

Research Article

A study of hypertension epidemiology among urban population of Malwa region, India

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ABSTRACT

Background: Hypertension (HTN) is the leading risk factor for cardiovascular disease and mortality worldwide. Almost three quarters of individuals with HTN live in developing countries with limited health resources and where people have low awareness of HTN and limited access to health care. Our study was thus designed to determine the prevalence, awareness, treatment, and control rates of HTN.

Methods: We conducted a cross-sectional survey in different areas of urban Indore. Inclusion criteria were adults older than 21 years who gave oral consent to participate. There were no exclusion criteria. Data were collected on demographic variables, socio-economic status, presence of other cardiovascular risk factors, and medication use. BP was measured after at least 10 minutes of rest in the sitting position. Data analysis was done with Statistical Product and Service Solutions (SPSS) Statistics version 17.0 (Chicago IL, USA).

Results: From December 2014 to May 2015, a total of 1697 participants were enrolled in the study. Their mean age was 42.9 years and 56% were men. The crude prevalence of HTN in our study was 36.9%. The prevalence of HTN was higher in men compared with women and increased with increasing age groups. In addition, HTN was more prevalent in patients who smoked, patients with diabetes, patients with higher BMI, and those who were married, divorced, or widowed compared with singles. HTN awareness was 53%. Among “aware” participants, 93% were taking BP-lowering therapy. Among treated participants, 54% had their BP under control during the examination. This translates into an overall 27% control rate when all hypertensive patients were considered (treated and not treated).

Conclusions: Our results confirm the importance of the HTN epidemic; only one third of participants have optimal BP levels and the remaining two thirds are either hypertensive or prehypertensive. Men in particular are severely affected by the disease: 43% and 35% have either HTN or pre-HTN. Their awareness, treatment, and overall control rates are lower than those of women.

Keywords: Hypertension, Awareness, Urban population

INTRODUCTION

Hypertension (HTN) is the leading risk factor for cardiovascular disease and mortality worldwide. It is currently estimated that more than 1 billion individuals in the world have HTN and it is the cause of more than 7 million deaths annually.^{1,2} Almost three quarters of

individuals with HTN live in developing countries with limited health resources and where people have low awareness of HTN and limited access to health care.^{3,4} A large proportion of these hypertensive patients are unaware of their blood pressure (BP) level and are consequently not treated. In addition, among treated individuals, more than half do not have their BP under

control.^{5,6} Our study was thus designed to determine the prevalence, awareness, treatment, and control rates of HTN.

METHODS

Study population

We conducted a cross-sectional survey in different areas of urban Indore. Inclusion criteria were adults older than 21 years who gave oral consent to participate. There were no exclusion criteria. Data were collected on demographic variables, socio-economic status, presence of other cardiovascular risk factors, and medication use. BP was measured after at least 10 minutes of rest in the sitting position.

Definitions

Prevalent HTN was defined as systolic BP (SBP) ≥ 140 mm Hg and/or a diastolic BP (DBP) ≥ 90 mm Hg or individuals who were currently taking antihypertensive medications irrespective of their BP at the time of the examination. Pre-HTN was defined as SBP ≥ 120 mm Hg and < 140 mm Hg and/or a DBP ≥ 80 mm Hg and < 90 mm Hg.

Statistical analysis

Data analysis was done with Statistical Product and Service Solutions (SPSS) Statistics version 17.0 (Chicago IL, USA). A p value < 0.05 was considered statistically significant.

RESULTS

From December 2014 to May 2015, a total of 1697 participants were enrolled in the study. Their mean age was 42.9 years and 56% were men. Table I lists the distribution of the study population according to age, sex and other demographic characteristics. The crude prevalence of HTN in our study was 36.9%. The prevalence of HTN was higher in men compared with women and increased with increasing age groups. Almost three quarters of subjects aged 65 years and older had HTN. In addition, HTN was more prevalent in patients who smoked, patients with diabetes, patients with higher BMI, and those who were married, divorced, or widowed compared with singles. HTN awareness was 53%. It increased with increasing age and income level groups, and was higher in patients who smoked, patients with diabetes, and as well as those who were married, widowed, or divorced compared with singles. About 49% of patients with HTN were receiving treatment. Treatment rates were higher in older individuals, in those with higher income, in people who were married, in patients who smoked, in patients with diabetes mellitus.

Table 1: Hypertension prevalence, awareness, treatment and control by demographic and baseline characteristics.

	No.	Prevalence %	Awareness %	Treatment %	Control in Treated %
All	1697	36.9	53	48.9	54.2
		P < 0.001	P < 0.001	P < 0.001	P = 0.2
Age (years)					
21-34	600	14.8	23.2	13.8	53.8
35-49	510	34.1	41.3	37.8	58.2
50-64	399	57.6	59.1	55.8	53
>65	176	73.3	78.8	76.1	52.5
		P < 0.001	P = 0.067	P = 0.057	P = 0.021
Sex					
Female	742	29.5	57.9	54	62.3
Male	952	42.7	50.4	46.1	48.9
		P = 0.09	P = ns	P = ns	P = ns
Education					
<10 th Standard	249	30.5	50.5	46.2	54
10-12 th Standard	78	35.9	53.6	50	64.3
Graduate	344	39.8	58.6	55.4	54.5
>Graduate	1020	37.5	50.9	46.8	53.3
		P = 0.05	P = 0.028	P = 0.022	P = 0.096
Income level					
Poor	603	33.3	45.9	41	43.5
Lower Middle	569	37.8	51.1	47.2	59.2
Upper Middle	148	37.8	63.8	61.4	62.8
Affluent	114	44.8	63.5	56.9	48.3

		p<0.001	p<0.001	p<0.001	p=ns
Marital Status					
Single	565	21.8	28	25	64.5
Married	1052	43.6	59.4	55.2	52.5
Widowed	40	62.5	64	60	46.7
Divorced	38	47.4	42.1	31.6	83.3
		P=ns	P=0.053	P=0.011	P=ns
Current Smoking					
Yes	180	47.2	66.3	63.5	55.6
No	1513	35.6	51.2	46.8	53.9
		P<0.001	P=ns	P=ns	P=ns
Body mass index					
<25	731	22.3	54.4	49.7	59.5
25-29	579	45.6	51.7	46.8	51.6
≥30	289	53.3	57.7	54.8	55.3
		P<0.001	P<0.001	P<0.001	P=ns
Diabetes mellitus					
Yes	156	73.5	76.7	73.9	54.1
No	1530	33.2	48	43.5	54
		P<0.001	P<0.001	P<0.001	P=ns

Among “aware” participants, 93% were taking BP-lowering therapy. Among treated participants, 54% had their BP under control during the examination. This translates into an overall 27% control rate when all hypertensive patients were considered (treated and not treated). Overall, only one third of the subjects have an optimal BP defined as <120/80 mm Hg. Optimal BP was more prevalent in women compared with men in all age groups, while pre-HTN and HTN were overall more prevalent in men.

Among patients who were aware of HTN, 70% answered “yes” to the question “Have you tried to decrease your salt intake,” 40% answered “yes” to the question “Have you tried to decrease your weight,” 20% said “yes” to “Did you try to engage in more physical activity,” 11% answered “yes” to “Have you decreased your alcohol consumption,” and 9% said “yes” to “Did you consume more DASH-type nutrimentals.”

DISCUSSION

This study evaluated prevalence, awareness, treatment, and control rates of HTN in our region. It highlights the extent of the epidemic: 35.9% of the study participants were hypertensive, 30% had pre-HTN, and only one third had optimal BP level. The awareness rate was 53% and the overall treatment rate was 48.9% but treatment rate was extremely high (93%) in persons who were aware. BP control was observed in 54% of those who were treated, resulting in an overall 27% control rate when all hypertensive patients were considered. HTN awareness was lower in men compared with women, but was higher in patients, who were older, married, had a higher income, or who were diagnosed with diabetes.

CONCLUSION

Our results confirm the importance of the HTN epidemic; only one third of participants have optimal BP levels and the remaining two thirds are either hypertensive or prehypertensive. Men in particular are severely affected by the disease; 43% and 35% have either HTN or pre-HTN. Their awareness, treatment, and overall control rates are lower than those of women. The results of our study should encourage the development of national programs in India to improve public awareness of HTN and to train public health providers for better screening and treatment of this disease.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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