International Journal of Community Medicine and Public Health
Bolisetti V et al. Int J Community Med Public Health. 2020 Jul;7(7):2551-2555
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20202975

Original Research Article

A cross-sectional study on prevalence of hypertension and pre-hypertension among young adults at urban field practice area, Gandhi Medical College, Secunderabad

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Received: 28 April 2020
Revised: 13 June 2020
Accepted: 15 June 2020

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ABSTRACT

Background: Hypertension is also known as high or raised blood pressure. It is a condition in which the blood vessels have persistently raised pressure. Hypertension is directly responsible for 57% of all stroke deaths and 24% of all coronary heart disease deaths in India. Young adults have been deemed to be at lower risk in their development of hypertension due to resultant gaps in the literature. Hence the present study was aimed to determine the prevalence of hypertension and pre-hypertension among young adults (18-35 years) residing in Urban Field Practice Area of Gandhi Medical College. Objectives of the study was to determine the prevalence of hypertension and pre-hypertension in young adults and to identify the risk factors and sociodemographic factors associated with hypertension and pre-hypertension.
Methods: A sample of 233 young adults (18-35 years) was included in the community based cross sectional study by simple random sampling followed by systematic random sampling in Bholakpur. All the participants were assessed for blood pressure and BMI status. Data was analysed in MS Excel version 7.2 Software.
Results: The prevalence of hypertension was 9.85% (n=23) and pre–hypertension was 23.65% (n=55). About 13.3% of the study population were smokers and 26.6% of them were alcoholics. Twenty seven percent of the study participants were obese and overweight.
Conclusions: Higher proportion of hypertensives and pre-hypertensives were found in the category of males, smoking, alcohol intake and obesity than their counter ones.

Keywords: Hypertension, Pre-hypertension, Young adults, Young hypertension, 18-35 years

INTRODUCTION

Hypertension is also known as high or raised blood pressure. It is a condition in which the blood vessels have persistently raised pressure. Normal adult blood pressure is defined as a systolic blood pressure of 120 mmHg and diastolic blood pressure of 80 mmHg.

According to seventh report of Joint National Committee (JNC-7) pre-hypertension is defined as systolic blood pressure between 120 and 139 mmHg and/or diastolic between 80 and 89 mmHg and hypertension is defined as a systolic blood pressure greater than 140 mmHg and/or a diastolic blood pressure greater than 90 mmHg.[1] Young adults is defined as persons belonging to 18-35 years.[2] The global prevalence of hypertension in adults aged 18 years and over was around 24.1% in, men and 20.1% in women in 2015.[3] Prevalence of hypertension in India among 15-49 years in men is 13.6% and in women is 8.8% according to

NFHS 4.[4] High blood pressure in young adulthood is associated with increased risks of cardiovascular disease and mortality decades later, independent of later life blood pressure levels.[5,6] Hypertension is one of the important risk factors of cardiovascular disease. Hypertension is directly responsible for 57% of all stroke deaths and 24% of all coronary heart disease deaths in India.[7]

Rationale

Young adults have been deemed to be at lower risk in their development of hypertension due to resultant gaps in the literature on hypertension which typically target older adults and the elderly. The prevalence of hypertension among younger individuals however, is on a steady rise and this is the population that could derive the most benefit from control measures. Hence present study was aimed to determine prevalence of hypertension and pre-hypertension among young adults (18-35 years) and associated risk factors among the people living in urban field practice area of Gandhi Medical College (GMC). Objective of the study was to determine the prevalence of hypertension and pre-hypertension in young adults and to identify the risk factors and sociodemographic factors associated with hypertension and pre-hypertension.

METHODS

This was a community based cross sectional study done among young adults (18-35 years) who were the residents of Bholakpur, Urban Field Practice Area of Gandhi Medical College, Secunderabad for a period of 2 months (April and May 2019). Individuals aged 18-35 years who were willing to participate were included in the study. A sample of 233 participants (calculated using $4PQ/L^2$ where p=17.72% and L=5% absolute error) were considered for the study.[8]

Simple random sampling followed by systematic random sampling was done. Urban field practice area of Gandhi Medical College covers 3 areas, Bholakpur, Boiguda and DBR mills. Among them Bholakpur was selected by simple random sampling through lottery method. There were 11000 households in Bholakpur according to the available records at Urban Health Centre, Bholakpur calculated k^{th} number was 48 (k^{th} number=11000/233=48). First house was selected randomly and then every 48th house was visited for data collection with the help of ASHA's working at Bholakpur. If the house was locked or no person in the age group of 18-35 years or not willing to participate, next house was visited. If there were 2 or more persons of 18-35 years in the same house, only 1 person was selected by lottery method. Written informed consent was obtained prior to the study. After taking all the necessary permissions and ethical clearance, data collection was started. Participants were interviewed in full privacy by using the pre-tested questionnaire.

The information was collected regarding the socio demographic characteristics, anthropometric measurements (BMI = weight in kg/height in m^2), lifestyle patterns and physical examination (Blood pressure measured with sphygmomanometer- average of 2 readings taken with a gap of 1 minute).[9-11] If the blood pressure was high, then a second visit was done to that house to confirm hypertension or pre hypertension. Socio demographic characteristics like age, gender, socio-economic status (by modified Kuppuswamy classification, education, occupation, physical activity were taken. personal habits like history of smoking (smoker-currently smoking for more than 1 year) and alcohol consumption (alcoholic-currently taking alcohol, 3-5 days a week for more than 1 year duration) were considered.[12-15]

Data entry was done using M.S. Excel and it was statistically analysed using Epi-info 7.1 software M.S. Windows. Data analysis was carried out to explore the distribution of several parameters. Categorical variables were summarised with N (%) while quantitative variables were summarised by mean. The differences between the groups were tested for Statistical Significance by using Chi square test. P value less than 0.05 considered to be statistically significant.

RESULTS

A total of 233 study participants who belong to the age group of 18-35 years were included in the final study. The prevalence of hypertension was 9.85% (n=23) and pre - hypertension was 23.65% (n=55) (Figure 1).

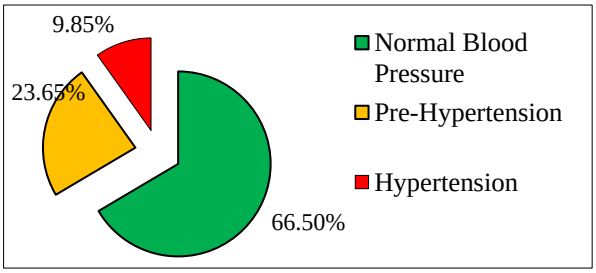

Figure 1: Distribution of study participants according to their status of blood pressure.

Table 1: Socio-demographic characteristics of study population (n=233).

Socio-demographic factor	Category	Number (%)
Age (years)	18-25	117 (50.21)
	26-35	116 (49.79)
Gender	Male	115 (49.35)
	Female	118 (50.65)
Education	Illiterate	91 (39.06)
	Literate	142 (60.94)
Occupation	Employed	160 (68.6)
	Unemployed	73 (31.4)
SES	Higher (class 1, 2)	94 (40.34)
	Lower (class 3, 4, 5)	139 (59.66)

Table 2: The relationship between socio-demographic factors and hypertension and pre-hypertension.

Study variable	Category	HTN	Pre-HTN	Normal	P value Chi-square value
Age (years)	18-25 (n=117)	6 (5.12)	20 (17.09)	91 (77.77)	P<0.001*
	26-35 (n=116)	17 (14.65)	35 (30.17)	64 (55.17)	χ^2=14.05
Gender	Male (n=115)	16 (13.91)	35 (30.43)	64 (55.65)	P<0.05*
	Female (n=118)	7 (5.93)	20 (16.94)	91 (77.11)	χ^2=12.28
Education	Illiterate (n=91)	14 (12.72)	32 (29.09)	45 (40.9)	P<0.001*
	Literate (n=142)	9 (7.31)	23 (18.69)	110 (89.43)	χ^2=19.59
Occupation	Employed (n=160)	20 (12.5)	42 (26.25)	98 (61.25)	P<0.05*
	Unemployed (n=73)	3 (4.1)	13(17.8)	57 (78.08)	χ^2=7.22
Socio-economic Status	Higher (n=94)	14 (14.89)	30 (31.91)	50 (53.19)	P<0.05*
	Lower (n=139)	9 (6.47)	25 (17.98)	105 (75.53)	χ^2=19.59
Total (n=233)		23	55	155	

* Significant

Table 3: Proportion of study population showing risk factors (n=233).

Risk Factor	Number (%)
Smokers	31 (13.3)
Alcoholics	62 (26.6)
Excess salt intake	104 (44.6)
Overweight and obesity	63 (27)
Inadequate physical activity	174 (74.6)

The mean age of the present study was 26 years. In the present study, there were 115 males and 118 females in Table 1.

There were more no. of hypertensives and pre-hypertensives in males which was found to be statistically significant and 40% of the participants belong to higher socio economic status (class 1 and 2) which was associated with significantly higher proportion of hypertension and pre-hypertension (Table 2). The study participants were enquired about the risk factors of hypertension like habit of smoking, alcohol intake, excess salt intake and physical activity and also assessed for BMI status which was shown in the Table 3. Smoking, alcohol intake and overweight and obesity showed statistical significance with hypertension and pre-hypertension (Table 4).

Table 4: The relationship between risk factors and hypertension and pre-hypertension.

Study variable	Category	HTN	Pre-HTN	Normal	P value Chi-square Value
Smoker	Yes (n=31)	8 (25.8)	12 (38.7)	11 (35.48)	P<0.001*
	No (n=202)	15 (7.42)	43 (21.28)	144 (71.28)	χ^2=17.83
Alcohol intake	Yes (n=62)	13 (20.96)	20 (32.25)	29 (46.77)	P<0.001*
	No (n=171)	10 (5.84)	35 (20.46)	126 (73.68)	χ^2=18.17
Overweight and obese	Yes (n=63)	8 (12.64)	21 (33.33)	34 (53.96)	P<0.05*
	No (n=170)	15 (8.82)	34 (20)	121 (71.17)	χ^2=6.2
Excess salt intake	Present (n=104)	14 (13.46)	25 (24.03)	65 (62.5)	P>0.05
	Absent (n=129)	9 (6.97)	30 (23.25)	90 (69.76)	χ^2=2.92
Physical activity	Adequate (n=59)	7 (11.86)	10 (16.94)	42 (71.18)	P>0.05
	Not Adequate (n=174)	16 (9.19)	45 (25.86)	113 (64.94)	χ^2=2.05
Total (n=233)		23	55	155	

* Significant

DISCUSSION

In our study we found that the prevalence of hypertension was 9.85% and pre-hypertension was 23.65% in 18-35 years age group. The prevalence of hypertension was almost comparable to a study conducted by Reddy et al in costal district of Karnataka i.e., 7.1% followed by Menta et al in cardiology department of Gabriel Toura University teaching hospital i.e 6.1%.[8-16] So many risk factors develop in this age group and were continued for

the later life. This might be the possible reason for the development of pertension in young adults. This also explains the higher proportion of pre-hypertension than that of hypertension. In the present study, males showed significantly higher proportion of hypertension and pre-hypertension than females (p<0.05). This finding was in concordance with a study conducted by Zafer et al. in rural population of North India and Reddy et al. in costal district of Karnataka.[17,18] Biological gender difference of sex hormones and the male preference of risky habits like smoking, alcohol abuse might be the possible explanation for high prevalence of hypertension and pre-hypertension in males. The prevalence of hypertension in smokers was 25.8% and is significantly associated with smoking (p<0.001). This was almost nearly comparable to a study done by Singh et al.18 Nicotine levels in blood tightens the blood tightens the blood levels and restrict the blood flow and also helps in the plaque formation in the blood vessel walls which narrows the lumen and thus raises the blood pressure and leads to pre-hypertension and hypertension.

It was also found that the 26.6% of the study participants were alcoholics and significantly associated with higher proportion of hypertension and pre-hypertension (p<0.001). Alcohol intake was also significantly associated with Hypertension in a study done by Kini et al.[19] Binge drinking increases the risk of atherosclerosis and also increase the weight which further elevate the blood pressure.

In our study 44.6% of the study subjects consume excess salt and were associated with higher proportion of hypertension and pre-hypertension (p>0.05) which differed in frequency and significance with a study done by Kini et al in coastal villages where 10% of the participants add extra salt in meals and 90% eat salty foods regularly which was significantly associated with pre-hypertension.[19] Eating excess salt raises the amount of sodium in your bloodstream which results in high blood pressure which leads to pre-hypertension and Hypertension over a period of time. It was assumed that so much of salt is lost through sweating in tropical countries like India which might also influence the status of hypertension and pre-hypertension.

In the present study it was found that 27% of the study participants were obese and overweight and was significantly associated with higher proportion of hypertension and pre-hypertension (p<0.05). Significance was also found in another study conducted by Likhita et al.[20] Excess bodyweight can cause hypertension by multiple mechanisms. Obesity especially central obesity causes metabolic abnormalities in the body, thereby increasing the risk for hypertension.

CONCLUSION

Mean age of the study population is 26 years and majority belong to the age group of 26-35 years. The prevalence of hypertension and pre-hypertension is 9.85% and 23.65% respectively. Almost equal proportion of study participants were belonging to male and female category. Majority of the study population belong to lower socioeconomic status (class 3, 4 and 5). About 39% of the study population are illiterates and 31% of the study population are unemployed. Being males, illiterate, employed and higher socioeconomic class is significantly associated with hypertension and pre-hypertension (p<0.05). Smoking, alcohol intake and obesity and overweight are significantly associated with hypertension and pre-hypertension.

Recommendations

Adults were also given equal importance to that of elderly when considering for hypertension especially pre-hypertension. Health Education regarding life style modification was given more in young adults (18-35 years) which will further reduce the burden of hypertension in their later ages. Create more awareness regarding NCD clinics at PHC's in young adults. Alcoholics and smokers should be referred to psychiatrists and de-addiction centres for behaviour change.

ACKNOWLEDGEMENTS

Authors would like to thank Akhila Tejaswini, Lakshmi Prasanna, Kandukuri Vaishnavi, Kashetty Srija, Kasuri Akhila, Katakam Akshith Kumar for their timely contribution.

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: Bolisetti V, Padmavathi Y, Bindu HM, Thomas V, Kavya, Kasam A. A cross-sectional study on prevalence of hypertension and pre-hypertension among young adults at urban field practice area, Gandhi Medical College, Secunderabad. Int J Community Med Public Health 2020;7:2551-5.