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RESEARCH ARTICLE

Prevalence of Prehypertension in Adult population of Rural Andhra Pradesh

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ABSTRACT

Background: Prehypertension and hypertension were related with many complications of nearly every organ, but often neglected by young adults in rural area. This research was done to observe the prevalence of prehypertension among young adult in a rural area of Andhra Pradesh(AP).

Methods: This cross-sectional study was done in rural areas of Andhra pradesh, India. 1624 subjects were consecutively recruited and surveyed during January 2011 – November 2012 and were aged between 18–35 years old. They were interviewed about their age, gender, physical activity, smoking habit, alcohol consumption, and family history and examined for weight, height, body mass index [BMI], systolic and diastolic blood pressure.

Results: From 1624 young adults, 30.1% had prehypertension and 7.75% had hypertension ($p < 0.05$). Within sex groups, the prevalence of prehypertension was higher in males. BMI was associated with pre-hypertension.

Conclusion: Prevalence of prehypertension and hypertension were relatively high among young adults in rural areas of AP, India. Intervention to prevent further complications needs to be done early with lifestyle modification because blood pressure is associated with modifiable risk factors, such as BMI and total activity.

Keywords: Hypertension, prehypertension, rural area, young adult

1. INTRODUCTION:

Hypertension is responsible for 57% of stroke deaths and 24% of coronary heart disease deaths in India[1]. Cardiovascular disease will be the largest cause of death and disability in India by 2020. Hypertension is emerging as a major health problem. Prehypertension is considered to be blood pressure readings with a systolic pressure from 120 to 139 mm Hg or a diastolic pressure from 80 to 89 mm Hg. Readings greater than or equal to 140/90 mm Hg are considered hypertension. Above classification is based upon two or more readings at two or more separate occasions with a gap of at least one week. The seventh report of the Joint National Committee (JNC 7) proposed the term Prehypertension for elevated blood pressure values below 140/90 to more accurately justify the tendency of blood pressure to rise with age [2].

Prehypertension is a new category by the Seventh Joint National Committee[3], so far only little work was done on the incidence and prevalence of prehypertension in the literature. Especially there are only a few studies from India on the prevalence for prehypertension especially from rural areas. The literature on prevalence of prehypertension and hypertension in Andhra Pradesh was scarce, thereby this study was planned to investigate the prevalence and risk of hypertension in young adults 18 -35 years of age in a rural area of Andhra Pradesh, India. This project recognizes the importance of detection of

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prehypertension and emphasizes the need for advent of early treatment or necessary life style modifications and precautions to be taken so that many later complications can be avoided and people can live healthy with few precautionary measures by early detection

2. MATERIALS AND METHODS

This work is a cross-sectional survey where 1624 participants were selected and surveyed during January 2011– November 2012 in rural areas of Andhra Pradesh. Informed consent and institutional ethics clearance was obtained prior to the start of the study. Study subjects were examined and analyzed. We collected this data on college going and random population of rural district in outskirts of Hyderabad (A.P). We took B.P reading by technically qualified personnel and three readings as per standard procedure. Sitting BP was measured after 10 minutes of rest with a standard adult sphygmomanometer at the beginning of the interview and again at the end. The mean BP value was used for analysis. Blood pressure was graded as normal (SBP <120 and DBP <80 mmHg), pre-hypertension (SBP = 120-139 and/or DBP = 80-89 mmHg) and stage I hypertension (SBP = 140-159 and/or DBP = 90-99 mmHg) as per US Seventh Joint National Committee on Detection, Evaluation & Treatment of Hypertension (JNC VII) criteria [4].

Data entry and statistical analysis were performed using the Microsoft Excel and Statistical Package of Social Sciences (SPSS) windows version 11.0 software. Tests of significance like Chi- square test, Student's t test and ANOVA were applied to find out the results. A p value < 0.05 was taken for statistical significance.

3. RESULTS

Characteristics of the study subjects are displayed in table 1 . Among 1624 subjects analyzed and as per JNC VII criteria, 1008 (62%) were having normal B.P readings, 126 (7.75%) were having evidenced hypertension by history as well as measurement and 494 subjects (30.15%) were found to have pre-hypertension (p value <0.05) (Table 1 and figure 1).

The proportion of prehypertension was found be higher in males (85.22%) as compared to females (14.77%) (Figure 2), the difference being statistically significant. Among Pre-hypertensive subjects, there were 78 (15.78%) between 18yrs to 20 years of age, 167 (33.8%) subjects were between 21 years to 25 years and 249 (50.4%) subjects above 25 yrs of age (Figure 3). The proportion of pre-hypertension showed an increasing trend with the increase in age. 115 pre-hypertensive subjects were obese (23.28%) and remaining 379 subjects were non obese (Figure 4).

Variables	Normal (n=1004)	Prehypertensive(n=494)	Hypertensive (n=126)
Ages (years)	21.9 ± 6.8	20.3 ± 8.6	25.2 ± 6.8
Weight (kg)	48.2 ± 6.3	51.1 ± 7.5	53.3 ± 12.4
Height (cm)	153 ± 7.5	153.4 ± 7.5	156.4 ± 10.5
BMI (kg/m^2)	19.8 ± 2.8	21.2 ± 4.2	22.2 ± 4.2
Systolic BP (mmHg)	98 ± 9.6	117.5 ± 9	137 ± 12.9
Diastolic BP (mmHg)	64.4 ± 5.2	85 ± 6.1	91 ± 3.3
Smoking (%)	14.8	15.8	21.1
Family History (%)	31.5	36.8	42.1
Gender: Male (%)	88.5	85.2	76.3
Female (%)	11.5	14.7	24.7

Table 1 Characteristics of the study subjects

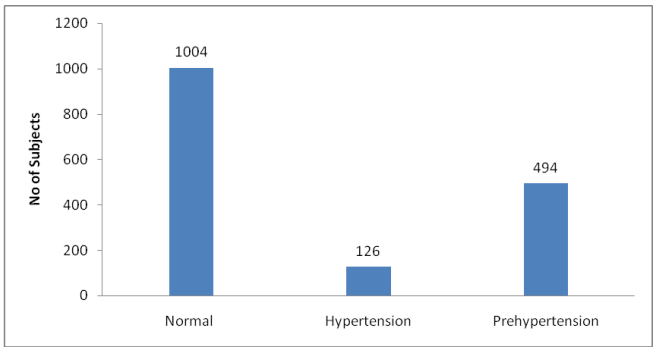

Figure 1 Prevalance of prehypertension

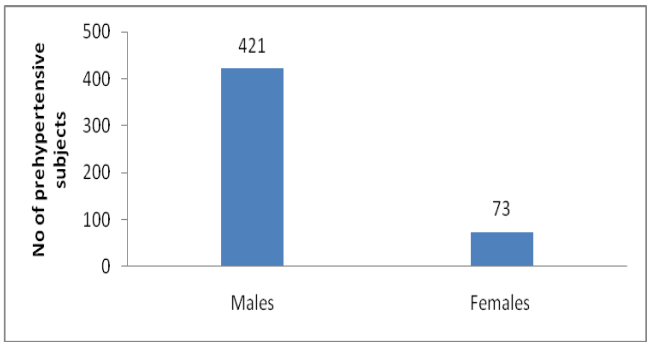

Figure 2: Male: female ratio of prehypertension

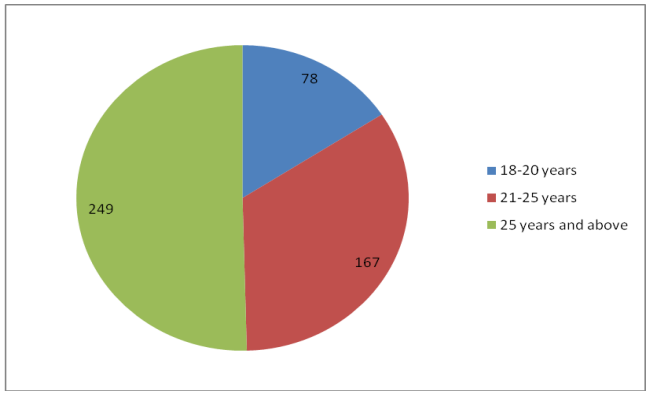

Figure 3 Age-Wise prevalence of Prehypertension

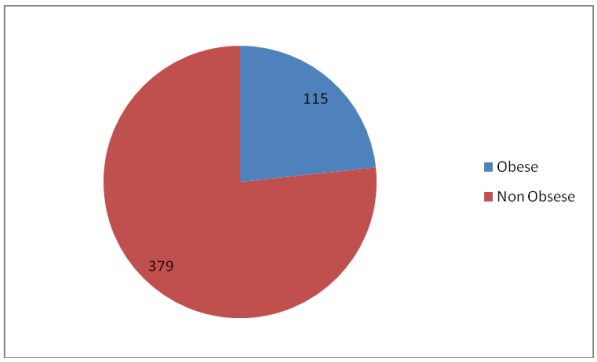

Figure 4 Obese wise prevalence of Prehypertension

4. DISCUSSION

Prehypertension is considered as a precursor of clinical hypertension. JNC VII was not the original source for the term pre-hypertension or the BP range that defines it. In 1939, Robinson and Brucer defined BP in the range of 120-139/80 to 89 mm of hg as pre – hypertensive when compared with normotensive individuals. Prehypertensive individuals are more likely to be overweight and obese to have other cardiovascular risk factors to progress to established hypertension and to experience premature clinical CVD.

The prevalence of hypertension has increased during the last decade [5]. The high prevalence of prehypertension (30.15%) and hypertension (7.75%) in this study, confirms this increasing trend. Rapid urbanization, lifestyle changes, dietary changes and increased life expectancy are factors attributable to this rising trend. High prevalence of prehypertension observed in this study was similar to that reported elsewhere in India, Himachal Pradesh [6], Central India [7] and Kerala [8]. The proportion of pre-hypertension was higher among males compared to that in females. This concurs with the observation made by previous study that males (42.9%) had higher pre-hypertensive values when compared to females (34.2%) among rural population of Davanagere [9].

Moreover, the current study showed that the proportions of prehypertension were found to increase steadily with the increase in age. These findings are coherent with those reported in the study conducted among urban and rural adults of Lucknow [10]. Such changes of blood pressure with age might be due to changes in vascular system. Cross-sectional surveys, as well as prospective observational cohort studies, have consistently demonstrated a positive relation between age and blood pressure in most populations with diverse geographical, cultural and socioeconomic characteristics [11].

Elevated blood pressure developing gradually over many years usually without a specific identifiable cause. However, possible medical causes, such as medications, kidney disease, adrenal problems or thyroid problems, must first be excluded. High blood pressure that develops over time without a specific cause is considered benign or essential hypertension. Blood pressure also tends to increase as a person ages.

A primary risk factor for prehypertension is being overweight. Other risk factors include a family history of hypertension, a sedentary lifestyle, eating high sodium foods, smoking, and excessive alcohol intake. Blood pressure levels appear to be familial, but there is no clear genetic pattern [12,13].

Prehypertension is often asymptomatic (without symptoms) at the time of diagnosis. Only extremely elevated blood pressure (malignant hypertension) can, in rare cases, cause headaches, visual changes, fatigue, or dizziness, but these are nonspecific symptoms which can occur with many other conditions. Thus, blood pressures above normal can go undiagnosed for a long period of time [12, 13].

Findings from the current investigation must be considered within the context of the study's limitations. Specifically, BP was measured 3 times according to a standard protocol during only a single visit. According to the guidelines set by the World Health Organization, hypertension should be assessed based on the average of ≥2 BP readings taken at ≥2 visits after an initial screening. Furthermore, the co-variantsfor example, diet, anxiety and depression, and pharmacological treatment, which may have effects on these associations, were not included in this survey.

This study on Prehypertension prevalence among young adult population warns and makes us aware of possible cardiovascular risks [12, 13, 14] and forewarn us to be alert and precautions to be taken before it becomes too late.

5. CONCLUSION

This project recognizes the importance of detection of prehypertension and emphasizes the need for advent of early treatment or necessary life style modifications. The precautions should be taken so that many later complications can be avoided and people can live healthy with few precautionary measures by early detection.

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Conflict of Interest: None Declared

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