International Journal of Community Medicine and Public Health
Patil SD et al. Int J Community Med Public Health. 2024 Sep;11(9):3472-3476
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20242544

Original Research Article

A study of prevalence and associated risk factors of hypertension in urban health training center: a cross-sectional study

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Received: 18 June 2024
Accepted: 21 July 2024

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ABSTRACT

Background: WHO estimates that, 57 million disabilities adjusted lifetimes are attributed to hypertension. The global health overlook data reported that the age standardized frequency of hypertension is 24.1% and 20.1% for males and females respectively. Objectives were to find out the prevalence of hypertension in the urban field practice area and to study the risk factors associated with hypertension.
Methods: A community based cross-sectional study was carried out in urban field practice area of medical college. Sample size of 350 participants of age more than 19 years residing in study area. Data collected by using simple random sampling by house-to-house visit. A pre-structured and pretested questionnaire used to interview the patients after obtaining their consent. The data was analyzed using SPSS.
Results: 51.9% were having normal BP, 18.5% were having prehypertension, 19.7% were having stage-I HTN and 9.9% of the subjects were having stage-II HTN. Overall prevalence of hypertension in the study population was 29.6%. The prevalence of HTN was 32.42% in subjects who had family history of hypertension when compared to 33% in subjects who do not have a positive family history. In the present study, prevalence of HTN was 62% in past smokers compared to 33% in current smokers and 10% in nonsmokers.
Conclusions: There is a significant burden of hypertension in urban areas. Age, education, and overcrowding were independent risk factors of hypertension in the present study. This study projects the need of an early detection of hypertension at the community level, which can be achieved by repeated periodic screening of the individuals.

Keywords: Body mass index, Cross sectional study, Hypertension, Risk factors, Young adults

INTRODUCTION

The WHO estimates, 57 million disability adjusted life years are attributed to hypertension. It is a major risk factor for coronary heart disease, ischemic heart disease and stroke across the world.[1] In the era of rapid advancement in technology and lifestyle, non-communicable diseases (NCD's) have been established a clear threat not only to human health, but also to development and economic growth. Hypertension is a major public health challenge in the phase of socio demographic and epidemiological transition leading to various complications causing high morbidity and mortality. Prevalence of hypertension has been found to be increasing in epidemic proportions in Indian population.[2] The global health observatory data reported that the age standardized prevalence of hypertension is 24.1% and 20.1% for males and females respectively.[3] This epidemic of hypertension is affecting the population of low- and middle-income countries. Once known to be a common chronic disease in older age groups, with the advent of globalization affecting the lifestyle of the population, non-communicable diseases like hypertension, diabetes etc. are affecting the young adults (18 to 40 years).[4,5] Since, 18 to 40 years is the most productive group, there is a recent shift of focus on inculcation of healthy lifestyle among these age groups.[6] Almost 13.5% of the global total, approximately 7.6 million premature deaths were endorsed to high blood pressure. About 54% of stroke and 47% of ischemic heart disease worldwide

were attributable to high blood pressure.[7] Hypertension has been associated with enlarged threat of coronary artery disease, and cardiovascular and cerebrovascular diseases are also cause by hypertension.[8,9] Studies in India have shown an increasing trend in the prevalence of HTN among urban adults. In India, between three and six decades, the prevalence of hypertension has increased by about 30 times among urban developers and by about 10 times among the rural inhabitants. The present study was undertaken to find the prevalence of hypertension and to identify the associated risk factors in the urban field practice area.

METHODS

A community based cross sectional study was carried out among adults who were aged 19 years and above of the urban field practice area Chandabowdi, under Department of Community Medicine, Shri B. M. Patil Medical College, Vijayapura. The study period was from June to November 2017. The study subjects who were permanent residents of the area, with no documented hypertension and who gave informed consent were included in the study. Pregnant women and subjects with pre-existing thyroid disease, renal and other cardiac diseases were excluded from the study. Ethical committee permission was taken before the start of the study. Optimal sampling size was calculated based on prior prevalence rate of hypertension of 24.9%.[10] Using this prevalence, with 95% confidence interval and 5% allowable error the minimum sample size calculated was 300. Considering the non-response rate, we recruited a total of 350 study subjects in our study.

After obtaining informed oral consent from the study subject, a pretested and semi structured questionnaire was used to record data. The questionnaire included socio-demographic characteristics such as age, gender, occupation, socio economic status, marital status, literacy status, height, weight, and physical activity, lifestyle habits like smoking and alcohol and family history of hypertension. Height and weight were recorded using standardized methods.[11] 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.[12] The waist hip ratio was classified separately for males and females using the WHO guidelines.[13] Physical activity was measured using the WHO/FAO/1985 guidelines on human energy requirements.[14] Blood pressure was measured using sphygmomanometer in sitting position. Blood pressure was classified into prehypertension, hypertension and normotension based on the JNC-8 classification.[15] The patients who were diagnosed hypertensive for the first time were advised to dietary modifications, pharmacological treatment, and regular follow up. The data was processed and statistical analysis was done using SPSS version 16.0. The quantitative variables were expressed in terms of mean and standard deviation and the qualitative variables were expressed in proportions. Chi-square test has been used to find the difference between two proportions.

RESULTS

A total of 350 subjects were interviewed for the survey. 28.5% of the subjects were in the age group 19-28 years and only 23.71% of the subjects were in the age group >60 years. The median age of the study subjects was 42 (SD±14) years. Out of these, 152 (43%) were male subjects and 198 (56%) were female. Majority of the study subjects were married 72.28% and 14% of the study participants were unmarried. About 39.43% were illiterates whereas among literates 26.57% studied up to primary school and 6.6% were graduates and postgraduates. In our study, 24.28% were professional, doing business and working as clerks. 21.16 were unskilled workers and only 13.71% were skilled workers and remaining 22% were home maker, 18.85 were unemployed.

Table 1: Socio-demographic characteristics of the participants (n=350).

Socio-demographic characteristics	Frequency	Percentage
Age (years)		
19-28	100	28.57
29-38	68	19.43
39-48	56	16
49-58	43	12.29
Above 59	83	23.71
Sex		
Male	152	43.42
Female	198	56.57
Marital status		
Married	253	72.28
Unmarried	48	13.72
Divorced/separate/widowed	49	14.0
Education		
Illiterate	138	39.43
Primary	93	26.57
Secondary	61	17.43
Higher secondary	35	10.0
Graduate	15	4.28
Postgraduate	8	2.29
Occupation		
Professional	16	4.57
Clerk	28	8.0
Business	41	11.71
Skilled workers	48	13.71
Unskilled workers	74	21.16
Unemployed	66	18.85
Homemaker	77	22.0

In our study, 51.9% were having normal BP. 18.5% were having prehypertension (SBP 120-139 and/or DBP 80-89 mmHg).19.7% were having stage-I HTN (SBP 140-159

mmHg and/or DBP 90-99 mm Hg). 9.9% of the subjects were having stage-II HTN (SBP>160 mmHg and/or DBP >100 mm Hg) overall prevalence of hypertension in the study population was 29.6%.

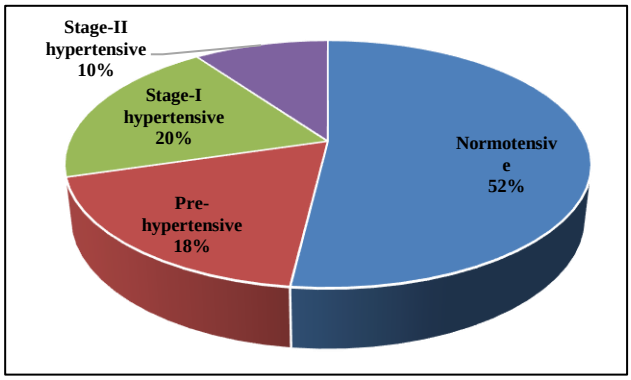

Figure 1: Distribution of study subjects according to blood pressure status (n=350).

Table 2: Association between hypertension and age (n=350).

Age (in years)	Hypertensive (%)	Normotensive (%)	Total (%)
19-28	04 (4)	96 (96)	100 (28.57)
29-38	09 (13.23)	59 (86.77)	68 (19.43)
39-48	18 (32.14)	38 (67.85)	56 (16)
49-58	22 (51.16)	21 (48.84)	43 (12.29)
Above 59	51 (61.45)	32 (38.55)	83 (23.71)
Total	104	246	350

Chi-square =128.72, p value <0.0001.

In the present study the prevalence of hypertension was increasing with age. The prevalence of hypertension was 4% in the age group of 18-28 years compared to 62% in those above 59 years and the difference observed was highly significant with p<0.0001.

Table 3: Association between hypertension and family history (n=350).

Family history of hypertension	Hypertensive (%)	Normotensive (%)	Total (%)
Yes	71 (32.42)	73 (74.81)	144
No	33 (25.19)	173 (67.58)	206
Total	104	246	350

Chi-square =43.38. P value <0.0001.

In the present study, the prevalence of HTN was 32.42% in subjects who had family history of hypertension when compared to 33% in subjects who do not have a positive family history and the difference observed was significant with p<0.0001.

In the present study, prevalence of HTN was 62% in past smokers when compared to 33% in current smokers and 10% in nonsmokers. The observed difference was significant with p<0.0001.

Table 4: Association between hypertension and smoking (n=350).

Smoking habits	Hypertensive (%)	Normotensive (%)	Total
Current smoker	34 (33)	69 (70)	103
Non-smoker	16 (10)	144 (90)	160
Past smoker	54 (62)	33 (38)	87
Total	104	246	350

Chi-square =73.91, p value <0.0001.

DISCUSSION

A total of 350 subjects were interviewed for the survey, among them 28.57% of the subjects were in the age group 19-28 years. The median age of the study subjects was 42±14 years. In the present study, the overall prevalence of hypertension in study subject was found to be 29.6%. The prevalence of hypertension increased gradually with increasing age. The difference was found to be highly significant (p<0.001). However, in a study conducted by Bhagyalaxmi et al the mean age of patients in the urban area was 37.8±1.36 years.[16] The presence of hypertension and diabetes increased with increasing age and individuals >47 years of age had a 6.91 (4.77-10.01) and 1.46 (1.01-2.12) higher risk of developing hypertension and diabetes, respectively. The results of our study can be compared with a study conducted by Gupta et al in Jaipur, in urban adults in 2002 showed prevalence of hypertension as 36% in men and 37% in women.[17] Our prevalence was less when compared to a study conducted by Avadaiammal et al in Trivandrum city, Kerala, south India in 2006 which showed the prevalence as 47%.[18]

Out of 350 adults screened for hypertension using JNC VII guidelines (SBP≥140 mmHg and/or DBP≥90 mmHg) in our study, 104 were found to have hypertension giving a prevalence of 29.6%. This shows the submerged portion of the iceberg. In our study 18.5% were having prehypertension. This was low when compared to a study carried out by Desai et al in urban area of south Gujarat region which showed the overall prevalence of pre hypertensives as 34.5%.[19] The prevalence was higher in comparison with the prevalence reported in study conducted by Bhardwaj et al in Nagpur as well as studies done by Mohan in Chennai.[20,21]

The present study shows that hypertension was found significantly more among individuals with family history of hypertension (32.42%). This can be attributed to common genetic background, shared environment, and lifestyle habits. Similar findings of significant association were observed by Singh et al.[22] In his study, family history of hypertension was significantly greater among subjects with prehypertension and hypertension when compared with those with normal blood pressure

($p<0.01$). shows that prevalence of hypertension is more in past smokers (62%) and current smoker (33%). The observed difference was significant with $p<0.00001$. Similar significant association was observed in study done by Tiwari et al, Das et al and Gupta et al.[23-25]

CONCLUSION

There is a significant burden of hypertension is found in urban areas. Age, education, and overcrowding were independent threat factors of hypertension in the present study. This study projects the need of an early screening of hypertension at the community level, which can be achieved by recurrent periodic screening of the individuals. Prevention measures should be undertaken targeting the modifiable risk factors associated with hypertension. The person being overweight, and age are independent predictors for hypertension in youth full grownups. These observations re-emphasize the need to follow effective preventative interventions similar as healthy lifestyle with regular physical movement and healthy dietary practices to be adopted to prevent hypertension.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Patil SD, Ganganahalli P, Yenkanchi S. A study of prevalence and associated risk factors of hypertension in urban health training center: a cross-sectional study. Int J Community Med Public Health 2024;11:3472-6.