

Original Research Article

Prevalence of hypertension and its associated risk factors in the rural field practice area of a tertiary care teaching hospital of Coastal Andhra Pradesh, India

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ABSTRACT

Background: Hypertension is a major public health challenge in present phase of socio-demographic and epidemiological transition leading to various complications causing high mortality and morbidity. This study was carried out to observe changing trends prevalence of hypertension and its association with major risk factors in rural community.

Methods: A community based cross sectional study was carried out among 1500 individuals (654 men and 846 women) aged 18-65 years living in villages under rural field practice area of Dr. Pinnamaneni Siddhartha Institute of Medical Sciences and Research Foundation, Chinaoutpally, Krishna district, Andhra Pradesh. Information on socio-demographic data and risk factors was obtained. Height, weight and blood pressure were measured.

Results: The mean systolic blood pressure was 130 ± 19 mmHg and diastolic blood pressure was 86 ± 11 mmHg. The mean age, waist circumference and BMI are 40 ± 13 years, 85 ± 11 cm's and 24 ± 4 kg/m² respectively. The prevalence of hypertension and pre-hypertension in the age group of 18-65 years was reported to be 27.7% and 24.3% respectively. The prevalence of hypertension was significantly higher with increasing age, BMI, positive family history and low physical activity.

Conclusions: Hypertension is one of the major public health problems in India with a long preclinical phase i.e. pre hypertension. Sedentary lifestyle, obesity and tobacco consumption are the modifiable risk factors associated with high prevalence of hypertension. These observations re-emphasize the need to follow effective preventive interventions such as healthy life style with regular physical activity and healthy dietary practices to be adopted to prevent hypertension.

Keywords: Blood pressure, Cross sectional study, Hypertension, Non communicable diseases, Pre hypertension, Risk factors

INTRODUCTION

In the era of rapid advancement in technology and life style, Non Communicable Diseases (NCD's) have been

established a clear threat not only to human health, but also to development and economic growth. Hypertension is a major public health challenge in the phase of socio demographic and epidemiological transition leading to

various complications causing high morbidity and mortality. Prevalence of hypertension has been found to be increasing in epidemic proportions in Indian population.¹ Certain physical traits and lifestyle choices can put an individual at a greater risk for developing high blood pressure which contributes to stroke, cardiovascular diseases and other health threats. High blood pressure is one of the most important modifiable risk factors for cardiovascular diseases, which accounts for one in every eight deaths globally.² Complications from hypertension account for 9.4 million deaths globally every year.³ Hypertension is directly responsible for 57 per cent of all stroke deaths and 24 per cent of all coronary heart diseases (CHD) in India.⁴ In analysis of worldwide data for the global burden of hypertension, 21 per cent of Indian men and women were found to suffer from Hypertension.⁵ Recent studies indicate an increasing prevalence of Hypertension in rural communities and hence this study was carried out to observe the changing trends in the prevalence of hypertension in rural community.

METHODS

Study design

This study was carried out as a community based cross-sectional study.

Study area

Rural field practice area of Dr. Pinnamaneni Siddhartha Institute of Medical Sciences and Research Foundation, Chinnaoutpally, Andhra Pradesh covering 9 villages with a population of 31,420.

Study duration

The study was conducted during December 2016 to July 2017.

Study population

People aged 18 years to 65 years, residing in the study area and willing to participate in the study are taken as study subjects. People either not willing to participate or <18 years and >65 years are excluded from the study.

Sample size: 1500 study subjects.

Estimation of sample size

Sample size was calculated using the formula, $n = \frac{4pq}{L^2}$. As per the review of various studies in south Indian rural population, the pooled prevalence of HTN in rural south India was 21.1%.⁶ The sample size comes to 1495 considering an allowable error of 10% which was rounded to 1500.

Sampling technique

The sample to be studied from each village is done by Probability Proportion to Size (PPS) method. The first house is selected by lottery method and then onwards each house is selected by systematic random sampling until the desired sample is reached in each village.

Procedure methodology

After obtaining informed oral consent from the study subject, a pre tested and semi structured questionnaire was used to record data. The questionnaire included socio-demographic characteristics such as age, gender, occupation, socio economic status, marital status, literacy status, height, weight, physical activity, lifestyle habits like smoking and alcohol and family history of hypertension. Height and weight were recorded using standardized methods.⁷ Socio-economic status was classified using modified B.G. Prasad scale 2016. BMI was calculated using quetelet index.⁸ Blood pressure was recorded in the sitting position in the left upper arm using the electronic OMRON-HEM 7120 machine (Omron Corporation, Tokyo, Japan). The study subject was asked to sit quietly and rest for 15 minutes with his/her legs uncrossed and three readings were taken with a minimum interval of 3 minutes and the mean of the second and third reading was taken as the blood pressure and are classified basing on JNC VII criteria.^{9,10} The data was processed and statistical analysis was done using SPSS version 16.0.

RESULTS

Majority of the respondents were females (56.4%). The mean systolic blood pressure was 130±19mmHg and diastolic blood pressure was 86±11mmHg. The mean age, waist circumference and BMI are 40±13 years, 85±11cm's and 24±4kg/m² respectively. The prevalence of hypertension and pre-hypertension in the age group of 18-65 years was reported to be 27.7% (415) and 24.3% (365) respectively. Out of 27.7% (415) hypertensive subjects, 54.2% (225) are known hypertensives and 45.8% (190) are unknown hypertensives (Figure 1). Men are at a greater risk of pre-hypertension (31%) and hypertension (28.9%) compared to females (19.1 and 26.7 respectively). The prevalence was recorded high in unemployed, house makers, dependents (38.6%) and Business people (35.5%). Analysis on the different social classes revealed that the prevalence of hypertension to be significantly higher among the high and middle income groups compared to lower income group (Table 1). The prevalence of hypertension was observed to be inversely proportional to literacy status. The prevalence of hypertension was observed significantly higher in widow (64.2%) and divorced (38.4%). The prevalence of hypertension was significantly higher with increasing age, BMI, positive family history and low physical activity (Table 1 and 2).

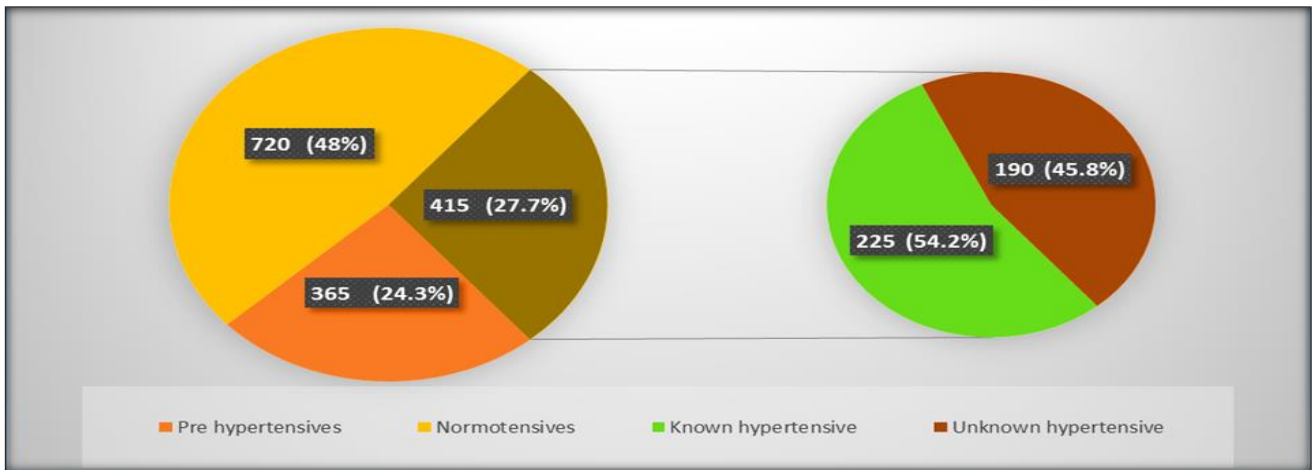


Figure 1: Prevalence of HTN.

Table 1: Socio demographic profile of the study participants' v/s status of HTN.

Parameter	N	Blood pressure			Chi-square value	P-value
		Normal	Pre HTN	HTN		
Age		%	%	%		
18-24	408	81.10	15.70	3.20	473.29	0.000
25-34	313	53.60	32.30	14.10		
35-44	345	41.40	29.30	29.30		
45-54	260	18.50	25.00	56.50		
55-65	174	17.20	19.50	63.30		
Sex						
Male	654	40.10	31.00	28.90	37.29	0.000
Female	846	54.20	19.10	26.70		
Occupation						
Unemployed/house maker/dependent	523	41.30	20.10	38.60	112.42	0.000
Daily laborer	251	38.60	36.70	24.70		
Farmer	398	63.60	16.60	19.80		
Employee	119	46.20	35.30	18.50		
Business	62	32.20	32.30	35.50		
Others	147	53.70	27.20	19.00		
Socio economic status						
Class 1	301	36.90	31.20	31.90	39.27	0.000
Class 2	520	48.80	24.40	26.80		
Class 3	495	49.10	24.40	26.50		
Class 4	175	58.90	13.10	28.00		
Class 5	9	100.00	0	0		
Marital status						
Unmarried	134	85.10	13.40	1.50	184.62	0.000
Married	1205	47.60	26.40	26.00		
Divorced	13	46.20	15.40	38.40		
Widowed	148	17.60	18.20	64.20		
Literacy status						
Illiterate	508	39.40	23.60	37.00	75.69	0.000
Primary	361	42.90	25.80	31.30		
Secondary	349	56.70	22.40	20.90		
Higher secondary	116	55.20	29.30	15.50		
Graduate	128	66.40	18.80	14.80		
Post graduate	38	47.40	42.10	10.50		
Total	1500	720(48)	365(24.3)	415(27.7)		

Table 2: Risk factors v/s status of HTN.

Parameter	N	Blood Pressure			Chi-Square value	P-value
		Normal	Pre HTN	HTN		
		%	%	%		
BMI						
Under weight	126	61.90	17.50	20.60	253.31	.000
Normal	856	62.80	18.60	18.60		
Over weight	332	22.90	33.10	44.00		
Obese	186	15.10	39.70	45.20		
Physical Activity						
No	241	38.60	15.80	45.60	125.18	.000
Mild	536	36.20	32.80	31.00		
Moderate	622	61.60	19.10	19.30		
Severe	101	49.50	31.70	18.80		
Alcohol Consumption						
Yes	170	40.60	30.60	28.80	5.36	.068
No	1330	48.90	23.50	27.50		
Family History of HTN						
No	1000	52.50	23.20	24.30	86.07	.000
Either Parent	286	43.40	33.50	23.10		
Both Parents	54	24.10	31.50	44.40		
Siblings	128	39.80	12.50	47.70		
Parents+ Siblings	32	21.90	12.50	65.60		
Tobacco Consumption						
Present	279	40.20	27.20	32.60	11.28	.024
Absent	1221	50.00	23.50	26.50		
Total	1500	720 (48)	365 (24.3)	415 (27.7)		

DISCUSSION

The 1992 Victoria declaration on heart health has advised adoption of a public health approach for the prevention and control of cardiovascular disease by giving importance to control of risk factors like hypertension.¹¹ In spite of increased public awareness of cardiovascular disease and hypertension, the prevalence of hypertension still appears to be increasing dramatically.⁴ The prevalence of hypertension was observed to be increasing with age and this result was statistically significant (p value 0.000).

The prevalence was recorded high in unemployed, house maker, dependents (38.6%) and business people (35.5%), and this implies the significance of lifestyle and stress in disease causation. The prevalence of hypertension and pre-hypertension in the age group of 18-65 years was reported to be 27.7% and 24.3% respectively. Rapid urbanization, lifestyle changes, dietary changes and increased life expectancy are factors attributable to this rising trend.

This reported prevalence was in concordance with the findings of Subramanian et al, Satish et al, Deepa et. al, Shanthirani et al, Latheef et al, Gupta et. al, and

Prabhakaran et. al, and slightly higher compared to the study findings of Aswar NR et al, and lower when compared with the study findings of Iyer U et al.¹²⁻²⁰ The reported prevalence in the study conflict with the study findings of Manimunda et al, (Nicobar Islands) and Gupta R et al, (Bhatia community, Rajasthan) who reported a very high prevalence in their study area.^{21,22} This could be due to change in dietary pattern of the study participants and race.

CONCLUSION

Hypertension is one of the major public health problems in India with a long pre-clinical phase i.e. pre hypertension. Prevalence of Pre hypertension and Hypertension was found to be highly prevalent in rural Andhra Pradesh. Sedentary lifestyle, Obesity and Tobacco consumption are the modifiable risk factors associated with high prevalence of hypertension. This study projects the need of early detection of hypertension which can be facilitated by periodic screening of the people regularly at hospital as well as community level. These observations re-emphasize the need to follow effective preventive interventions such as healthy life style with regular physical activity and healthy dietary practices to be adopted to prevent hypertension.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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