



Research Article

PREVALENCE OF HYPERTENSION AND ASSOCIATED FACTORS IN UTTARAKHAND, INDIA

Shishir Kumar¹, Rakesh Sharma^{2*}, Mugdha Sharma³, Preeti Bali¹

¹Nursing Tutor, College of Nursing, SVBP Hospital, LLRM Medical College, Meerut, Uttar -Pradesh, India

²Faculty Nursing, College of Nursing AIIMS Raipur, Tatibandh, All India Institute of Medical Sciences, Raipur Chhattisgarh, India

³Assistant Professor, Himalayan College of Nursing, SRHU, Dehradun, Uttarakhand, India

*Corresponding Author Email: rakesh553333@gmail.com

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ABSTRACT

Background: Hypertension is a current and significant public health issue globally. Hypertension should be given priority in terms of prevention, early identification, management, and proper control. Hypertension is defined as an average systolic blood pressure 140 mm Hg or greater, diastolic blood pressure 90 mm Hg or greater. Hypertension is a significant public-health challenge globally, because of its high frequency this is a risks factor for many major health problems such as cardiovascular, cerebrovascular, and chronic kidney disease. India is a developing country with a heterogeneous and young population therefore the prevalence rate from the developed countries are different. **Aim:** The main objective of the study is to determine the prevalence of hypertension among residents of selected area. **Material and methods:** The study has adopted a cross sectional design. Out of 820 people were surveyed. Furthermore, 151 participants with hypertension were interviewed. Data was collected through structured questionnaire and measurement of blood pressure. **Results:** The study found that majority (70.19%) of participants were in Stage-1 hypertension and 19.20% in Stage-2 hypertension. Only 10.59% of participants were in pre-hypertensive stage. **Conclusions:** Among selected rural area of Dehradun the prevalence of hypertension was 151 (18.41%). It indicates the iceberg phenomenon of hypertension in the rural population as 70.17% cases with grade-1 hypertension. It is very essential for the health care system to screen the interior parts and remote rural areas and provide preventive and promotive services to treat and manage the hypertension.

Key words: Prevalence, Non-communicable disease, Hypertension, Rural areas, Uttarakhand

INTRODUCTION

In general term hypertension is an increased blood pressure from the normal range. In present era hypertension became a very significant health problem globally as well as in India.^{1,2} American heart association has defined hypertension as an average systolic blood pressure 140 mm Hg or greater, diastolic blood pressure 90 mm Hg or greater.³ Hypertension is current and a significant public health issue globally as it is highly prevalent and patients with high blood pressure are on risk to develop cerebrovascular, cardiovascular and kidney disease.^{4,5}

World Health Organization (WHO) has estimated that in 2015 about 17.7 million people died from cardiovascular diseases (CVDs). Out of 17.7 million, 6.7 million were died due to stroke and about 7.4 million were due to coronary heart disease. Shockingly, it was recorded that 17 million deaths were premature death (<70 years of age) due to non-communicable diseases. Hypertension has to be identified at early stage and need to be treated with regular non-pharmacological and pharmacological management and patient to be counselled appropriately. Most of the cardiovascular diseases can be prevented by changing life style behavior.⁶

As mentioned above, the mortality and morbidity are high, and, in most conditions, hypertension is prime cause. In India rural areas are in transitional phase which increases the risk of developing hypertension. It is very high time to screen these rural

areas to, therefore present study has been undertaken to investigate the prevalence of hypertension.

MATERIALS AND METHODS

The aim of the study was to determine the prevalence of hypertension among residents of selected area of Dehradun district, Uttarakhand state. The design adopted for the present study was community based cross sectional design. Present study was conducted between December to March from 13/12/14 to 03/03/15 (three months) in Bhogpur, Bullawala, Jhabrawalla and Khairi. The study was carried out after the Institutional Ethics and Research Committee approval. Data were collected by self-developed questionnaire which included questions regarding family and subject who was found with raised blood pressure. To measure blood pressure a Welch Allyn Aneroid Sphygmomanometer was used.

Blood Pressure (BP) was recorded in a sitting position using after five minutes of resting quietly. When 1st reading came normal than the participant was excluded, if the reading indicated as hypertensive, a second reading was measured and used for the study. To classify the hypertension JNC-8 guidelines were followed.⁷ After obtaining informed consent, details about the household was collected from the subjects. 151 people who had higher blood pressure from the normal range were included in the study. Before collecting the information from the samples, the investigator explained the nature and purpose of the study and gained their support. Informed consent was obtained from the

samples and collects the information. Descriptive statistics; frequency and percentage distribution was used to describe the sample characteristics, hypertension; a chi-square test was done to find the level of association among stages of hypertension and demographic variables.

Present study was carried out in accordance with ethical principles by following International conference of Harmonization-Good Clinical Practices Guidelines (ICH-GCP).

Table 1: Demographic characteristic of study participants based on household questionnaire

S.NO	Sample characteristics (n=151)	Frequency (f)	Percentage (%)	
1.	Religion of head of household	Hindu	113	74.8
		Muslim	13	8.6
		Sikh	25	16.6
2.	Fuel use for cooking	Wood Cake	26	17.2
		LPG	125	82.8
3.	Type of family	Joint	21	13.9
		Nuclear	130	86.1
4.	Family income (Rs/month)	Up to 5000	8	5.3
		5001-10000	46	30.5
		10001-15000	72	47.7
		15001 & above	25	16.6
		Mean ±SD	12,632.45±3955.461	
5.	Vehicle Facility at home	Yes	139	92.1
		No	12	7.9
6.	Approximate intake of salt per head per day (in grams)	3-6 (grams)	18	11.9
		6.1-9 (grams)	77	51.0
		9.1 and above (grams)	56	37.1
		Mean ±SD	8.791±2.2845	
7.	What health Facility does your household utilize?	PHC/ CHC	52	34.4
		Private	99	65.6

Table 2: Demographic characteristic of study participants based on the individual questionnaire

S.NO	Sample characteristics (n=151)	Frequency (f)	Percentage (%)	
1.	Gender	Male	65	43.0
		Female	86	57.0
2.	Age	21-40	44	29.1
		41-60	79	52.3
		61-80	28	18.5
		Mean ±SD	48.26±12.360	
3.	Current Marital Status	Single/ Widow/ Widower	33	21.9
		Married	118	78.1
4.	Highest level of education completed	Primary/Secondary	101	66.9
		Graduate/Post-Graduate	27	17.9
		No Formal Education	23	15.2
5.	Occupation	Govt.	4	2.6
		Private	25	16.5
		Self	30	19.9
		Unemployed	2	1.3
		Retired	7	4.6
	Housewife	83	55	

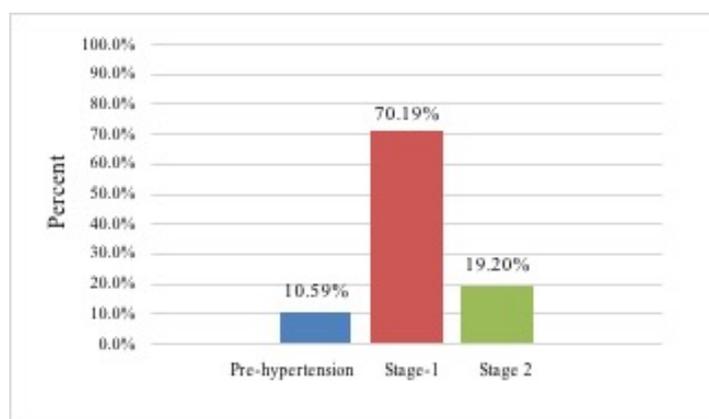


Figure 1: Classification of subjects as JCN-8 hypertension stages

Table 3: Association between stages of hypertension and demographic characteristic of study participants based on individual questionnaire

SN	Characteristics (n=151)		Classification of hypertension stage according JCN-8			df	p Value
			Pre-hypertension	Stage 1	Stage 2		
1.	Gender	Male	8	46	11	2	0.73
		Female	8	60	18		
2.	Age	21-40	3	34	7	4	*0.00
		41-60	13	55	11		
		61-80	0	17	11		
3.	Current Marital Status	Single/widow/widower	0	24	9	2	*0.07
		Married	16	82	20		
4.	Highest level of education completed	Primary/ Secondary	14	64	23	4	*0.09
		Graduate	1	24	2		
		No Formal education	1	18	4		
5.	Occupation	Govt.	1	3	0	12	*0.94
		Private	4	16	5		
		Self	3	22	5		
		Unemployed	0	2	0		
		Retired	0	6	1		
		Housewife	8	57	18		

(p value<0.05 level); * Yets correction

RESULTS

Table 1 showed that the frequency and percentage wise distribution of demographic characteristics of study participants based on household questionnaire revealed that majority 113 (74.8%) of participants were Hindu, maximum 125 (82.8%) participants use LPG as their fuel for cooking and majority 130 (86.1%) participants were living in nuclear family. Majority, 72 (47.7%) participants have the monthly family income Rs. (10,001-15000). The mean income of participants was Rs. 12,632.45± 3955.46 per month. Maximum 139 (92.1%) participants have vehicle facility at home and majority 77 (51.0%) participants consume salt approximately 6.1-9 (grams per day). The mean consumption of salt per day by participants 8.791gm with standard deviation 2.28. Majority 99 (65.6%) participants utilize private health facilities.

Results depicted in Table 2 shows that more than half 86 (57%) of subjects were female and 79 (52.3%) were aged between 41-60 years. The mean age of participants was 48.26±12.36. Majority 118 (78.1%) participants were married and 101 (66.9%) had primary/ secondary as their highest level of education, whereas only 27 (17.9%) participants with graduation/post-graduation education. Majorities 83 (55%) participants were housewife and only 4 (2.6%) participants were govt. employee. (Table 2).

The prevalence rate of hypertension was 151 (18.41%) out of 820 subjects who were surveyed. According JCN 8 classification the stages of hypertension was categorized into pre-hypertension, stage-1 and stage-2. The study found that majority (70.19%) of participants were in Stage-1 hypertension and 19.20% in Stage-2 hypertension. Only 10.59% of participants were in pre-hypertensive stage (Figure 1).

There was no significant association between stages of hypertension and gender, current marital status, highest level of education completed, and occupation; but there was significant association between stages of hypertension and age at the <0.05 level of significance (Table 3).

DISCUSSION

In this study, showed that majority 74.8% of participants were Hindu, maximum 82.8% participants use LPG as their fuel for cooking and majority 86.1% participants were living in nuclear family. Majority 47.7% participants have the monthly family

income Rs. (10,001-15000). The mean income of participants was 12,632.45 with standard deviation 3955.461. Maximum 92.1% participants have vehicle facility at home and majority 51.0% participants consume salt b/w 6.1-9 (grams per day). The mean consumption of participants/ day was 8.791 with standard deviation 2.2845. Majority 65.6% participants utilize private health facilities. Findings were consistent with a prospective study.⁸

In present study the prevalence rate was 18.41%, this result was consistent from a study⁹ conducted by Vivek Kashyap et al. Whereas, in another studies the prevalence rate was reported high^{8,10} (29.08%) and low¹¹ (11%).

The proportion of prevalence rate of hypertension was high among female. Similar trends was observed by Hasan I, Ali M, Hussain M.,¹¹ Todkar SS et al.¹² Whereas, the stages of hypertension was not associated with the gender statistically. Similar result was reported in other study,⁸ while there was no significant difference in prevalence between males and females. In present study the number of cases were more with stage-1 hypertension (70.19%), whereas in a study⁹ have recorded higher percentage (58.2%) of cases in pre-hypertension stage in comparison from present study.

World health Organization (WHO) has recommended to consume less than 5 gm per day salt for an adult.¹³ In present study majority (43.7%) cases reported of consuming more than 8 gram / day and 20% cases were using 6-8 gm / day salt in their diet, which is higher than WHO recommendation. The findings were consisted with study done by Velu MK¹⁴ in Delhi region, Saxena¹⁵ in Tehri, Ghosh¹⁶ in Bihar and Todkar SS¹² from Maharashtra state.

CONCLUSION

Among selected rural area of Dehradun, the prevalence of hypertension was 151 (18.41%). It indicates the iceberg phenomenon of hypertension in the rural population as 70.17% cases with grade-1 hypertension. It is very essential for the health care system to screen the interior parts and remote rural areas and provide preventive and promotive services to treat and manage the hypertension. In present study all the cases with hypertension were guided for medical consultation and ensured that every case started with treatment. We the researchers have provided information regarding lifestyle modification, and importance of

regular follow-up to all the cases as well as to all the population which was surveyed in present study.

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