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Original Research Article

Assessing the Prevalence of Hypertension and Study the Risk Factors and Strength of Association between Factors and Hypertension in Young Patients in the Age Group of 20–40 Years: An Observational Study

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Abstract

Aim: The aim of the present study was to study the prevalence of hypertension and study the risk factors and strength of association between factors and hypertension among 20–40 years old.

Material & Methods: A cross‑sectional study was conducted among 20–40 years old residing in the urban field practice area to find the prevalence of hypertension and its association with socio‑demographic factors. After obtaining informed consent, data were collected with the help of an interview method by systematic random sampling using predesigned and pretested semi‑structured questionnaires. Three readings of blood pressure were recorded using a sphygmomanometer, and the average reading was considered. Data analysis was done using Microsoft Excel, Open Epi software, and SPSS software.

Results: Our study revealed that 100 study subjects out of 500 were hypertensives and 400 (80%) were normotensives. So, the prevalence of hypertension in the area studied was 20%. Out of 500 study subjects, the majority of the study subjects (250, 50%) were pre‑hypertensive, followed by stage 1 hypertension (80, 16%) and (20, 4%) subjects belonged to stage 2 hypertension. In our study, 20 of the smokers and 80 of the non‑smokers were hypertensives and this association was not statistically significant (P = 0.24). Also, 60 of the tobacco chewers were hypertensives, whereas 40 of those who did not consume tobacco were hypertensives and the association was highly significant (P < 0.001). The prevalence of hypertension was more in obese class 2, followed by obese class 1. The association was highly significant (P < 0.001).

Conclusion: The present study reveals a high prevalence of hypertension (20%) in the 20–40 years old age group, which can lead to increased cardiovascular disease burden in the population.

Keywords: Hypertension, Prevalence, Urban Area, Young Adult.

Introduction

Hypertension is a major public health problem due to its high prevalence all around the globe. [1-4] Around 7.5 million deaths or 12.8% of the total of all annual deaths worldwide occur due to high blood pressure. [5] It is predicted to be increased to 1.56 billion adults with hypertension in 2025. [6] Raised blood pressure is a major risk factor for chronic heart disease, stroke, and coronary heart disease. Elevated BP is positively correlated to the risk of stroke and coronary heart disease. Other than coronary heart disease and stroke, its complications include heart failure, peripheral vascular disease, renal impairment, retinal hemorrhage, and visual impairment. [5] Hypertension (orHTN) or high blood pressure is defined as abnormally high arterial blood pressure. According to the Joint National Committee 7 (JNC7), normal blood pressure is a systolic BP < 120mmHg and diastolic BP < 80mmHg. Hypertension is defined as systolic BP level of ≥140mmHg and/or diastolic BP level ≥ 90mmHg.

The grey area falling between 120–139mmHg systolic BP and 80–89mmHg diastolic BP is defined as "prehypertension". [7,8] Although prehypertension is not a medical condition in itself, prehypertensive subjects are at more risk of developing HTN.[1] It is a silent killer as very rarely any symptom can be seen in its early stages until a severe medical crisis takes place like heart attack,

stroke, or chronic kidney disease. [8-10] Since people are unaware of excessive blood pressure, it is only through measurements that detection can be done. Although majority of patients with hypertension remain asymptomatic, some people with HTN report headaches, lightheadedness, vertigo, altered vision, or fainting episode. [11] There are several factors predisposing to hypertension.

Blood pressure measurement at younger ages is a reliable way to predict the progression to hypertension in adulthood. Prevention, detection, and treatment of hypertension in the age group of 20–40 years are necessary to halt the natural history of the disease and delay complications such as congestive cardiac failure, stroke, and myocardial infarction (MI). Hence, this community‐based study was taken up in an urban area in a young population of 20–40 years to know the prevalence and risk factors of hypertension.

Material & Methods

The present cross‐sectional study was undertaken in the urban field practice area of a medical college with a study population comprising the age group of 20–40 years at Department of Community Medicine, Nalanda Medical College and Hospital, Patna, Bihar, India from July 2021 to June 2022. So, the desired sample size was obtained by the formula. A total of 500 study subjects were included in the study.

The age group of 20–40 years in the study population and who were residents of the study area for more than 6 months were included, and pregnant women, with congenital cardiac disorders, and seriously ill patients were excluded from the study. A systematic random sampling method was used to select the subjects. Informed written consent was taken from participants before the interview, and the study protocol was approved by the Institutional Ethics Committee.

A predesigned, pre‐tested, semi‐structured questionnaire was devised to collect information pertaining to the following criteria. Questionnaire regarding socio‐demographic variables, socio‐economic status, and personal history. Anthropometric measurements such as weight, height, waist and hip circumference were recorded. Body mass index (BMI) was classified according to the South East Asian region (WHO). [12] Cohen perceived scale was used to assess stress. [13] Blood pressure was measured using the standard mercury sphygmomanometer and stethoscope in the sitting position. Three readings were taken in an interval of 3 to 5 min and the mean was calculated. Subjects were categorized according to the JNC 8 classification. [14]

Results

Table 1: Distribution of study subjects according to JNC 8 criteria

Blood pressure status	n (%)
Normal	150 (30.4)
Pre‐HTN	250 (50)
Stage 1 HTN	80 (16)
Stage 2 HTN	20 (4)
Total	500 (100)

Our study revealed that 100 study subjects out of 500 were hypertensives and 400 (80%) were normotensives. So, the prevalence of hypertension in the area studied was 20%. Out of 500 study subjects, the majority of the study subjects (250, 50%) were pre‐hypertensive, followed by stage 1 hypertension (80, 16%) and (20, 4%) subjects belonged to stage 2 hypertension.

Table 2: Association of socio‐demographic characters with hypertension

Variables	Normotensive N=400	Hypertensive N=100	p-value
20-24 years	120	7	<0.001
25-29 years	75	20	
30-34 years	85	20	
35-40 years	120	53	
Socio-economic status			
Class I	20	10	0.36
Class II	120	25	
Class III	110	15	
Class IV	90	33	
Class V	60	17	
Nature of work			
Sedentary	90	50	0.102

Moderate	270	30	
Heavy	40	20	
Smoking			
Non-smoker	350	80	0.24
Smoker	50	20	
Tobacco chewing			
Absent	330	40	<0.001
Present	70	60	
Stress			
No stress	320	45	<0.001
Stress	80	55	
BMI			
Under weight	50	5	<0.001
Normal	140	15	
Over weight	75	15	
Pre-obese	95	25	
Obese class 1	40	35	
Obese class 2	0	5	
Family history of HTN			
Absent	340	55	<0.001
Present	60	45	

In our study, 20 of the smokers and 80 of the non-smokers were hypertensives and this association was not statistically significant (P = 0.24). Also, 60 of the tobacco chewers were hypertensives, whereas 40 of those who did not consume tobacco were hypertensives and the association was highly significant (P < 0.001). The prevalence of hypertension was more in obese class 2, followed by obese class 1. The association was highly significant (P < 0.001).

Discussion

Hypertension is the commonest cardiovascular disorder and one of the major risk factors for cardiovascular mortality which accounts for 20–50% of all deaths. Hypertension, being one of the non-communicable diseases, is adding up to the burden in developing countries that are already facing the challenges of infectious diseases. [15] Hypertension increases the risk of developing coronary artery disease by two times, four times the risk of developing congestive heart failure, and seven times the risk of cerebrovascular disease. It stands in fourth place in causing premature death in developing countries and seventh place in developed countries. Hence, hypertension is considered a major public health problem in the 21st century. [16] In India, the prevalence of hypertension in males ranges from 3%–34.5% and from 5.8%–33.5% in females. Recent studies show a prevalence of 25% in urban areas and 10% in rural areas. The prevalence increases with age. There could be due to many factors such as lifestyle changes, increased salt intake, increased life expectancy, and increased awareness about the disease and stress. [17]

Our study revealed that 100 study subjects out of 500 were hypertensives and 400 (80%) were normotensives. So, the prevalence of hypertension in the area studied was 20% which was similar to a study done in an urban slum of Mumbai in 2014–2015, which had a prevalence of 16.2%. [18] Out of 500 study subjects, the majority of the study subjects (250, 50%) were pre-hypertensive, followed by stage 1 hypertension (80, 16%) and (20, 4%) subjects belonged to stage 2 hypertension. In our study, 20 of the smokers and 80 of the non-smokers were hypertensives and this association was not statistically significant (P = 0.24). A study done in Andhra Pradesh found that the prevalence of hypertension among smokers was 53.06% and in non-smokers was 18.11%, which was statistically significant (P < 0.001). [17] Also, 60 of the tobacco chewers were hypertensives, whereas 40 of those who did not consume tobacco were hypertensives and the association was highly significant (P < 0.001). Another study done in Raichur also found that 66.66% of hypertensives had stress, whereas 33.34% of hypertensives did not have any stress. There was a significant association between HTN and stress (P < 0.0001). [19] This could be attributed to chronic stress, which is known to activate sympathetic activity leading to hypertension. [20] Yoga and meditation can be introduced in the community to relieve stress. As per WHO report, alcohol consumption was the third largest risk factor in the developed countries and tobacco use was being the second major cause of death worldwide. [21]

The prevalence of hypertension was more in obese class 2, followed by obese class 1. The association was highly significant (P < 0.001). Similarly, in a

study done in Chidambaram, the prevalence of hypertension was more among obese persons (48.3%) and it was found to be significantly associated with hypertension. [22] This could be attributed to obesity‐related hypertension, which is a multifactorial and polygenic trait.

Conclusion

The present study reveals a high prevalence of hypertension (20%) in the 20–40 years old age group, which can lead to increased cardiovascular disease burden in the population. Hence, epidemiological studies to assess the prevalence of hypertension in 20–40‐year‐olds are needed in developing countries such as India to determine the baseline against which the future trends in risk factors can be assessed and preventive strategies can be planned to promote health among all sections of the population.

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