

## Prevalence of Hypertension in Young Adults at a Tertiary Care Teaching Hospital

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### Abstract

**Background:** Hypertension is the most common cardiovascular disorder and public health problem. The recent tendency of the rising incidence of hypertension in young adults is alarming. Globalization changes in dietary habits, decrease in physical activity, obesity, alcohol consumption and exposure to continuous stress are affecting young adults. The present study aimed to estimate the prevalence of hypertension and its associated risk factors in young adults attending our tertiary care teaching Hospital. **Methods:** A pre-test and pre-validated questionnaire were used to collect details with regards to variables like age, gender, and religion and behavioral risk factors like tobacco chewing, alcohol use, and smoking. A detailed clinical examination was performed which included general examination and systemic examination. Blood pressure is generally measured by using a mercury sphygmomanometer by using both palpatory and auscultatory methods. **Results:** Based on the age-wise and sex-wise distribution of cases out of n=80 cases 56.25% were males and 6.25% were females the most common age group involved was 36 – 40 years with 27.5% of all cases. The mean age group of all the cases in the study was  $35.5 \pm 4.5$  years. Out of the n=80 primary hypertensive cases of the current study n=55 (68.75%) cases were belonging to Stage I hypertension and n=25 (31.25%) cases were belonging to stage II hypertension. **Conclusion:** The prevalence of hypertension is increasing in young adults of our population. Especially those who have higher BMI, Waist hip ratio, and those with a family history of hypertension. The disease is more existent in the age group of 30 – 40 years. Most of them are not aware of existing hypertension. Therefore, health education regarding hypertension and its adverse effects must be disseminated.

**Keywords:** Hypertension, Obesity, BMI, Waist Hip Ratio, Young Adults

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### Introduction

Hypertension is also known as a silent killer due to the absence of obvious symptoms in many cases and it is becoming a major global public health problem. <sup>[1]</sup> In hypertension, the blood pressure is constantly elevated and clinical benefits may be obtained from blood pressure lowering. <sup>[2]</sup> The prevalence is constantly increasing in recent decades and awareness and controls rates remain poor especially in developing countries. Each year approximately

9.4 million deaths worldwide are due to the complications of hypertension. <sup>[3]</sup> A global health observatory data has approximated the age-standardized prevalence of hypertension is 24.1% and 20.1% for males and females respectively. <sup>[4]</sup> In India, approximately 23.1% of males and 22.6% of females over the age of 25 years suffer from hypertension. <sup>[5]</sup> Studies have shown that the prevalence of hypertension in India is 25% in the urban population and 10% in the rural population. It is the cause of 57% of cases of all stroke deaths and 42% of deaths due

to cardiovascular disease. [6] Epidemiological studies have been carried out in various parts of the country on younger individuals. A study on a healthy Western Indian population found the prevalence of hypertension among those less than 40 years to be 11%. [7] A study from Karnataka, looking at the prevalence of hypertension in 991 individuals between the ages of 20 and 40 found it to be nearly 8%. [8] One of the important causes of the development of hypertension is hereditary factors. The risk of developing hypertension was even greater in those whose parents had an early onset of hypertension. Subjects whose mother and father had developed hypertension at the age of 55 or younger had a 7.1-fold higher risk of developing hypertension during their adult life as compared to those without a hypertensive parent. [9] Studies about the relation of socio-economic factors and hypertension have found that socially disadvantaged people could face stress from their job and lack of stable financial position. The problem is coupled with poor knowledge and limited access to resources could result in these individuals consuming food that is cheap and high in calories, saturated fats, and salt, which in turn would result in obesity and hypertension. These in turn could result in chronic ill health, further limiting their job options and resulting in further stress. [10] A study looking at the association of socioeconomic status and hypertension in a rural South Indian population, found the prevalence of hypertension to be 22.5% in those belonging to the highest socioeconomic group and 8.8% in those belonging to the lowest socioeconomic group. [11] In a study looking at rural tribal populations in India, it was noted that the prevalence of hypertension increased with increasing literacy and among landowners. Early detection of hypertension is beneficial it minimizes the risk of long-term cardiovascular and kidney diseases. [12] Since most of the hypertensive patients are not aware of their condition and have lower literacy regarding the condition, we in the current study tried to study and profile patients with young-onset hypertension who present to the Department of General Medicine, of our tertiary care teaching hospital.

## Materials and Methods

This cross-sectional study was conducted in the Department of General Medicine, Chalmeda Anand Rao Institute of Medical Sciences, Bommakal, Karimnagar. Institutional Ethical Permission was obtained for the study. Written consent was obtained from all the participants of the study. The method of sampling in this study was convenient sampling.

### *Inclusion criteria*

1. Patients diagnosed with hypertension AHA/ACC Guideline Recommendations by Blood Pressure Category [13, 14]
2. Aged 18 – 40 years.
3. Male and Females
4. Patients attending General Medicine OPD of CAIMS

### *Exclusion criteria*

1. Those with endocrinal disorders
2. Pregnant females
3. Patients who were not available for follow-up examinations

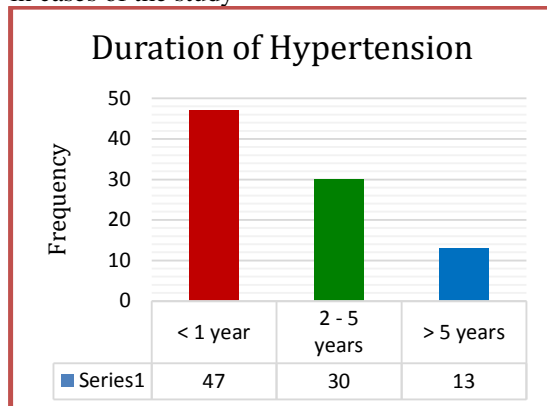
A pre-test and pre-validated questionnaire were used to collect details with regards to variables like age, gender, and religion and behavioral risk factors like tobacco chewing, alcohol use, and smoking. A detailed clinical examination was performed which included general examination and systemic examination. Blood pressure is generally measured by using a mercury sphygmomanometer by using both palpatory and auscultatory methods. The person should be seated in a chair that supports the back and should not have smoked, for several minutes (10 – 15 Minutes), Measurement is taken in a sitting position with the arm muscles relaxed and the forearm supported with the cubital fossa at heart level. A cuff of a suitable size is applied, for adults, it must have a bladder 13-15 cm wide and 30-35 cm long to encircle the average arm. The cuff is rapidly inflated until the manometer reading is about 30 mmHg above the level of which the pulse disappears, and then slowly deflated at 2 mmHg per second. The pressures at which sounds are first heard are the systolic blood pressure and the point when the sounds disappear (phase V) is taken as diastolic blood pressure. An average of two blood pressure readings 15 minutes apart was considered. The anthropometric variables like

height, weight, waist circumference, and hip circumference were measured according to standard guidelines. 16 Further, body mass index and waist-hip ratio were calculated. Body mass index was classified into underweight, normal, overweight, and obese based on the WHO guidelines. 17 The waist-hip ratio was classified separately for males and females using the WHO guidelines. 18 The data was collected and uploaded on an MS Excel spreadsheet and quantitative variables were expressed on mean and standard deviations and qualitative variables were expressed in proportions. The Chi-square test/ fisher's exact test has been used to find the difference between two proportions.

### Results

During the period of study n=90 cases of hypertension were detected in young adults. Of the N=90 patients, n=10(11.11%) cases were found to have a secondary cause for hypertension and the remaining were categorized as having Primary hypertension. The duration of hypertension was less than a year in approximately half 52.22% of the study group 33.33% had hypertension range from 2 – 5 years and 14.44% had a duration of hypertension that was more than 6 years depicted in figure 1.

**Figure 1:** showing the duration of hypertension in cases of the study



The secondary hypertension cases were managed according to the underlying cause and primary hypertension n=80 cases were followed up further. Based on the age-wise and sex-wise distribution of cases out of n=80 cases, 56.25% were males and 6.25% were females the most common age group involved was 36 – 40 years

with 27.5% of all cases. The mean age group of all the cases in the study was 35.5 ± 4.5 years. The detailed depiction of cases in the study has been shown in table 1.

**Table 1:** age-wise and sex-wise distribution of cases

Age group	Male	Female	Total (%)
18 – 20	03	02	05 (6.25)
21 – 25	08	09	17 (21.25)
26 – 30	07	10	17 (21.25)
31 – 35	11	08	19 (23.75)
36 – 40	16	06	22(27.50)
Total	45	35	80 (100)

With regards to the nature of residence, n=55 (68.75%) cases were from Urban residences and n=25 (31.25%) cases were from rural backgrounds. Out of the n=80 primary hypertensive cases of the current study n=55 (68.75%) cases were belonging to Stage I hypertension and n=25 (31.25%) cases were belonging to stage II hypertension based on JNC 9 Hypertension guidelines 2020. A detailed description is given in table 2.

**Table 2:** Distribution of cases of hypertension

	Male	female	Total (%)
Hypertension			
Stage I	29	26	55 (68.75)
Stage II	16	09	25 (31.25)
Hypertensive crisis	00	00	00 (00.00)
Total	45	35	80 (100.0)

**Table 3:** Risk factors for hypertension in the study

Risk factor		Hypertensive Stage I (N=55)	Hypertensive Stage II (N=25)	P-value
Alcohol consumption	Yes	18 (32.27%)	15 (60.0%)	0.147
	No	37 (67.27%)	10 (40.0%)	
Smoking	Yes	05 (9.09%)	08 (32.0%)	0.065
	No	50 (90.9%)	17 (68.0%)	
Tobacco chewing	Yes	06 (10.9%)	03 (12.0%)	0.813
	No	49 (89.09%)	22 (88.0%)	
BMI	Overweight	12 (21.81%)	05 (20.0%)	0.047 *
	Obesity	21 (38.18%)	10 (40.0%)	
Waist hip ratio	< 1.0	35 (63.63%)	18 (72.0%)	0.012 *
	> 1.0	20 (36.36%)	07 (28.0%)	

\* significant

Of the N=80 subjects, hypertension was detected out of which n=42(52.5%) had symptoms and the rest were asymptomatic. The CNS symptoms of headache, dizziness were common and n=4(5.0%) had a cerebrovascular accident. The other symptoms were a pain in the

chest, palpitations, tachycardia, and breathlessness. Among the risk factors for hypertension Alcohol consumption, smoking, and tobacco chewing were common in hypertensive patients however the p-values were not significant. The two important risk factors BMI and Waist hip ratio showed that overweight and obesity, as well as the waist-hip ratio of >1.0, was significantly associated with hypertension given in table 3. Based on the socio-economic status the prevalence of hypertension was commonly found in the upper lower-class patients and based on the occupation it was more prevalent in agriculturists given in table 4.

**Table 4:** socio-economic status and occupation in the cases of study

		Hypertensive Stage I (N=55)	Hypertensive Stage II (N=25)
<b>Socio Economic Status</b>	Upper Class (I)	02 (3.64)	01 (4.00)
	Upper middle class (II)	05 (9.09)	04 (16.00)
	Lower middle class (III)	21 (38.18)	10 (40.00)
	Upper lower class (IV)	16 (29.09)	07 (28.00)
	Lower class (V)	11 (20.00)	03 (12.00)
<b>Occupation</b>	Professional	02 (3.64)	03 (12.00)
	Non-Professional	04 (7.27)	02 (8.00)
	Students	08 (14.54)	06 (24.00)
	Skilled laborer	12 (21.81)	03 (12.00)
	Unskilled Laborer	06 (10.9)	02 (8.00)
	Agriculturist	13 (23.63)	04 (16.00)
Unemployed/ Housewife	10 (18.18)	05 (20.00)	

Of the n=80 cases the history of parents with hypertension was found in n=10(12.5%) cases, and parents with both diabetes and hypertension in n=5(6.25%) cases. Among the cases, n=22(27.5%) cases were found to have dyslipidemia.

## Discussion

The recent trends of hypertension have shown that relatively young adults appear to be affected by this disease. Gupta et al., [15] have shown that the prevalence of various cardiometabolic risk factors among adolescents is low however, there is the rapid escalation of these risk factors by the age of 30 to 39 years. Hence, this hospital-based study was conducted with a primary focus on young adults aged between 18 – 40 years. Of the n=80 cases of primary hypertension n=45 (56.25%) were males and n=35(43.75%) were females the difference was not statistically

significant. This gender difference could be due to the cardiovascular protective effect offered by the circulating estrogen in females of these age groups. And the behavioral risk facts associated with males such as smoking, tobacco chewing, and alcohol abuse are not present in females. The most common age group involved was 36 – 40 years with 27.5% of all cases. Kayima et al., [16] found the prevalence of hypertension was significantly in the age group of 30 to 40 years as compared to 18 to 29 years (p-values <0.05) these findings were in agreement with observations of the current study. SS Reddy et al., [17] in Tirupati found the prevalence of hypertension is slightly higher in males 9.6% as compared to females 7.6% however, the difference was not significant. In the current study, 47.5% of cases were asymptomatic that is why hypertension is called the silent killer because patients usually remain asymptomatic. Among the symptoms, the commonest were headache, dizziness, and palpitations. A positive family history of hypertension in parents was found in n=10(12.5%) cases, and parents having both diabetes and hypertension in n=5(6.25%) cases. Rao CR, et al., [18] in Coastal Karnataka found a positive family history of hypertension in 41% of cases detected with hypertension. The prevalence of dyslipidemia was found in 27.5% of cases of this study. The prevalence of obesity was found in 38.75% of cases of the study. Papathanasiou et al., [19] found that body mass index and male gender had higher odds of being hypertensive in this age group. Similar findings have been reported by Bruno et al., [20] in their study of hypertension. The current study was a hospital-based study with convenient sampling hence generalization of the findings may not be feasible however this study shows an increasing trend of hypertension in young adults.

## Conclusion

Within the limitations of the current study, it can be concluded that the prevalence of hypertension is increasing in young adults of our population. Especially those who have higher BMI, Waist hip ratio, and those with a family history of hypertension. The disease is more existent in the age group of 30 – 40 years. Most of them are not aware of existing hypertension. Therefore, health education regarding hypertension and its adverse effects must be

disseminated and regular check-ups at least once a year must be advised after the age of 30 years onwards.

**Conflict of Interest: None**  
**Source of support: Nil**  
**Ethical Permission: Obtained**

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