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Research Article

Prevalence of prehypertension in young adults in a semi-urban district in Telangana

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ABSTRACT

Background: Referred to as silent killer, is one of the leading causes of cardiovascular diseases. The risk of cardiovascular disease in people with prehypertension increases with the increase in burden of the other risk factors such as obesity, diabetes mellitus and dyslipidaemia. This study was undertaken to estimate the prevalence of prehypertension among the young adults in our area.
Methods: 2658 patients, between 18-35 years of age, were included in the study. Complete physical and clinical examination, blood pressure, blood tests for cholesterol levels, blood glucose levels, and triglyceride levels were done. BMI, waist to hip ratio was also calculated.
Results: 1433 (53.9%) of the patients were females and 1225 (46.1%) were males. Pre hypertension was found in 846 (31.8%) hypertension in 261(9.8%) young adults. There was a higher rate of BMI, blood glucose levels and cholesterol in these patients.
Conclusions: There is a high prevalence of prehypertension among the young adults in our geographical. Therefore, awareness among the community, lifestyle modifications such as proper nutrition and less of fatty foods, regular check-ups especially for those with risk factors and timely treatment are very essential for curbing outcomes such as cardiovascular diseases.

Keywords: Prehypertension, Hypertension, Prevalence, Young adults

INTRODUCTION

Hypertension is one of the fast emerging causes of death in developed as well as the developing countries. It is many times referred to as the 'silent killer'.[1] It is known to be a major risk factor for cardiovascular disease accounting for 20-50% of the morbidity and mortality.[2]

Among the total global burden, hypertension accounts for 4.5% of the morbidity and is the reason of 5.8% of the total deaths, 1.9% of the years of life lost and 1.4% disability adjusted life years. [3,4] In India, hypertension is responsible for 57% of the deaths caused due to stroke and 24% caused due to coronary heart diseases.[5]

Prehypertension is a warning sign, early in age which denotes the risk of hypertension later on in life. The seventh report of Joint National Committee (JNC-7) proposed a new classification for prehypertension, separating it from established hypertension. Persons with systolic blood pressure between 120-139 or diastolic between 80-89 were considered prehypertensive. This report emphasized that even slightly elevated blood pressure increased the cardiovascular risk and this was doubled with each increase of 20/10 mmHg of SBP/DBP.[6-8]

This report also stated that the risk of cardiovascular disease in people with prehypertension increased with the

increase in burden of the other risk factors such as obesity, diabetes mellitus and dyslipidemia.

It is estimated that by 2020, the number of deaths due to prehypertension will increase to 15% i.e. 44 million people. This is more likely to occur in poor and developing countries4. In India, the pooled estimate in men is about 45 %, while in a few studies in different region in India has put an estimate of prehypertension to be around 40 – 60%.[9-11]

Since the prevalence of prehypertension in different geographical areas differ, this study was conducted to establish the prevalence of this disease in our area. This can enable the individuals to take necessary precautions so that cardio vascular diseases and other complications can be prevented.

METHODS

This study was performed in the Department of Medicine at Deccan College of Medical Sciences. A total of 2658 patients, between 18-35 years of age, who came into the hospital were included in the study. Patients with established hypertension using antihypertensive medications were excluded from the study.

All the patients underwent complete physical and clinical examinations. Demographic details like age, sex, height and weight were taken. BMI was calculated or all the patients. Smoking and drinking details of all the patients were collected. Family history of hypertension in the patients was also noted.

Blood pressure was taken in a sitting position from the left arm of all the patients twice with a 10 minute rest in between. The mean of both the readings were taken as the blood pressure.

The patients were asked to fast for at least 6 hours and blood was collected for regular hematological and biochemical tests like complete blood count, hemoglobin levels, ESR, blood glucose, lipid profile, urea and creatinine levels were performed.

Waist to hip ratio was measured for the patients, by measuring the waist at the midpoint between the lower margin of the last palpable rib and the top of the iliac crest. Hip level was measured at the level of the greater trochanter.

RESULTS

Out of the 2658 patients included in the study, 1433 (53.9%) of them were females and 1225 (46.1%) were males (Figure 1).

Pre hypertension was found in considerable number of young adults.846 out of 2658 patietns (31.8%) were found to be hypertensive and 261 (9.8%) of this age group had prominent hypertension (Figure 2).

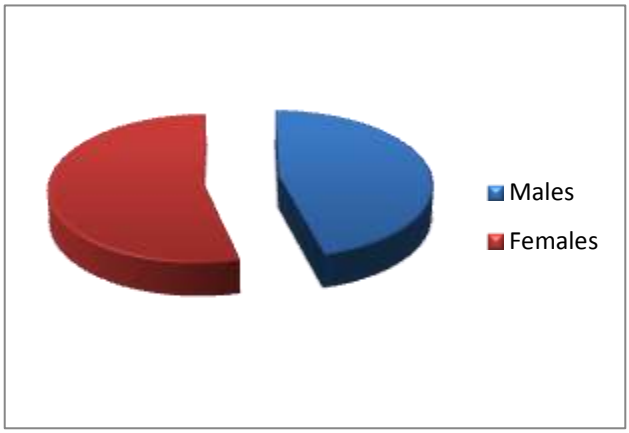

Figure 1: Sex wise distribution of the patients.

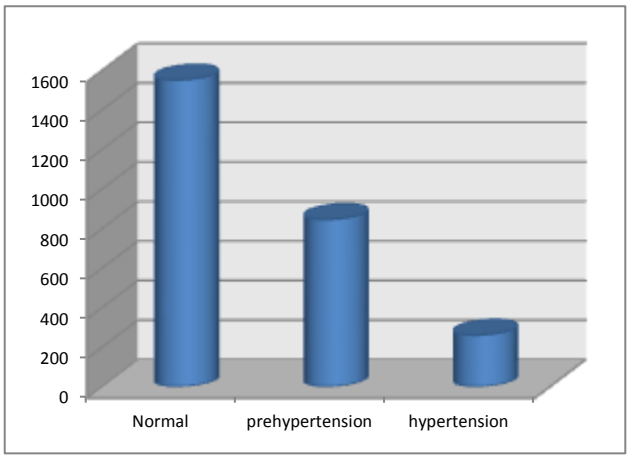

Figure 2: Prevalence of pre and hypertension.

The mean age of the prehypertensive patients was 28.7 and those persons having established hypertension was 31.4.

The weight was also higher among the persons with hypertension than those with prehypertension. BMI above normal was found in both prehypertensive as well as hypertensive patients (25.2 and 28.7 respectively). Many of the youngsters had a familial history of hypertension in the family, with either or both the parents being affected. In some cases, it was the grandparents who were affected, but this did not contribute to any significant difference.

The cholesterol levels were on the higher side in both prehypertension and hypertension cases as was the blood glucose levels. There was not much difference in the triglyceride levels (Table 2).

Table 1: Demographic details.

	Normal (n=1551)	Prehypertension (n=846)	Hypertension (n=261)
Age (in years)	23.4 ± 4.3	28.7 ± 2.9	31.4 ± 3.7
Weight (in kgs)	50.2 ± 6.9	54.9 ± 9.4	59.2 ± 3.1
BMI	19.2 ± 3.2	25.5± 5.1	28.7 ± 7.2
Waist to hip ratio	0.87 ± 0.02	0.86 ± 0.003	0.87 ± 0.04
Systolic(mm Hg)	99.1 ± 5.8	121 ± 6.1	129 ± 8.4
Diastolic (mm Hg)	73 ± 12.1	85.3 ± 4.6	91.8 ± 8.2
Smoking (in %)	0.9%	5.7%	7.2%
Family history of HTN	16.8%	33.8%	37.5%

Table 2: Blood investigation details.

	Normal (n=1551)	Prehypertension (n=846)	Hypertension (n=261)
Fasting Blood sugar (mg/dl)	98.3 ± 4.6	107.4 ± 8.2	123.1 ± 7.0
Cholesterol	188.4 ± 7.3	192.3 ± 4.6	194.3 ± 7.8
LDL	103.9 ± 6.1	107.3 ± 6.3	109.5 ± 3.8
HDL	39.5 ± 5.7	38.5 ± 6.3	36.2 ± 3.9
Triglycerides	142.7 ± 5.2	144.3 ± 6.1	145.8 ± 6.0

DISCUSSION

Prehypertension is said to be a precursor to hypertension in the later age. Obesity and overweight are common cofactors occurring in individuals with prehypertension.

In the past decade, there has been an increase in the prevalence in the incidence of hypertension.[12] This was seen even in our study, where we have reported a prevalence of 31.8% prehypertension and 9.8 hypertension among individuals below the age of 35. This increase in trend was attributed to rapid urbanization, lifestyle changes, dietary changes and increased life expectancy.[13]

Still, our data is comparatively lesser than that reported in other studies. A study in Northern India reported a prevalence of 44%[14] while another study in the urban population of Chennai showed a prevalence of 47%.[10] A study from Assam reported 54%[15] prevalence. In a study conducted on military personnel, in south India, the prevalence was observed to be above 77% though this highly elevated level was observed due to work related stress, psychosocial factors and ongoing nutritional transition in these persons.[16] In other countries also there is a higher prevalence of this condition. In a study in Indonesia,[17] 57.7% prevalence was observed while in China it was 44.1%.[18] Similar results to our study was observed in a study in Japan,[19] where 34.3% of prevalence was observed, Taiwan[20] and Korea,[21] who reported 31.6% and 34% respectively, Venezuela with 29.6%[22] and Cuba with 27.6%.[23]

A slight predominance of the condition was observed in females with almost 54% of them being affected in our study. This was in contrast to a study by Srinivas et al who found males to be more affected than females.[13] The same was observed in other similar studies also.[16,24]

It has been observed that there is an increase in the prevalence of hypertension with increase in age.[13,25] These changes are assumed to be due to changes in the vascular system. There have been studies which have observed a positive relation between the increased incidences of hypertension with increase in age.[26]

One of the major risk factors for hypertension is excessive BMI or overweight/obesity. Family history of hypertension, sedentary life style, smoking and drinking also are considered to be risk factors.[27,28] Though we have had very few cases of smoking, increased BMI was observed in many cases as was family history. 33% and 37% of the patients with prehypertension and hypertension had at least a parent or grandparent with this condition. High levels of cholesterol and triglycerides were also observed in these patients.

This was in concordance to a similar study by Ray et al who also observed that the patient with prehypertension were associated with at least one of the risk factors such as overweight or dyslipidemia. Other studies from India have also shown that increasing age, BMI, waist hip ratio and impaired glucose tolerance were risk factors for hypertension and prehypertension.[11,14,29]

Prehypertension most often is asymptomatic and as a result goes unrecognized. Only under certain conditions like other diseases or ailments, headaches, visual ailments etc. Our study shows us the prevalence of prehypertension among the younger generation in our

area, thereby warning us to be alert and take proper precautions to curb outcomes such as CVD.

CONCLUSIONS

There is a high prevalence of prehypertension among the young adults in not only our geographical area but also in the world. Therefore, awareness among the community, lifestyle modifications such as proper nutrition and less of fatty foods, regular checkups especially for those with risk factors and timely treatment are very essential for curbing outcomes such as cardiovascular diseases.

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