



**Prevalence of hypertension among adults visiting a government community health centre in
Coastal Karnataka: A cross-sectional study**

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Abstract

Hypertension is a serious and growing health issue. It is a major contributor to cardiovascular morbidity and mortality worldwide and in India. The present study was conducted to estimate the prevalence of hypertension and the association of hypertension towards sociodemographic and behavioral risk factors among adults attending outpatient department of a community health centre in coastal Karnataka. A hospital based descriptive cross-sectional study was conducted over a period of 3 months in outpatient department of a community health centre in coastal Karnataka. The overall mean systolic and diastolic among men was 131.09 ± 15.49 mmHg and 82.15 ± 8.45 mmHg. The mean systolic and diastolic among women was 131.26 ± 19.71

mmHg and 81.23 ± 9.591 mmHg. The age group of 50-64 years were at 33 times more at risk of being associated with Hypertension than the younger age group (20-34 years). People who were unemployed (unable to work) were at 21 times higher risk of being associated with Hypertension. People who were obese and overweight were 3 times more at risk of being associated with Hypertension. The results were statistically significant.

Key Words

Hypertension, community health centre, Coastal Karnataka

Introduction:

In India, non-communicable disease (NCDs) like hypertension, diabetes, cardiovascular diseases, chronic respiratory diseases, cancer etc. are in rising trend. NCDs have surpassed the burden of communicable diseases over the decade and have become one of the major challenges not only in terms of human suffering but also the harm inflicted on socioeconomic development of the country. NCDs are also said to be the modern epidemic due to the rising trend.

NCD is responsible for 74% of global death. 41 million people die of NCD every year out of which 17 million deaths occur before the age of 70 (1). 86% of this premature death occurs in low and middle income countries(2). According to WHO projections, incidence of NCDs will increase to 55 million by 2030.

In India, it has been estimated that 1 in 4 are at risk of dying due to any of the non-communicable disease before they reach the age of 70. Almost 60% of deaths in India is caused by non-communicable diseases.

Hypertension is a serious and growing health issue. It is a major contributor to cardiovascular morbidity and mortality worldwide and in India. Hypertension is also a major cause of premature death worldwide. Hypertension, also known as silent killer, as it usually presents without any way warning symptoms because of which the hypertensives tend to remain unaware of the raised blood pressure(3).

Globally, it is estimated that more than 1 billion people worldwide have hypertension and 2/3rd of them live in low- and middle-income countries(4). Approximately 20 crore Indians have hypertension in India out of which only less than 10% have it under control(5).

As per NFHS 5 data, the prevalence of hypertension in India is 29.4% and the prevalence was 24% among men and 21 % among women(6). Only 14.5% of the individuals with hypertension are on treatment. The data also states that 49% of men and 39% of women are pre-hypertensives. The burden of hypertension is estimated to double in India by 2025(7). As of 2017, almost 17.5% of deaths and 9.7% of DALY in India are attributed to hypertension.

Although the awareness and treatment rates have increased over the years, the rate of undiagnosed and untreated hypertension remains high. Previous studies have documented that the prevalence of hypertension and the rates of untreated and undiagnosed hypertension was associated with various factors like socio demographic and behavioral factors. Hence, this study was conducted to estimate the prevalence of hypertension and the association of hypertension towards sociodemographic and behavioral risk factors among adults attending outpatient department of a community health centre in coastal Karnataka.

Methodology:

A hospital based descriptive cross-sectional study was conducted over a period of 3 months (from July 2022 to October 2022) in outpatient department of a community health centre in coastal Karnataka, India. The CHC covers a population of 39,842 individuals living in 7927 families. Purposive sampling technique was employed, and complete enumeration method was adopted. All patient and patient attenders/relatives aged ≥ 20 years attending OPD at Community health centre and willing to give consent were included in the study. Patient or patient attender/relatives not willing to participate in the study, antenatal mother, casualty emergencies and MLC cases were excluded from the study. A total of 374 participants were interviewed using a pre-designed, pre-tested, semi-structured questionnaire which included the sociodemographic characters of the study participants and behavioral risk factors. Following this, anthropometric measurements and blood pressure was recorded.

Blood pressure (BP) measurements: For measuring BP, patients were seated comfortably for at least 5 minutes in a quiet environment before taking the BP measurements. 2 BP measurements were recorded at least 10 minutes apart. Standard bladder cuff (35cm long and 12-13cm wide) was used for all patients. The cuff was placed at heart level with back and arm being supported. The median BP was considered as reference. Individuals with systolic blood pressure values ≤ 120 mmHg and diastolic blood pressure values ≤ 80 mmHg were considered as **“Normal”**. Individuals with systolic blood pressure between 130-139mmHg and diastolic blood pressure between 85-89mmHg were considered as **“Prehypertensive”**. Individuals with systolic of ≥ 140 mmHg and diastolic of ≥ 90 mmHg were considered as **“Hypertensives”**.

Anthropometric measurements: For assessing BMI, weight was recorded to the nearest 500 grams using a standard weighing scale. Height was recorded using a stadiometer to the nearest 1 cm. Participants were requested to stand upright, without footwear, with their back supported against the wall, heels together and looking forward. Body mass index (BMI) was calculated using the formula of weight (kg)/height (m²). As per WHO BMI classification, BMI of < 18.5 was considered underweight, BMI of 18.5-24.9 was considered normal, BMI of 25-29.9 was considered overweight and BMI of > 30 was considered obese.

Behavioral factors: Participants who was currently smoking tobacco in the form of bidis, cigarettes, hookah and the those who was consuming smokeless tobacco products such as khaini, gutkha, zarda etc were defines as Tobacco users. Study subjects who reported consuming alcohol in the past 1 year were considered alcohol users.

Statistical analysis:

The data was entered in Microsoft excel and all the statistical analysis was performed using SPSS version 16. Qualitative data were expressed in frequencies and percentages. Continuous variables were expressed as mean and standard deviation. Prevalence of hypertension are presented as frequencies and percentages. T-test and one way ANOVA was used to test the significance. The association between hypertension and various sociodemographic variables and behavioral factors was assessed using chi square test.

Results:

A total of 374 participants were recruited for the study. Among them, 219 (58.6%) were male and 155(41.4%) were females. 110 (29.4%) belonged to the age group of 50-64 years and 101 (27%) belonged to >65 years of age. Majority of the participants. 219(91.4%) belonged to Hindu religion. 124 (33.2%) were self-employed and 97 (25.9%) were home makers. 364 (97.3%) participants belonged to Karnataka and 353 (97%) out of them were residents of Udupi district. 211 (56.4%) of them belonged to normal BMI category and 106 (28.3%) were overweight as per WHO body mass index calculation. [Table 1]

Table1: Basic sociodemographic characteristics and behavioral risk factors among the study participants (N=374)

Variable	Frequency	Proportion
Age group		
20-34	78	20.9
35-49	85	22.7
50-64	110	29.4
>65	101	27
Gender		
Male	219	58.6
Female	155	41.4
Religion		
Hindu	342	91.4
Other religion	32	8.6
Occupation		
Self employed	124	33.2
Home maker	97	25.9
Unemployed (Unable to work)	63	16.8
Non-government employee	30	8.0
Government employee	24	6.4
Unemployed (able to work)	20	5.4
Student	16	4.3
State of residence		
Karnataka	364	97.3
Outside Karnataka	10	2.7
If, Karnataka, district (n=364)		
Udupi	353	97.0
Outside Udupi	11	3.0
BMI		
Underweight	28	7.5
Normal	211	56.4
Overweight	106	28.3
Obese	29	7.8

Diet		
Mixed diet	354	94.6
Vegetarian diet	20	5.4
Alcohol intake		
Yes	109	29.1
No	265	70.9
Tobacco usage		
Yes	147	39.3
No	227	60.7

Table 2 depicts that 146 (39%) of the participants have hypertension. 178 (47.6%) of the participants are prehypertensive and 50 (13.4%) have isolated systolic hypertension.

Table 2: Distribution of participants based on the classification of hypertension.

Classification of hypertension	Total (N=374)	
	Frequency	Percentage
Normal	50	13.4
Prehypertension	178	47.6
Hypertension	146	39

The overall mean systolic and diastolic among men was 131.09±15.49 mmHg and 82.15±8.45 mmHg. The mean systolic and diastolic among women was 131.26±19.71 mmHg and 81.23±9.591 mmHg. The results were not statistically significant.

Table 3 depicts gender wise distribution of blood pressure classification. 26 (52%) of women were normotensives. Prevalence of prehypertension and hypertension were more among male 104 (58.4%) and 91 (62.3%) respectively.

Table 3: Gender wise distribution of participants based on hypertension classification.

	Total (N=374)		Male (n=219)		Female (n=155)	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Normal	50	100	24	48	26	52
Prehypertension	178	100	104	58.4	74	41.6
Hypertension	146	100	91	62.3	55	37.7

Table 4 depicts the age wise mean systolic and diastolic blood pressure. The mean systolic was highest among the age group of 65-79 years of age (136.96±17.82), followed by 50-64 years of age (135.86±16.64 and 84.36±9.16). The mean diastolic was highest among 50-64 years of age

(84.36±9.16) followed by 35-49 years of age (82.65±9.01). Both mean systolic and diastolic were lowest among 20-34 years of age. The results were statistically significant.

Table 4: Age wise mean systolic and diastolic blood pressure

Age group (in years)	Mean Systolic BP	Mean Diastolic BP
20-34	118.97±13.68	76.79±8.25
35-49	129.58±15.48	82.65±9.01
50-64	135.86±16.64	84.36±9.16
65-79	136.96±17.82	82.17±7.64
>80	135±11.726	80.56±8.07
Test of significance (p value)	0.000	0.000

Prevalence of hypertension is associated with age, occupation and BMI is depicted in Table 5.

Table 5: Association between prevalence of prehypertension and hypertension according to sociodemographic and behavioral risk factors (n=161)

Variables	Total (n=196)	Normal (n=50)		Hypertension (n=146)		UOR	P value
		Frequency	Percentage	Frequency	Percentage		
Age group							0.000*
20-34	31(100)	25	80.7	6	19.4	1	
35-49	43(100)	10	23.3	33	76.7	13.750	
50-64	63(100)	7	11.1	56	88.9	33.333	
>65	59(100)	8	13.6	51	86.4	26.562	
Gender							0.078
Male	115(100)	24	20.9	91	79.1	1.792	
Female	81(100)	26	32.1	55	67.9	1	
Religion							0.441
Hindu	179(100)	47	26.3	132	73.7	0.602	
Other	17(100)	3	17.7	14	82.3	1	

religion							
Occupation							0.000*
Self employed	64(100)	8	12.5	56	87.5	17.500	
Home maker	47(100)	15	31.9	32	68.1	5.333	
Unemployed (Unable to work)	38(100)	4	10.5	34	89.5	21.250	
Non-government employee	15(100)	6	40	9	60	3.750	
Government employee	14(100)	3	21.4	11	78.6	0.556	
Unemployed (able to work)	11(100)	9	81.8	2	18.2	9.167	
Student	7(100)	5	71.4	2	28.6	1	
Diet							0.331
Non vegetarian diet	187(100)	49	26.2	138	73.8	2.841	
Vegetarian diet	9(100)	1	11.1	8	88.9	1	
Alcohol use							0.654
Yes	54(100)	15	27.8	39	72.2	1.176	
No	142(100)	35	24.7	107	75.3	1	
Tobacco Use							0.292
Present	75(100)	16	21.3	59	78.7	1.441	
Absent	121(100)	34	28.1	87	71.9	1	
BMI							0.001*
Underweight	14(100)	8	57.1	6	42.9	1	
Normal	105(100)	33	31.4	72	68.6	2.115	
Overweight and Obese	62(100)	9		53		3.795	

The age group of 50-64 years were at 33 times more at risk of being associated with Hypertension than the younger age group (20-34 years). People who were unemployed (unable to work) were at 21 times higher risk of being associated with Hypertension. People who were obese and overweight were 3 times more at risk of being associated with Hypertension. The results were statistically significant.

Discussion:

In the present study, 39% participants attending the outpatient department of Community health centre were hypertensives whereas in a community-based study study done by

Krishnamurthy Jayanna et al (2019) (8) at the field practice area of an urban primary health centre in south Karnataka, 19.4% of the participants had hypertension. The higher prevalence in the present study could be due to the variation in the study setting.

In the present study, the prevalence of hypertension in men and women are 62.3% and 37.7% whereas in **National family health survey 5 (NFHS-5) (2019-2021)** (9) conducted by Ministry of Health and Family Welfare, the prevalence of hypertension in men and women are 49% and 39%. The difference in prevalence among male gender could be due to differences in socio-cultural factors in rural Udupi district.

Conclusion

The prevalence of prehypertension (47.6%) and hypertension (39%) was found to be high in rural area of Udupi district. Significant association was found between hypertension and age, occupation and BMI.

Limitation

The study was carried out in the outpatient department of one CHC of Udupi district hence the study cannot be generalized to the entire community.

Recommendations

By conducting population based as well as high risk screening of all individuals aged above 30 years in the community along with referral and follow up services of cases. Health education of the community to prevent emergence of risk factors and progression of the disease.

Ethical clearance

Ethical approval was obtained from the institutional ethics committee of Kasturba Medical College, Manipal and Kasturba Hospital, Manipal vide letter no IEC: 102/2022 dated 15th April 2022.

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Nil

Conflict of interest

None declared.

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