

Original Research Article

The prevalence of hypertension among young adults in a rural population of North India

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ABSTRACT

Background: Most of the studies on hypertension provided the data on older age group. Most of the times, younger population remains unaddressed as they are assumed to be at a lower risk of developing the disease. So, the study on prevalence of hypertension among younger age group and their socio-demographic variables provides the guide for requirements of any intervention. Objective of present study is to estimate the prevalence of Hypertension among young adults in a rural population of central India.

Methods: We collected data on socio-demographic characteristics and hypertension status from 1061 subjects aged 18–40 years. Relevant clinical parameters were collected (blood pressure recordings and anthropometric measurements).

Results: Hypertension was detected in 188 of the 1061 subjects (17.7%). Prevalence among men was higher (18.8% compared to 15.2% among women). A total of 40.2% of the subjects was found to have pre-hypertension. Higher prevalence of hypertension was seen among those with a history of smoking.

Conclusions: Most of the young adults with raised blood pressure were previously undiagnosed. A large number of subjects had prehypertension. Their early identification facilitates early, active management of blood pressure and formulation of preventive strategies thereby decreasing morbidity and mortality due to cardiovascular diseases and hypertension.

Keywords: Hypertension, Prevalence, Rural, Young adults

INTRODUCTION

In developing countries, cardiovascular disease (CVD) is the leading cause contributing to 30 % of all global deaths.¹ According to the report of World Health Organisation (WHO) 2002, cardiovascular diseases (CVD) are the major cause of mortality and morbidity by 2020 in India. The WHO considers hypertension as important risk factor for premature death worldwide.

Global burden of Disease estimated that in India, total percentage of death due to cardiovascular diseases (CVD)

below 70 years of age is 52% as compared to those who live in developed nations where it is 23% only. The prevalence rate varies with the age, as the younger age group of 18-24 years, it is only 4% and rises to 60 % after 65 years.

Over the last thirty years, there is considerable decline in morbidity and mortality in developed countries as the consequence of treatment and control of hypertension proving it to be one of the major modifiable risk factor.^{2,3} In the rural area of India, blood pressure control to the suboptimal level remains challenging. Recent studies showed that there is a variable prevalence at different

regions and excessively low awareness among general public leading to poor control of hypertension.⁴

Developing countries are suffering with the increasing burden of hypertension and other cardiovascular diseases.⁵ Hypertension forces an excessive financial burden on population and health systems, consuming scarce resources.⁶ There are limited data on the prevalence of high blood pressure and its risk factors among the young, whereas this is the population that could derive the most benefit from control measures.

METHODS

A random sample of 1061 rural individuals (age 18 to 40 years) were included in a cross-sectional study. We conducted this study in Saifai under Etawah district, from the period of January 2016 to June 2016. The selected area is situated 22 kilometers away from Etawah city. The total population of Saifai is 7141 according to 2011 census. The sociodemographic characteristics of rural life defined for this study were the livelihood primarily related to the agriculture activities.

All male and female 18 to 40 years of age were considered eligible except pregnant women and subjects on medication. The eligible participants were informed about the objectives of the study. After providing the informed consent, each interested individual was requested to attend the nearby health care centre. Each participant's was interviewed for the status of physical activities, family history of hypertension, diabetes, smoking, annual income etc. Other investigations included anthropometry and blood pressure. Measurement of height, weight, waist and hip girth were taken with light cloth without shoes. Diagnosis of hypertension was made by measurement of blood pressure in arm with sphygmomanometer according to the JNC 7.

Blood pressure was measured with a Diamond mercury sphygmomanometer whose accuracy has been validated.⁷ Participants were asked to refrain from smoking cigarettes and drinking alcohol or caffeinated beverages for at least 60 min prior to examination. The blood pressure in the left arm was measured after resting for at least five minutes. The blood pressure was taken in the sitting position, legs uncrossed, with the arm resting on a table and the ante-cubital fossa at the level of the lower sternum. Two arm cuffs that fit arm circumferences 9–13 in. and 13-17 in. were used in the process. Three blood pressure readings were measured to the nearest mmHg three minutes apart and the mean of the closest two values was used for analyses.⁸

Statistical analysis

Data were collected using hand-held computers programmed to include range checks, structure checks and internal consistency checks. For this analysis we

included all participants between the ages of 18–40 years, stratified by younger (18–29) and older (30–40) groups. The outcomes of interest were: (1) prehypertension defined as systolic blood pressure between 120 and 139 mmHg and/or diastolic between 80 and 89 mmHg; (2) hypertension which was defined as a systolic blood pressure greater than 140 mmHg and or a diastolic blood pressure greater than 90 mmHg or treatment with anti-hypertensive medication.

RESULTS

A total of 1061 participants between the ages of 18 and 40 years were screened during the survey. Table 1 summarizes the characteristics of the study participants.

Table 1: Socio-demographic characteristics of the study participants aged 18-40 years.

Age (years)	18-29	590 (55.6%)
	30-40	471 (44.4%)
Sex	Male	732 (69%)
	Female	329 (31%)
Smoking	Smoker	82 (7.73%)
	Non smoker	979 (92.23%)
Family history	No	812 (76.53%)
	Yes	249 (23.47%)

The majority of the participants (69%) were male. The median age of the participants was 27 years; 55.6 % were in the young age-group (18–29 years).

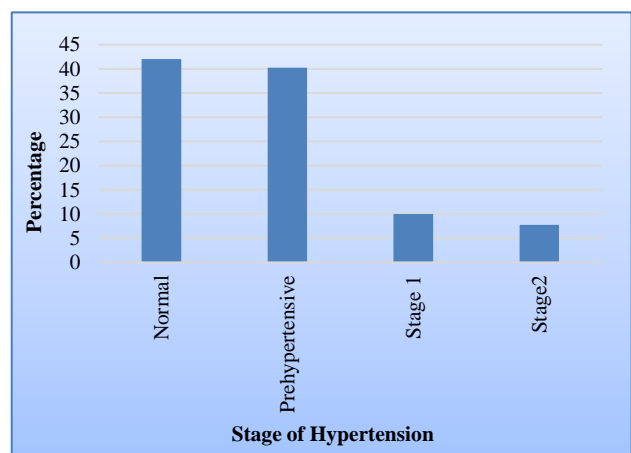


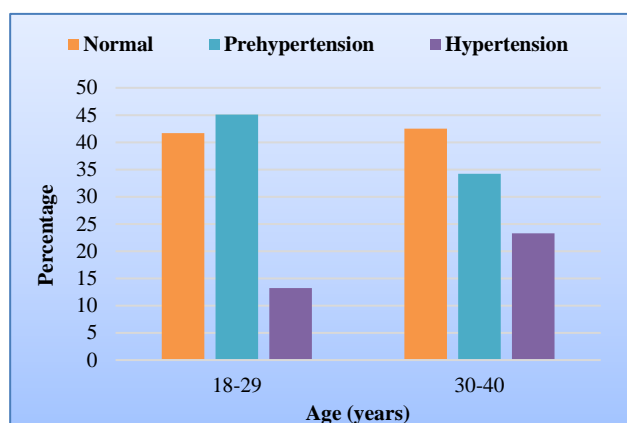
Figure 1: Distribution of cases according to JNC 7.

The overall prevalence (95% CI) of hypertension in this population was 17.72% (95% CI). Figure 1 summarizes the prevalence of different stages of hypertension among the study participants using JNC VII classification according to both systolic and diastolic blood pressure. Of all the study participants, 82 (7.74%) had severe hypertension (stage 2) and 106 (10%) had stage 1 hypertension. Only 446 (42%) of participants had a normal blood pressure and 427(40.25%) had prehypertension.

Table 2: Prevalence of hypertension among men as compared to women.

	Male	Female
Hypertension	138 (18.85%)	50 (15.20%)
Non hypertension	594	279
Total	732 (100%)	329 (100%)

The prevalence of prehypertension was higher in younger age groups; while, hypertension was more prevalent in the older age group (13.22% vs 23.30%, $p=0.001$). The prevalence of hypertension among men (18.85%) was higher as compared to women (15.20%).

**Figure 2: Hypertension classified using the JNC VII criteria by age-group.**

DISCUSSION

The persistence of high blood pressure in childhood and adolescent population and its progression into adult hypertension has been demonstrated in the various studies in the past. Persistently raised blood pressure in adolescent age group are a predictor of adult hypertension.⁹ Blood pressure monitoring in young adults is therefore very useful for the early detection and management of hypertension.

Hypertension is a major health problem in India and other developing countries.^{11,12} High prevalence of hypertension was found among the young adults in our study. Similar high rates have been demonstrated in earlier studies on young adults.¹³ A national epidemiology study in 2002 found that almost 18% of Chinese aged 15 years and older were hypertensive.¹⁴ The increasing prevalence of hypertension and prehypertension in rural area is the consequence of acculturation i.e. the adoption of Western lifestyle with rapid urbanisation. Dietary intake of higher sodium and lower potassium are widespread throughout rural areas. Similar to older age group, younger men are more often hypertensive than women attributable to differences in the hormonal regulation of blood pressure and smoking.^{13,15} A study suggested that the prevalence of hypertension in young men is higher than in young women.¹⁶

CONCLUSION

Hypertension was found to be a problem among young adults. Most of the cases were previously undiagnosed leading to a considerable threat to them. The large proportion of prehypertensive needs regular follow-up. Their early identification facilitates early, active management of their hypertension thereby minimizing complications such as cardiovascular changes and end organ damage later in life. Further studies need to be conducted as there is paucity in data on hypertension in the young adult population of this area in order to formulate preventive strategies at all levels.

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