

PREVALENCE OF PREHYPERTENSION IN STUDENTS OF A TERTIARY CARE INSTITUTE OF NORTH INDIA

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DOI: 10.5455/ijmsph.2013.051220131

Received Date: 03.10.2013

Accepted Date: 25.01.2014

ABSTRACT

Background: Prehypertension is associated with an increased risk of the development of hypertension and persistent hypertension can lead to cardiovascular diseases. According JNC-7, prehypertension is SBP of 120–139 mmHg or DBP of 80–89 mmHg.

Aims & Objective: Estimation of prehypertension in young medical students and sensitizing them at an early stage about importance of life style modifications can help in preventing hypertension and subsequent cardiovascular diseases.

Material and Methods: A total of 400 students were enrolled in the study. Information was collected related to their BMI, dietary habits, and exercising habits. After a rest of twenty minutes three readings of blood pressure, at one minute interval were taken and mean of three readings were recorded.

Results: The overall prevalence of Prehypertension was 58.75%. Prevalence of prehypertension systolic and diastolic was 41.5% and 38.5% respectively. Prevalence of hypertension was 5%.

Conclusion: There is a need for practicing life style modifications at an early stage. Modern life style is responsible for increasing prevalence of risk factors that increase the risk of cardiovascular events.

Key-Words: Prevalence; Prehypertension; Students; Life Style

Introduction

Prehypertension is associated with an increased risk of the development of hypertension and persistent hypertension can lead to cardiovascular diseases.^[1] Several epidemiologic studies that have demonstrated that systolic and diastolic blood pressures have a strong and etiologically significant positive association with cardiovascular-disease outcomes. These relations are consistent in both men and women, in young, middle-aged, and older subjects among different racial and ethnic groups.^[2] The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC-7) defined normal blood pressure as systolic blood pressure (SBP) <120 mmHg and diastolic blood pressure (DBP) <80mmHg and prehypertension as SBP of 120–139 mmHg or DBP of 80–89mmHg.^[3]

The prevalence of hypertension and cardiovascular disease is rapidly increasing in India. A survey conducted in nine States of India by the National Nutrition Monitoring Bureau reported the pooled estimate of prehypertension in rural men to be about 45 per cent.^[4] Another study from different region of India have also indicated the prevalence of prehypertension in the range of 40-60 per cent.^[5] Cardiovascular diseases in developing countries are increasing because hypertension is poorly controlled.^[6-7] For each 20 mmHg increase in systolic blood pressure or

10 mmHg increase in diastolic blood pressure over 115/75 mmHg, there is a two-fold increase in mortality associated with coronary artery disease and stroke". The risk of cardiovascular disease in the individuals with prehypertension was observed to increase with concomitant risk factors such as obesity, diabetes mellitus and dyslipidaemia. The Report suggested that estimation and reduction of these risk factors in the population are desirable to reduce the overall risk of cardiovascular disease.³ Life style modifications can effectively reduce the rate of cardiovascular events and are recommended. Prehypertensives, when compared to normotensives usually have higher BMI.^[8]

Estimation of prehypertension in young students and sensitizing medical students at an early stage can help in preventing hypertension. This study aims to sensitize medical students about the role of life style modifications in cardiovascular diseases. So that they can benefit not only to themselves but community at a later stage.

Materials and Methods

This cross sectional study was carried out in the SGRRIM & HS in the year 2012. The study was submitted to Institutional Ethics committee for approval. A total of 400 students were enrolled in the study. Assuming the prevalence of prehypertension to be 50%, with 95%

confidence interval and 5% absolute error, the sample size was calculated to be 384. Information was collected related to their BMI, dietary habits, exercising habits, sleeping pattern, alcohol and smoking use and family history. Pulse and Blood pressure were measured at the same time of day. After a rest of twenty minutes three readings of blood pressure, at one minute interval were taken and mean of three readings were recorded.

Results

The students of this institute are all over from North India. So they represented a good study sample of upper middle class population of North India. A total of 400 students were enrolled. Table 1 shows age and sex distribution and various other characteristics of study subjects. Figure 1 shows distribution of BMI among the students. The overall prevalence of Prehypertension was 58.75 %.

Table-1: Demographic data of the participants in the study

| Characteristics | | Value |
|-------------------------|--------------------------------|---------------|
| Age (Years) (Mean ± SD) | | 20.66 ± 1.37 |
| Gender | Male | 45.5% |
| | Female | 54.5% |
| N | | 82.3% |
| BMI | < 18.5 | 4.2% |
| | > 25 | 9.8% |
| | > 30 | 3.7% |
| Predominantly Veg | | 61.25% |
| Predominantly Non-Veg | | 38.75% |
| Diet | Fried food (Most days of week) | 68% |
| | Fruits (Most days of week) | 65% |
| | Added salt/pickles | 50% |
| | Regular | 10% |
| Exercise (30 Min/day) | 3 days per week | 50% |
| | Not doing | 40% |
| | SBP (Mean ± SD) | 118.43 ± 5.65 |
| DBP (Mean ± SD) | 78.58 ± 1.41 | |

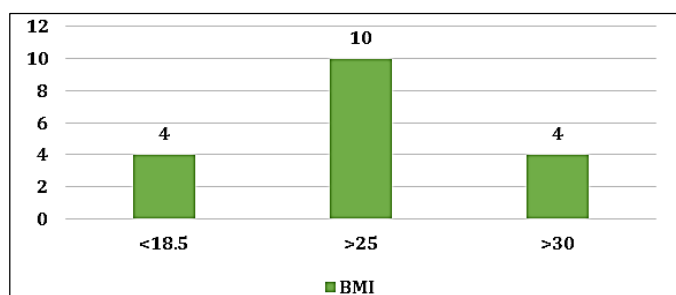


Figure-1: Distribution according to BMI

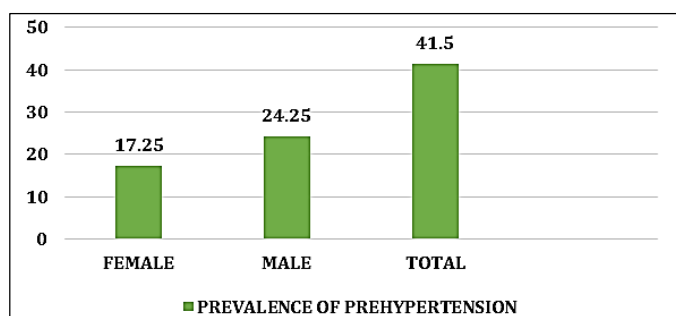


Figure-2: Prevalence of prehypertension (systolic)

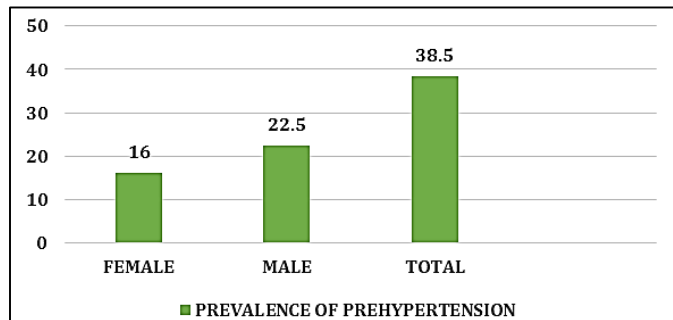


Figure-3: Prevalence of prehypertension (diastolic)

Prevalence of prehypertension systolic (Figure 2) and diastolic (Figure 3) was 41.5% and 38.5% respectively and they were more prevalent among boys as compared to girl students. Hypertension was seen in 5% of students.

Discussion

The study shows that prevalence of prehypertension is high in a young student population where mean age was 20.66 ± 1.37 years. Prehypertension is associated with three fold greater likelihood of developing hypertension and roughly twice the number of cardiovascular events than normotensives (BP < 120/80). Some other studies carried out in the past have revealed a high and increasing prevalence of CVD and its risk factors in individuals of South Asian origin.^[9-12]

Prehypertensives are more likely to be overweight and obese when compared to normotensives. Lifestyle modifications are recommended in prehypertension as it effectively reduces the rate of cardiovascular events. The weight loss is associated with significant reductions in both systolic and diastolic blood pressure.^[13] Overweight and obesity in children and adolescents should no longer be regarded as variations of normality, but as diseases with an extremely high risk for the development of atherosclerosis and cardiovascular complications in adulthood.^[14]

The daily physical activity and dietary habits are most important things to control and prevent high blood pressure. It needs only 30 minutes of daily physical activity on most days of week. It can be in the form of brisk walking, bicycling, gardening, washing car or stair walking etc. A healthy eating plan can lower blood pressure or prevent the risk of developing hypertension as seen by adopting DASH (Dietary approaches to stop hypertension) eating plan. It includes eating diet low in saturated fats and cholesterol, high in fruits, vegetables and low fat dairy products. Added salt should not be >2.4 g of Na equals to 6 g of salt.^[15]

Conclusion

The study concludes that there is a need for practicing life style modifications at an early stage. Modern life style is responsible for increasing prevalence of risk factors that increase the risk of cardiovascular events.

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Cite this article as: Kumar H, Uniyal N, Bawa S, Kumar S. Prevalence of Prehypertension in students of a tertiary care institute of North India. *Int J Med Sci Public Health* 2014;3:212-214.

Source of Support: Nil

Conflict of interest: None declared