 2000 (5). Waist-hip Ratio -The cut off point for truncal obesity was defined as ≥1.0 for males & ≥0.8 for females as suggested for Asian ethnicity (6). Blood Pressure: For the purpose of screening, subjects with blood pressure of ≥140/90 mmHg were termed as hypertensive (7). Individuals with history of

hypertension and on antihypertensive treatment were also labelled as hypertensive.

Statistical Analysis: Data was collected, entered and analysed using Microsoft excel and SPSS version 22. The chi square test was used for evaluating statistical significance of association between those were hypertensive and those who were normotensive. A two-tailed p value less than 0.05 was considered significant in this study.

Results

Out of total of 207 people that attended the camp, 196 consented to participate in the study. In this study, out of 196 subjects 66 (33.7%) were found to be hypertensive. (Figure.1) Number of males who participated in this study were 84 (42.9%) and number of females were 112 (57.1%). Most of the participants belonged 30-39 years age group constituting 32.7% of total. Majority of participants were currently married (86.2%), Hindu by religion (97.4%) and belonged to lower middle socio-economic status (30.6%) (as per Modified B. G. Prasad Classification, 2017). Around (28%) of the subjects were illiterate and only 15.3% were educated upto graduate level and maximum number of subjects (32.7%) were educated up to high school and intermediate level. (Table-1)

One or more than one risk factors were found in almost all subjects for hypertension. The risk factors for hypertension are enlisted in Table 2. Maximum number of subjects 25(48.0%) that were hypertensive belonged to 60 years and above age group and minimum number of hypertensive subjects 7(10.9%) belonged to 30-39 years age group. This association between increasing age and hypertension was found to be highly statistically significant (p=.000). According to Table-2, the other risk factors with which hypertension was found to be significantly associated were history of hypertension in family (p=0.021), body mass index (p=0.021), waist hip ratio in males (p=0.020) and in females (p=0.025), increased random blood sugar levels (p=0.021), tobacco use (p=0.006) and alcohol use (p=0.04). Hypertension was not found to be significantly associated with gender, socio-economic status and type of diet consumed by the study subjects.

Discussion

In this study, the prevalence of hypertension was found to be 33.6%. In a study conducted by Jha SK *et al* prevalence of hypertension in Nainital and Almora districts of Uttarakhand was found to be 27.7% (8).

In other parts of India like Bihar, West Bengal, Karnataka hypertension prevalence was found to be 11.43%, 26.1% and 43.3% respectively (9,10,11). Significant association of Hypertension was present with increase in age in our study and the finding was consistent with several studies (9,11). The prevalence was slightly higher among males compared to females but the difference was not found to be statistically significant. Similar pattern, was seen in a study done by Ghosh S *et al* in West Bengal (12) where males had more prevalence of hypertension and this association was found to be statistically significant as well. Kokiwar *et al* (13) observed females having higher prevalence of hypertension as compared to males. In the present study, hypertension association was statistically significant with presence of family history of hypertension and increasing BMI and similar findings were observed in studies done by Rajasekar *et al* (14) Saxena *et al* (15). Increased waist hip ratio was significantly associated with hypertension in this study and the similar results were reported in study done in Central India (Nagpur) by Kokiwar *et al* (13). Consumption of mixed/ nonvegetarian diet was not found to be significantly associated with hypertension in our study but it was found to be significantly associated in a study by Gupta M *et al* (16). Increased levels of blood sugar was also found to be significantly associated with hypertension in this study. A study carried out by Tripathy JP *et al* in North India which also showed similar findings (17). In the present study significant association was observed between hypertension and consumption of tobacco and alcohol which was similarly found in studies done by Gupta SK *et al* (18), Rajasekar *et al* (14), Saxena *et al* (15) and Yamasani B *et al* (19)

Conclusion

In this study, the prevalence for hypertension in patients attending health camp in urban Rishikesh was relatively high. Significant associations of hypertension were observed with various risk factors such as increasing age, family history of hypertension, use of tobacco and alcohol and last but not the least obesity. Except age and genetic predisposition which are non-modifiable risk factors the other risk factors mentioned above are very much modifiable and should be done so to curb the problem of hypertension. Thus, to reduce the growing problem of hypertension in Dehradun or Uttarakhand or India as a whole, extensive efforts

directed towards raising the awareness levels among the general public regarding lifestyle modifications and their advantages are very much required.

Recommendation

The routine screening of patients that have attained 30 years of age and above attending hospitals and at community level will facilitate early detection of hypertension and prevent or curb at initial stages, the various complications & morbidity resulting from hypertension.

Limitation of the study

The present study was carried in a camp setting, thus does not reflect the true burden of hypertension in the study area.

Relevance of the study

As limited data was available to identify people suffering from hypertension in Rishikesh tehsil of Uttarakhand, the current study was conducted to provide a rough estimate of the extent of burden of disease.

Authors Contribution

All authors had contributed equally.

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Tables

TABLE 1 DEMOGRAPHIC CHARACTERISTICS OF STUDY SUBJECTS

Characteristics of Study Subjects	Number (N=196)	Percentage (%)
Age Group (years)		
30-39	64	32.7
40-49	40	20.4
50-59	40	20.4
≥60	52	26.5
Gender		
Male	84	42.9
Female	112	57.1
Religion		
Hindu	191	97.4
Muslim	05	2.6
Marital Status		
Married	169	86.2
Unmarried	02	1
Widowed	25	12.8
Educational Status		
Illiterate	55	28.1
Primary-Middle	47	24.0
High school-Intermediate	64	32.7
Graduate and above	30	15.3
Socio-Economic Status		
Upper (I)	21	10.7
Upper Middle (II)	31	15.8
Middle (III)	41	20.9
Lower Middle (IV)	60	30.6
Lower (V)	43	21.9

TABLE 2 ASSOCIATION BETWEEN HYPERTENSION AND RISK FACTORS

Variables	Hypertension		p value
Age (years)	Hypertension absent	Hypertension present	
30-39	57 (89.0%)	07 (10.9%)	
40-49	27 (67.5%)	13 (32.5%)	0.000*
50-59	19 (47.5%)	21 (52.5%)	
≥60	27 (51.9%)	25 (48.0%)	
Gender			
Male	53 (63.0%)	31 (36.9%)	0.407
Female	77 (68.7%)	35 (31.2%)	
Socio-Economic Status			
Upper	14 (66.6%)	07 (33.3%)	
Upper Middle	20 (64.5%)	11 (35.4%)	
Middle	31 (75.6%)	10 (24.3%)	0.716
Lower Middle	38 (63.3%)	22 (36.6%)	
Lower	27 (62.7%)	16 (37.2%)	
Family H/o Hypertension			
Yes	21 (51.2%)	20 (48.7%)	0.021*
No	109 (70.3%)	46 (29.6%)	
Body Mass Index (kg/m2)			
Normal	72 (74.2%)	25 (25.7%)	0.021*
Overweight/Obese	58 (58.5%)	41 (41.4%)	
Waist Hip Ratio (Males)			

<1.0	48 (68.5%)	22 (31.4%)	0.020*
>1.0	05 (35.7%)	09 (64.2%)	
Waist Hip Ratio (Females)			
<0.8	10 (100.0%)	0 (0.0)	0.025*
>0.8	67 (65.6%)	35 (34.3%)	
Random blood sugar level (mg/dl)			
<140	101 (71.1%)	41 (28.8%)	0.021*
>140	29 (53.7%)	25 (46.2%)	
Tobacco Use			
Currently using	21(46.6%)	24 (53.3%)	
Quit	103 (72.0%)	40 (27.9%)	0.006*
Never used	06 (75%)	02 (25%)	
Alcohol Use			
Currently using	18 (48.6%)	19 (51.3)	
Quit	106 (70.1%)	45 (29.8%)	0.040*
Never used	06 (75%)	02 (25%)	
Diet			
Vegetarian	40 (68.9%)	18 (31.0%)	0.304
Non-vegetarian	47 (64.3%)	26 (35.6%)	

Figures

FIGURE 1 PREVALENCE OF HYPERTENSION