International Journal of Community Medicine and Public Health
Chethana KV et al. Int J Community Med Public Health. 2017 Jan;4(1):45-50
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20164710

Original Research Article

Prevalence of hypertension and its risk factors among adults in urban field practice area NMC, Raichur, Karnataka, India

Chethana K. V.[1]*, Anusha T.[1], Abhay Mane[1], Vijaya Mahanth Prasad[2], Vijay Mahantesh Sunkad[2]

[1]Department of Community Medicine, [2]Department of Orthopedics, NMC, Raichur, Karnataka, India

Received: 18 October 2016
Revised: 02 December 2016
Accepted: 02 December 2016

***Correspondence:**
Dr. Chethana K.V.,
E-mail: chetuvb09@gmail.com

ABSTRACT

Background: Hypertension is the commonest cardiovascular disorder, posting a major public health problem of the world and especially to population in socio-economic and epidemiological transition. It is one of the major and independent risk factors for non-communicable diseases like cerebrovascular disease, coronary heart diseases, and cardiac and renal failure. The recent WHO report states that considering the prevalence of any diseases, hypertension ranks fourth in the world. As it is hidden beneath an outwardly asymptomatic appearance, the disease does immense harm to the body in the form of 'Target organ' damage hence the WHO is named it the "silent killer". The objectives were to estimate prevalence of hypertension among adults in urban population and to estimate the risk factors associated.

Methods: A cross sectional, community based study over a period of one year from January 2013 - December 2013, in Urban field Practice area of Navodaya Medical College. Diagnostic criteria (based on JNC VII guidelines) includes SBP ≥140mmHg and/or DBP ≥90mmHg and persons already on anti-hypertensive treatment. Study Population includes people aged 18-65 years residing in the urban field practice area of NMC. Systematic random sampling method is used. Statistical Analysis was done by Chi Square Test by using SPSS version 17.

Results: The hypertension prevalence was 33.6%. The prevalence increased with age. Males have shown higher prevalence of HTN (49.4%) compared to females (23%). Family history of hypertension was present in 36.9% of hypertensives. Majority were taking >6 grams salt per day. Prevalence of hypertension was more in past smokers (82.4%) followed by current smokers (51.5%) when compared to non-smokers (27.6%). 45.4% of hypertensives had stress.

Conclusions: Prevalence of hypertension among adults in urban field practice area is 33.6%.There is significant association of hypertension with age, smoking tobacco, high salt intake, stress.

Keywords: Hypertension, Risk factors, Stress, Smoking

INTRODUCTION

It is the commonest cardiovascular disorder, posting a major public health problem of the world and especially to population in socio-economic and epidemiological transition.[1] It is one of the major and independent risk factors for non-communicable diseases like cerebrovascular disease, coronary heart diseases, and cardiac and renal failure.[2] The recent WHO report states that considering the prevalence of any diseases,

hypertension ranks fourth in the world.[3] As it is hidden beneath an outwardly asymptomatic appearance, the disease does immense harm to the body in the form of 'Target organ' damage hence the WHO is named it the "silent killer".[4] Hypertension affects approximately 1 billion people worldwide. Raised blood pressure is estimated to cause about 7 million premature deaths throughout the world, and 4.5% of the disease burden (64 million disability-adjusted life years (DALYs). The estimated number of Indians with hypertension was 120 million in year 2000, which is likely to expend to 200 million by 2025, with equal numbers among men and women.[2]

The World Health Day theme 2010 focuses on Urbanization and Health – addressing health issues of the rapidly increasing urban population. Over half of the world's population lives in cities. By 2050, seven out of every 10 people will be city dwellers. India is a part of this global trend. Nearly 28 percent of India's population lives in cities and this is expected to increase to 41 percent by the year 2020. The rapid increase in urban population worldwide is among the important global health issues of the 21st century.

Definition

Systemic arterial hypertension is defined as a state of chronically elevated arterial blood pressure, as compared to what is normally expected, as per the defined level given in JNC-VII.[5]

Table 1: JNC (Joint National Committee)-VII.

Grade	Systolic level (mmhg)		Diastolic level (mmhg)
Normal	<120	And	<80
Pre-Hypertension	120-139	Or	80-89
Hypertension Grade-1	140-159	Or	90-99
Hypertension Grade-2	>/160	Or	>/100

Objectives

- To estimate the prevalence of hypertension among adults in urban population.
- To estimate the risk factors associated.

METHODS

Study area: The study was undertaken in the urban field practice area of the Department of Community Medicine, Navodaya Medical College, Ashapur, Raichur.

Study population: The study population comprised of people aged 18-65 years residing in the urban-field practice area of Navodaya Medical College & Hospital, Raichur.

Study design: It is community based cross sectional study.

Statistical analysis

Analyzed statistically using the SPSS statistical package (SPSS version 17.0 for windows 2009).Chi Square test was used and P value less than 0.05 will be considered significant.

Duration of study: January 2013 – December 2013.

Inclusion criteria

People aged 18-65 years who are the permanent residents in the urban field practice area of Navodaya medical College.

Exclusion criteria

- Individuals below 18 years and above 65 years
- Individuals who did not give consent

Sample size calculation

Using statistical formula

$$n = \frac{Z^2 pq}{d^2}$$

Prevalence of NCD in urban area, p= 5%; n = 1900 (150 among these were not responding, so the sample size came to be 1751).

Sampling method: Systematic random sampling. House was taken as the sampling unit.

RESULTS

In our study, 23.9% were having normal BP. 42.5% were having pre hypertension (SBP 120-139 and/or DBP 80-89 mmHg). 29.2% were having stage I HTN (SBP 140-159 mmHg and/or DBP 90-99 mm Hg). 4.4% of the subjects were having stage II HTN (SBP >160 mmHg and/or DBP >100 mm Hg) giving a prevalence of 33.6% (29.2% stage I HTN +4.4% Stage II HTN) (Table 3).

Males have shown higher prevalence of HTN (37.3%) compared to female (28.9 %). There is highly significant association between HTN and sex (p<0.0001) (Table 4).

As age increases, BP increases, highest prevalence is seen. In 60-65 years followed by 40-49 years whereas in age group 20-29 years prevalence of HTN was less (11.8%). There is highly significant association between HTN and age (p<0.0001) (Table 5).

Table 6 shows that 53.7% of hypertensives were already diagnosed to have HTN while 46.3% were newly diagnosed hypertensives.

Table 2: Socio demographic factors.

Category		Number	Percentage
Gender	Male	964	55.1
	Female	787	44.9
Marital status	Married	1380	78.8
	Never married	184	10.5
	Widow	187	10.7
Occoputaion	Unemployed	6	.3
	Labourer	160	9.1
	Semi-skilled worker	898	51.3
	Clerical/Shop owner/farmer	258	14.7
	Semi-Profession	249	14.2
	Profession	180	10.3
Literacy	Illiterate	460	26.3
	Literate	1291	73.7
Religion	Hindu	1157	66.1
	Muslim	361	20.6
	Christian	206	11.8
Socio economic status (Modified B G Prasad)	Class V	39	2.2
	Class IV	503	28.7
	Class III	696	39.7
	Class II	412	23.5
	Class I	101	5.8

Table 3: Distribution of study subjects according to blood pressure status.

Classification of BP	Frequency	Percent
Normal	419	23.9
Pre-hypertension	744	42.5
Stage - I hypertension	511	29.2
Stage - II hypertension	77	4.4
Total	1751	100

Table 4: Association between hypertension and sex.

Sex	Hypertensive (%)	Normotensive (%)	Total
Female	228 (28.9)	559 (71.02)	787
Male	360 (37.3)	604 (62.65)	964
Total	588	1163	1751

χ^2 =36.939, df=1, p<0.0001.

Table 7 depictS that, 36.9% of hypertensives had family history of HTN and 63.09% hypertensives did not have family history of HTN. There is significant association between HTN and family history of HTN (p=0.003).

Table 5: Association between hypertension and age.

Age (in years)	Hypertensive (%)	Normotensive (%)	Total
<20	0	39 (100)	39
20-29	42 (11.8)	312 (88.2)	354
30-39	110 (31.3)	241 (68.66)	351
40-49	142(41.27)	202(58.72)	344
50-59	140(36.08)	248(63.91)	388
60-65	154(56)	121(44)	275
Total	588	1163	1751

χ^2 =84.676, df=6, p<0.0001.

Table 6: Percentage of hypertensives who were already diagnosed and newly detected.

Already diagnosed	Frequency	Percent
Yes	316	53.7
No	272	46.3
Total	588	100

Table 7: Association between hypertension and family history.

Family history of hypertension	Hypertensive (%)	Normotensive (%)	Total
Yes	217 (36.9)	313 (26.91)	530
No	371(63.09)	850 (73.08)	1221
Total	588 (100%)	1163 (100%)	1751

χ^2 =8.98, df=1, p=0.003.

The Table 8 shows that 2.21% of hypertensives were taking <6 grams salt per day while 97.78% of hypertensives were taking >6 grams salt per day. There is significant association between HTN and salt intake (p=0.009).

Table 8: Association between hypertension and salt intake.

Salt intake in grams	Hypertensive (%)	Normotensive (%)	Total
<6	13 (2.21)	81 (6.96)	94
>6	575 (97.78)	1082 (93.03)	1657
Total	588 (100%)	1163 (100%)	1751

χ^2 =6.67; df=1, p=0.009.

Table 9 depict that 30.27% of the hypertensives were physically active and 69.72% were physically inactive. There is no significant association between HTN and physical activity (p=0.586).

Occurrence of HTN was more in past smokers (79.79%) followed by current smokers (46.9%) when compared to non-smokers (24.25%). There is highly significant

association between HTN and smoking (p=0.0001) (Table 10).

Table 11 depict that 56.11% of the hypertensives were consuming alcohol and 32.1% of hypertensives were not consuming alcohol. There is significant association between HTN and alcohol consumption (p=0.013).

Table 9: Association between hypertension and physical activity.

Physical activity	Hypertensive (%)	Normotensive (%)	Total
Physically active	178(30.27)	329 (28.28)	507
Physically inactive	410 (69.72)	834 (71.71)	1244
Total	588 (100%)	1163 (100%)	1751

χ^2 =0.296, df=1, p=0.586.

Table 10: Association between hypertension and smoking.

Smoking habits	Hypertensive (%)	Normotensive (%)	Total
Current smoker	116 (46.9)	131 (53.03)	247
Non-smoker	318 (24.25)	993 (75.7)	1311
Past smoker	154(79.79)	39 (20.2)	193
Total	588	1163	1751

χ^2 =103.29, df=2, p<0.0001.

Table 11: Association between hypertension and alcohol.

Alcohol consumption	Hypertensive (%)	Normotensive (%)	Total
Alcoholic	83 (14.11)	97 (8.34)	180
Non-alcoholic	505 (85.88)	1066 (91.65)	1571
Total	588 (100%)	1163 (100%)	1751

$\chi 2$ =6.112, df=1, p=0.013.

Table 12 depict that, 33.3% of hypertensives had stress while 66.6% of hypertensives did not have any stress. There is highly significant association between HTN and stress (p<0.0001).

Table 12: Association between hypertension and stress.

Stress	Hypertensive (%)	Normotensive (%)	Total
Absent	196 (33.3)	601 (51.67)	797
Present	392 (66.66)	562 (48.32)	954
Total	588 (100%)	1163 (100)	1751

χ^2 =23.096, df=1, p<0.0001.

DISCUSSION

The present study was undertaken in the urban field practice area of Navodaya Medical College, Raichur. The objective of this community based cross sectional study was to find the prevalence of hypertension and the risk factors associated with it among adults.

Prevalence of hypertension

In our study, 588 were found to have hypertension giving a prevalence of 33.6%. Among them 53.7% of hypertensives were already diagnosed to have HTN while 46.3% were newly detected hypertensives. This shows the submerged portion of the iceberg. A simliar study conducted by Gupta R in Jaipur, in urban adults in 2002 showed prevalence of hypertension as 36% in men and 37% in women.[6] 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% (SBP 120-139 and/or DBP 80-89 mmHg).[7]

Prevalence of HTN with age

Highest prevalence is seen in 60-65 years (56%) followed by 40-49 years (41.27%). A study conducted by Patnaik N et al in 2005,in an urban slum of Orissa found that Hypertension was significantly higher in persons of more than 40 years age.[8] A study conducted by Zachariah M G et al. in a middle-aged urban population in Kerala in 2003 also found that prevalence of hypertension was more in older age.[9]

Prevalence of HTN with sex

Males have shown higher prevalence of HTN (37.3%) compared to female (28.9%). Studies done by Gupta R[(10)] in Rajasthan and Mohan V in Chennai also showed that the prevalence in males was found to be more than females.[11]

Prevalence of hypertension with family history

36.9% of hypertensives had family history of HTN and 63.09% hypertensives did not have family history of HTN. A study conducted by Patnaik N et al in 2005 in an urban slum of Orissa found that hypertension was significantly higher in persons who have a family history of hypertension.[8]

Prevalence of hypertension with quantity of salt intake

97.78% of hypertensives consumed more than 6 grams of salth per day. A study done by Chandwani Het al in Gujarat in 2010 showed a higher prevalence of hypertension among people who consumed excess salt.[12]

Prevalence of hypertension with smoking

In our study occurrence of HTN was more in past smokers (82.4%) followed by current smokers (51.5%) when compared to non-smokers (27.6%). There is significant association between HTN and smoking (p=0.0001).

Our study can be compared with studies done by Sahani PNC et al, Sahu T et al in Orissa found that Hypertension was significantly higher in Smokers.[13]

Prevalence of hypertension with alcohol

14.11% of hypertensives were consuming alcohol and 85.88% of hypertensives were not consuming alcohol. A study done by Hazarika NC et al in Assam in 2003 in elderly population found that Alcohol consumption increased the risk of hypertension in the study population.[14]

Prevalence of hypertension with physical activity

In our study 30.27% of the hypertensives were physically active and 69.72% were physically inactive. A study conducted by S.S.Reddy in Tirupati in 2005 showed higher prevalence of hypertension with lack of physical activity.[15] A study done by Shantirani et al in Chennai (Chennai Urban Population Study) also found significant association with hypertension and physical activity (p=0.0001).[16]

Prevalence of hypertension with stress

In our study 66.66% of hypertensives had stress while 33.3% of hypertensives did not have any stress. There is significant association between HTN and Stress. (p<0.0001). A study done by Deswal BS among the residents of Pune showed that the relative risk of developing hypertension in those who had stress and anxiety was 2.5 and 2.43 times respectively.[17]

CONCLUSION

The prevalence of hypertension in the study subjects was 33.6% . 50.7% of hypertensives were already diagnosed to have HTN while 49.3% were newly detected hypertensives. This represents the submerged portion of the iceberg. As age increases BP increases. Males have shown higher prevalence of HTN when compared to females. Family history of hypertension was present in 36.9% of the hypertensive. There is significant association between HTN and salt intake. Hypertension is more in those who are physically inactive. Occurrence of HTN was more in people who smoked. Occurrence of HTN was more in people who had stress.

Recommendations

- A nationwide initiative to create awareness among the people of the community regarding the harmful effects of tobacco, alcohol with main focus on children, adolescents and adults, so as to deter early initiation of smoking and alcohol .
- Effective implementation of COTPA (Cigarette Other Tobacco Product Act), to prevent the advertisement of tobacco products and to prevent use of cigarette in public places.
- Routine screening for risk factors and NCDs in the health services for all individuals.
- Emphasis on comprehensive approach that encompasses preventive, promotive, curative and rehabilitative aspects in medical and nursing curriculum rather emphasizing only on curative care.
- Integration of all NCDs related national programme by creating separate division/department for NCDs and renaming the programme as integrated National NCDs Control Programme keeping the scope open for entry of more diseases in future.

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

REFERENCES

1. Park. K, Text Book of Preventive and Social Medicine. 22nd edition. Jablapur: Banarsidas Banot; 2009. p 335-380.
2. Agarwal S, Basannar DR, Bhalwar R, Bhatnagar A, Bhatti VK, Chatterjee K et al Textbook of Public Health and Community Medicine. Pune: AFMC in collaboration with WHO, India; 2009 P1041-1101.
3. Sampatti ST, Venkatesh VG, Vinay ST. Period Prevalence and Socio Demographic factors Hypertension in rural Maharashtra: A cross Sectional Study. Indian J Community Medicine. 2009;34(3):183-7.
4. Yuvaraj BY, Nagendragouda MR, Umakanth AG. Prevalence Awareness and treatment and control of hypertension in rural area of Davangere city. Indian J Community Medicine. 2010;35(1):138-141.
5. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and treatment of High Blood Pressure [online]. Aug 2004 [cited 18 June 2010];
6. Gupta R. Trends in hypertension epidemiology in India. J Human Hypertension. 2004;18:73-8.
7. Avadaiammal Vimala, Suja Ann Ranji, Mattummal Thodi Jyosna et al.2009.
8. Vimala A, Ranji SA, Jyosna MT, Chandran V, Mathews SR, Pappachan JM. Prevalence, risk factors and awareness of Hypertension in urban population. Saudi J Kidney Dis Transpl. 2009;20(4):685-9.

9. Patnaik L, Sahani NC, Sahu T, et al. A Study on Hypertension in Urban Slum of Brahmapur, Orissa,journal of community medicine, Indian association of preventive and social medicine orissa chapter. 2005.
10. Zachariah MG, Thankappan KR, Alex SC. Prevalence, correlates, awareness, treatment, and control of hypertension in a middle-aged urban population in Kerala. Indian Heart J. 2003;55(3):245-51.
11. Sharma AK, Gupta VP, Prakash H, Bharadwaj H, Rajeev Gupta. High prevalence of hypertension in the desert based rural population of Rajasthan. South Asian Journal Preventive Cardiology. 2003;7(2):81-9.
12. Deepa R, Shantirani CS, Pradeepa R, Mohan V. "Is the Rule of Halves" in hypertension still valid? Evidence from Chennai Urban Population study. J Association physicians India. 2003;51:153-7.
13. Chandwani H, Pandor J, Jivarajani P, Jivarajani H. Prevalence and correlates of hypertension among adults in the urban area of Jamnagar, Gujarat. Electronic Physician. 2010;2:52-9.
14. WHO Expert Consultation Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. Lancet. 2004;363:157-63.
15. Benowitz NL, Porchet H, Sheiner L, Jacob P 3rd. Nicotine absorption and cardiovascular effects with smokeless tobacco use: comparison with cigarettes and nicotine gum. Clin Pharmacol Ther. 1988;44(1):23-8.
16. Reddy SS, Prabhu GR. Prevalence of hypertension and its risk factors among adults aged 20-60 years residing in an urban slum area of Channa Reddy Colony (Urban slum area) in Tirupati town. Indian J Community Medicine. 2005;30(3);84-6.
17. Shanthirani CS, Pradeepa R, Deepa R, Premalatha G, Saroja R, Mohan V. Prevalence and Risk Factors of Hypertension in a Selected South Indian Population - The Chennai Urban Population Study. J Assoc Physicians India. 2003;51:20-7.
18. Deswal BS, Satyamoorthy TS, Dutta PK, Ganguly SS. An epidemiology of hypertension among residents in Pune. Indian J Community Medicine. 1991;16(1): 21-8.

Cite this article as: Chethana KV, Anusha T, Mane A, Prasad VM, Sunkad VM. Prevalence of hypertension and its risk factors among adults in urban field practice area NMC, Raichur, Karnataka, India. Int J Community Med Public Health 2017;4:45-50.