



"FACTORS INFLUENCING HYPERTENSION AMONG ADULTS IN THE RURAL FIELD PRACTICE AREA OF GOVERNMENT TERTIARY CARE HOSPITAL, VIJAYAWADA- A CROSS SECTIONAL STUDY"

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ABSTRACT

Introduction: Hypertension is serious medical condition and might increase the risk of heart, brain, kidney and other diseases. Worldwide, it is a major cause of premature death, 1 in 4 men and 1 in 5 women – over a billion people – having this condition. Hence, this study was undertaken to estimate the prevalence of hypertension, and to identify the risk factors of hypertension in the population among adults of the rural field practice area of tertiary care hospital, Vijayawada. **Methodology:** A descriptive cross-sectional study was conducted among 300 adults aged 15 years and above in rural field practice area of tertiary medical care hospital. Systematic random sampling was used to select the households. Data was collected using WHO STEPS questionnaire for chronic disease risk factor surveillance. Data analysis was done using SPSS software. **Results:** The present study reveals a high prevalence of hypertension i.e., 38%. Significant association was found in the age, marital status, education status and socioeconomic status. Subjects with positive family history, smoking habit, abnormal WHR, BMI have significant association with prevalence of hypertension. **Conclusions:** Advocacy of life style changes using mass media approach has to be promoted. Additional research in the area of primary prevention of high BP should be encouraged.

KEYWORDS : Hypertension, Prevalence, Risk factors, WHO STEPS

INTRODUCTION:

Hypertension is serious medical condition and might increase the risk of heart, brain, kidney and other diseases. Worldwide, it is a major cause of premature death, 1 in 4 men and 1 in 5 women – over a billion people – having this condition¹. WHO in its Expert Committee report has arbitrarily defined Hypertension in adults as a "systolic blood pressure equal to or greater than 140 mmHg and/or diastolic pressure equal to or greater than mmHg"².

Hypertension increases the risk of developing coronary artery disease by 2 times, the risk of developing Congestive heart failure by 4 times and the risk of Cerebrovascular disease by 7 times³. Hypertension prevalence is expected to increase by 60% to a total of 1.56 billion in 2025, Among this, 80% is predicted to increase in developing countries and 24% in the developed countries⁴. This could be due to better access to health care and strong public health policies in developed countries and the number of people who are undiagnosed, untreated and uncontrolled are also more in low and middle-income countries which may be because of weak health systems.

Although there has been a special focus in research on the prevention of hypertension in urban areas, to reduce hypertension both urban and rural areas has to be considered. Hypertension is often thought to be less common in rural areas, though data is limited and estimates vary widely depending on the methodology used.

Hence such, community based studies on hypertension has now become an utmost necessity to not only assess the prevalence of hypertension & its risk factors among adults, but also to plan preventive strategies & promote the health of population. To estimate the prevalence of hypertension, and to identify the risk factors of hypertension in the population, a

study among adults of the rural field practice area of Government tertiary care hospital, Vijayawada was conducted.

OBJECTIVES:

1. To study the prevalence of hypertension among adults aged 15 years and above in the rural practice area of Government tertiary care hospital, Vijayawada .
2. To know the factors associated with hypertension among adults aged 15 years and above in the rural practice area of Government tertiary care hospital, Vijayawada.

METHODOLOGY:

A descriptive cross-sectional study was conducted among adults aged 15 years and above in rural field practice area of Government tertiary care hospital, Vijayawada from July to November 2023. Sample size was calculated using $4pq/l^2$ formula. Prevalence of hypertension was taken from NFHS-5 data for attaining the sample size. 300 subjects were taken into the study. Systematic random sampling was followed in this study. The households in the present study were selected by systemic random sampling method. Informed consent was taken, and the objectives of the study was clearly explained in local language to the subjects. Study subjects were motivated to participate in the study with the help of ASHA, ANM & the volunteers from that area by door-to-door visit.

Study was conducted for 3 days in a week from 9:00 AM to 12:30noon. Data was collected by interviewing the study subjects using a pre-tested questionnaire based on WHO STEPS approach for chronic disease risk factor surveillance. It was pilot tested in 50 individuals and the necessary changes were incorporated. Steps 1 and 2 have been adopted in this study. Information was collected on their socio demographic profile like age, education, occupation, income, housing, type of family and their behavioral risk factors like tobacco usage,

alcohol consumption and associated stress factors. Family history of hypertension was also obtained. Data analysis was done using SPSS software.

RESULTS:

Table 1: Distribution of the study subjects according to age and gender

Age	Male		Female		Total	
	No	%	No	%	No	%
15-30	15	37	25	63	40	13
31-40	17	45.9	20	54.1	37	12
41-50	37	45.7	44	54.3	81	27
51-60	43	60.6	28	39.4	71	24
>60	45	63.4	26	36.6	71	24
Total	157	52.3	143	47.7	300	100

Of the total 300 subjects, 157 (52.3%) were male and 143(47.7%) were female. The male female ratio was 1.09:1. The highest number of study subjects were in the age group of 41-50 years (27%). The highest number of males (63.4%) were in the age group of >60 years and females (63%) in the age group of 15-30 years.

Table 2: Distribution of the study subjects according to literacy status

Education	Male		Female		Total		
	No	%	No	%	No	%	
Literate	Graduate or post graduate	7	53.85	6	46.2	13	4.3
	Primary school certificate	33	48.53	35	51.5	68	22.7
	Middle school certificate	11	47.83	12	52.2	23	7.7
	High school certificate	21	52.5	19	47.5	40	13.3
	Professional or honors	3	100	0	0	3	1
	Total Literates	75	51.0	72	49.0	147	49.0
Illiterate		82	53.6	71	46.4	153	51
Total		157	52.3	143	47.7	300	100.0

It was observed that out of 300 subjects, 147(49%) were literates and 153(51%) were illiterates. Among literates, 51% were males and 49% were females. Among illiterates, 52.3% were males and 47.7% were females.

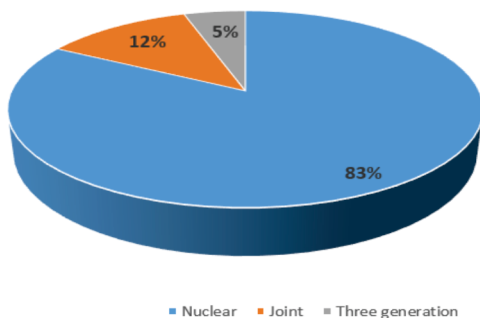


Figure 1: Distribution of the study subjects according to type of family

Our study revealed that out of the total 300 subjects, 249(83%) were from nuclear family, 35 (12%) were from joint family and 16(5%) belonged to three generation family.

Table 3: Distribution of the study subjects according to Socio-economic status

Socio economic status	Frequency	Percentage
< 1272 (lower class)	21	7
1272-2543 (lower middle class)	105	35
2544-4239 (middle class)	132	44

4240-8479 (upper middle class)	26	9
>= 8480 (upper class)	16	5

It was observed that majority of the subjects (44%) belong to middle class followed by lower middle class (35%), upper middle class (9%), lower class (7%) and 5% belong to upper class SES as per modified B.G. Prasad classification May 2022.

Association of prevalence of hypertension with risk factors: Table 4: Prevalence of hypertension according to JNC 8 criteria

Out of 300 study subjects, the majority of the study subjects 105 (35%) were normotensives followed by pre-hypertensives 82 (29%), 87(27%) subjects belonged to stage-1 hypertension, 26 (9%) subjects belonged to stage-2 hypertension.

Table 5: Association between Age and hypertension

Age	Normotensive		Hypertensive		Total	
	No.	%	No.	%	No.	%
15-30	38	95	2	5	40	13.3
31-40	31	83.8	6	16.2	37	12.3
41-50	47	58.0	34	42.0	81	27.0
51-60	34	47.9	37	52.1	71	23.7
>60	37	52.1	34	47.9	71	23.7
Total	187	62.3	113	37.7	300	100.0

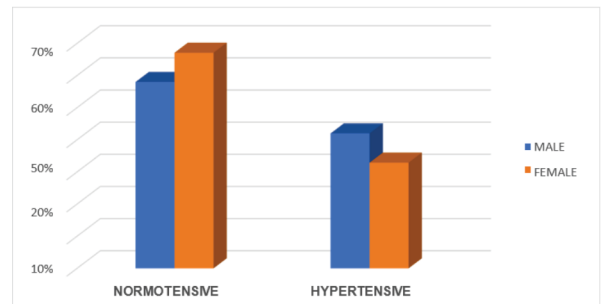
Chi-square = 35.34, p-value = 0.0000003

It was observed that the prevalence of hypertension was highest in 51-60 yrs and least in 15-30 yrs age group followed by 41-50 yrs, >60 yrs, 31-40 yrs age group subjects. The consistent rise in prevalence of hypertension with increasing age was found to be statistically significant (p<0.0000003).

Table 6 : Association between Gender and hypertension

Blood pressure status	Frequency	Percentage (%)
Normal	105	35
Pre HTN	82	29
Stage 1 HTN	87	27
Stage 2 HTN	26	9
Total	300	100

Chi-square = 2.68, p-value = 0.1



Out of 157 males, 66 (42%) were hypertensives whereas 91 (58%) were normotensives. Among 143 females, 47 (32.9%) were hypertensives and 96 (67.1%) were normotensives. This indicates that the prevalence of hypertensive was more in males (42%) when compared to females (32.9%). However, this was not statistically significant (p= 0.1).

Table 7: Association between SES and prevalence of hypertension

Socio-economic status	Normotensive		Hypertensive		Total	
	No	%	No	%	No	%
lower class	7	33	14	67	21	7
lower middle class	64	61	41	39	105	35
middle class	91	69	41	31	132	44
upper middle class	16	62	10	38	26	9

upper class	9	56	7	44	16	5
Total	187	62	113	38	300	100

Chi square = 10.32, p-value = 0.03

In the current study high prevalence of 67% was seen in lower class followed by upper class (44%). 39% and 38% prevalence were seen in lower middle and upper middle class respectively. Low prevalence of hypertension was seen in middle class (31%). The difference was found to be statistically significant (p-value= 0.03).

DISCUSSION:

This current study showed that out of 300 subjects prevalence of hypertension was 38% (113 hypertensives) and 62% (187 normotensives) were diagnosed as normal subjects according to JNC 8 guidelines (SBP \geq 140 mm Hg and/or DBP \geq 90mm Hg) 50.4% of hypertensives were already diagnosed to have HTN while 49.6% were newly detected hypertensives. This shows the submerged portion of the iceberg.

Our prevalence was less when compared to the study done by Utsa Basu et al in 2020 in Hooghly district where the prevalence was found to be 45%⁵.

The results of our study can be compared with a study conducted by Singh, M. in Chittoor, Andhra Pradesh in rural adults in 2018 showed prevalence of hypertension as 27%⁶. Reporting of different prevalence from different studies could be due to cultural factors determining physical activity of individuals and dietary pattern in different geographic areas, genetic makeup of different people/communities staying in the area or environmental influences.

Prevalence Of Htn With Various Risk Factors:

Hypertension and age:

In this current study, out of 300 subjects the highest number of study subjects were in the age group of 41-50 years (27%) followed by 51-60 yrs and >60 yrs age group (23.7%). Least prevalence was observed in 31-40 yrs age group (12.3%). The association between blood pressure and age was found to be highly significant (p value = 0.0000003). A similar study was done by Wada OZ et al in 2020 in rural village of Nigeria shown high prevalence in >50 yrs (37.7%) followed by <36 years (34.8%)⁷.

Hypertension with gender and marital status:

In our study, Males have shown higher prevalence of HTN (42%) compared to females (32.9%). The association between hypertension and sex was not found to be significant. A study done by THAPLIYAL et al in Uttarakhand state showed significant association with males (58.7%) than females (41.3%), (p= <0.01)⁸. The prevalence of hypertension was higher in married subjects (75.3%) followed by widowed (14%) and unmarried (9.3%). The association between hypertension and marital status was found to be significant (p=0.004).

Hypertension and education status:

In the present study, majority of the subjects who were hypertensives were illiterates (47%) and the remaining were literates (28%). Among literates prevalence of hypertension was high in subjects who have completed middle school (39%) and graduates (31%) followed by primary school (27%) and high school (23%). The association between hypertension and education status is found to be significant (pvalue= 0.01). Another study done by Ravi R Marinayakanakoppalu et al in 2017 in Mysore have shown that prevalence of hypertension was high in middle school and high school (26.2%) followed by illiterates (23.8%). The association was found to be significant (pvalue= 0.0001)⁹.

Hypertension and socioeconomic status:

The prevalence of hypertension was higher in lower class

(67%) followed by subjects who belong to upper class (44%), lower middle class (39%), upper middle class (38%) and lowest prevalence was seen in middle class (31%). The difference was found to be statistically significant (p-value= 0.03). The prevalence of hypertension was more among upper middle class 29.7% in the study done by Syam Sundar Junapudi et al, 2021 in Hyderabad. The association was not significant in this study¹⁰.

Hypertension and family history of hypertension:

In our study, the prevalence of hypertension was more in those who had a family history of hypertension (13%) compared to those who did not have a family history (30%) and the association was highly significant (p<0.001). A similar study was conducted by Chethana K V et al, in Raichur, in 2016. It was observed that 36.9% of hypertensives had a family history of HTN and 63.1% hyper tensive did not have a family history of HTN (p=0.003)¹¹.

Hypertension and smoking:

The present study shows that prevalence of hypertension was high in past smoker (72.9%) followed by current smokers (52.6%) and then non-smokers (30.9%). The association between hypertension and smoking is found to be significant. A similar study was done in Raichur, occurrence of HTN was more in past smokers (82.4%) followed by current smokers (51.5%) when compared to non-smokers (27.6%) the association was significant (p=0.0001)¹¹.

Hypertension with waist-hip ratio and BMI:

Hypertension was higher in study population with normal WHR (68.14%) compared to subjects with abnormal WHR (31.86%) and the association was found to be significant (P <0.001). In contrast to our study, a study done by Singh M et al, in 2018 in southern India have found that 64.8% have abnormal WHR whereas 35.2% have normal WHR where the association was significant (P <0.001)⁶. The prevalence of hypertension was higher in obese class II and obese class III (100%) followed by obese class I (73.3%), overweight (50.9%), underweight (29.8%) and normal (16.7%) and the association was statistically significant (P= <0.001). Similar study by Bendhari ML et al, in 2016 in Western Maharashtra found that higher prevalence (38.89%) was observed in individuals having BMI of \geq 30 whereas it was 8.26% in individuals having BMI of <18.5 which also showed statistically significance (P= <0.001)¹².

CONCLUSION & RECOMMENDATIONS:

- Prevalence of hypertension can be reduced by following healthy habits like regular exercise, dietary salt reduction, adherence to medication, abstinence from smoking and alcohol. In the current study, shows the high prevalence of hypertension in subjects with poor literacy status.
- Screening of the population is the only effective method for diagnosis of hypertension. Hence opportunistic screening by the physicians and private practitioners should be promoted.
- Advocacy of life style changes using mass media approach has to be promoted.
- Health education should focus on weight reduction, cessation of smoking and alcohol, increased physical activity and restriction of dietary salt intake.
- Conducting camps in rural areas and making people aware about hypertension, its causes, consequences and prevention. Additional research in the area of primary prevention of high BP should be encouraged. This should focus on the development of cost-effective programmes for primary prevention of hypertension which can be implemented in the general population (population strategy) and more intensive programmes for those who are at high risk of developing hypertension (high risk strategy).

Ethical Considerations :

Institutional ethical committee clearance was obtained and informed consent was taken before the commencement of the study.

Conflicts Of Interest: Nil**Funding:** Nil**REFERENCES:**

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