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Prevalence, awareness, treatment and control of hypertension in urban communities of Imphal, Manipur

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Abstract

Hypertension is a global public health issue. If Hypertension is detected early it is possible to minimize the risk of cardiovascular diseases, stroke and kidney failure. The objectives of this present research work are the following: i. To determine the prevalence of hypertension among the age group of ≥ 25 years in two urban communities of Imphal ii. To assess their knowledge on hypertension and practice of measuring BP. iii. To determine the factors associated with hypertension. iv. To assess the level of awareness, treatment and control of hypertension. A Cross-sectional study was done in two urban communities of Imphal, Manipur during May-June, 2013 among individuals aged ≥ 25 years. The final calculated sample size was 882. Convenience sampling method was used. Participants were interviewed using a structured interview schedule, their BP was measured, anthropometric measurements taken. Hypertension was defined according to JNC VII criteria. The collected data was exposed to statistical analysis. It was found that, out of the 957 eligible persons approached 923 persons consented to participate. About 63.6 percent of the respondents were females. Prevalence of hypertension was 37%. About one-sixth (17.0%) of the respondents had never heard of BP. About 17% of the respondents had never measured their BP in their life time. Increase in age, male gender, increase in BMI levels, tobacco and alcohol were found to be significant independent predictors of hypertension. About 42.5% of the hypertensives were aware of their hypertensive status, 30.8% are on treatment and only 11.4% of them were under control. It was concluded that the prevalence of hypertension was high but awareness was poor. It is recommended to create awareness about hypertension and regular BP check up should be done among the community for early detection of hypertension and to prevent complications.

Key words: Hypertension, prevalence, knowledge, predictors, awareness, control

Introduction

Hypertension is defined as a condition in which Systolic blood pressure (SBP) is equal to or greater than 140 mmHg and/ or diastolic blood pressure (DBP) equal to or greater than 90 mmHg¹. Globally, the overall prevalence of hypertension in adults aged 25 years & over was around 40% in 2008. The number of people with hypertension rose from 600 million in 1980 to 1 billion in 2008². The increasing prevalence of hypertension is attributed to population growth, ageing and behavioral risk factors, such as unhealthy diet, harmful use of alcohol, lack of physical activity, excess weight and exposure to persistent stress¹. Hypertension is a major risk factor for NCDs like stroke, cardiovascular disease and chronic kidney disease. Complications of hypertension account for 9.4 million deaths worldwide every year³. Hypertension is responsible for 45% of deaths due to heart disease and 51% of deaths due to stroke⁴. In India, 23.10% of men and 22.60% of women over 25 years suffer from hypertension⁵.

The prevalence of hypertension is increasing worldwide but awareness, treatment and control rates are very poor¹. If Hypertension is detected early it is possible to minimize the risk of cardiovascular diseases, stroke and kidney failure¹. It is vital to assess the burden of hypertension and associated risk factors as a prerequisite for meaningful prevention and control strategies and moreover studies on hypertension are lacking in Manipur and hence the present study was conducted.

Objectives

i. To determine the prevalence of hypertension among the age group of ≥ 25 years in two urban communities of Imphal ii. To assess their knowledge on hypertension and practice of measuring BP. iii. To determine the factors associated with hypertension. iv. To assess the level of awareness, treatment and control of hypertension

Materials and Methods

This was a Cross-sectional study conducted in two urban communities, New Chekon and Sagolband areas of Imphal, Manipur, a state in Northeast India. The study was conducted from May to June, 2013 among persons aged ≥ 25 years. Those who could not be contacted on the day of data collection and pregnant women were excluded from the study.

Sample size and sampling: Sample size is calculated based on the formula :

$$n = \frac{4 P(1-P)}{L^2}$$

where, $P=35$ (Prevalence is 35% based on a pilot study conducted)

$L=3.5$ (Taking relative error as 10%) at 95% confidence level

The calculated sample size is 742. Estimating a non response rate of 20% the final sample size is 882. Hence 882 adults were targeted for data collection. **Convenience sampling method** is used to select the study subjects. Eight teams consisting of MBBS students were formed and areas of data collection assigned to each team. Each household was approached and every available eligible person were contacted.

Data collection: After explaining the purpose of the visit and obtaining informed verbal consent they were interviewed using a structured interview schedule and BP, height and weight were recorded.

Measurement of BP: Blood pressure was measured in right arm in sitting posture, with the subject in a relaxed state. Standardized mercury sphygmomanometer (Diamond Deluxe BP Apparatus, Pune, India) with adult size cuff was used. Systolic BP noted as the reading at which first Korotkoff sound heard and Diastolic BP was noted at the point at which the sound disappeared. Two readings were taken five minutes apart, and the average of the two readings was taken as the final blood pressure reading

Measurement of height: Participant was asked to stand erect against a vertical surface with the heel, buttock, shoulder and occiput touching the surface and facing forward. A marking is made at the level of the vertex of head. Height measured using a steel measuring tape which records upto the nearest 1 cm

Measurement of weight: Participant asked to stand erect with minimum clothing and no footwear on the digital weighing machine (SECA model 334), calibrated daily and measurement recorded to the nearest 0.1 kg

Body Mass Index (BMI): $\text{Weight (kg)} / \text{Height(m}^2\text{)}$

Operational definitions:

Hypertension

Hypertension is defined as

- Systolic blood pressure equal to or greater than 140 mmHg and/or
- Diastolic blood pressure equal to or greater than 90 mmHg and/or
- Taking anti-hypertensive medications

Classification of Hypertension is done according to JNC-VII criteria⁶. Body Mass Index (BMI) was calculated and subjects were classified into categories of normal, overweight and obese, based on their BMI⁷.

Data analysis: Data were checked for consistency and completeness and entered in IBM SPSS V20 software. Descriptive statistics like mean, percentages used. Chi-square test is used for bivariate analysis between hypertension and selected variables like age, gender, BMI, diet, educational status, physical activity, tobacco and alcohol consumption. Multivariate analysis for variables significant at P value < 0.05 in bivariate analysis was done using multiple logistic regression.

Ethical issues: Ethical approval was obtained from Institutional Ethics Sub Committee, RIMS, Imphal. Informed verbal consent obtained from the participants and confidentiality was maintained.

Results

Out of the 957 eligible persons approached 923 persons consented to participate in the study with a response rate of 96.4%. About 63.6% of the respondents were females. A little more than half (51.2%) of the respondents were between 25 to 44 years (Table-1)

Out of the 923 respondents, 341 (37%) of them were hypertensives and 426 (51%) were in the prehypertensive range.

Table-2 shows the knowledge of respondents about hypertension. About one-sixth (17.0%) of the respondents had never heard of high BP. About one-third (35%) of the respondents could tell the normal BP level correctly. High salt intake was the most common risk factor known to respondents (22%). About two fifth (39.8%) of the respondents knew that dizziness is a symptom of high BP. A little less than half (45.8%) of the respondents didnot knew any of the complications of high BP.

The practice of measuring BP is shown in Table-3. About 17% of the respondents had never measured their BP in their life time. Among those who measured their BP only one fourth (24.8%) of them had measured in the past one month. Among the hypertensives about 12% of them have never measured their BP.

Table-4 shows that increase in age, male gender, increase in BMI levels, tobacco, alcohol, WHR were found to be significant independent predictors of hypertension and on multivariate analysis of these significant variables age, male gender, increase in BMI levels, daily and past users of tobacco, daily alcohol consumption were found to be significant after adjusting for other variables (Table-5).

The most important finding is that about 42.5% of the hypertensives were aware of their hypertensive status, 30.8% of the hypertensives are on treatment and only 11.4% of them were under control (Fig-1)

Discussion

The prevalence of hypertension is 36.4%. Studies done all over the world⁸⁻¹⁹ in different setting among different age groups showed widely varying prevalence rates (7.24-60.8). Among the studies done in Urban setting in India including all the adults, the study done in Mumbai⁹ had the same prevalence, while others in Mumbai¹⁰, Gujarat¹¹ lesser prevalence. The other Indian studies done in Urban setting in Jharkand¹⁵ and Kerala¹⁹ showed higher prevalence rates. This might be because they included only adults >30 years of age. Among the other Indian studies, higher prevalence rates were seen in Assam⁸ and Karnataka¹² while studies Karnataka¹⁴ and Kerala¹⁶ showed lower prevalence rates. In studies done outside India, except one study in Tunisia¹⁸ where the prevalence was 52%, all the others^{13,17} had lower prevalence rates as compared to our study (11.6 - 27.2). The varying prevalence rates might be due to differing age groups constituting the study population.

Only 35% of the respondents could answer the normal BP level in contrast to other studies^{20,21,22} but these studies were conducted among hypertensives. High salt intake is the most common risk factor known to 22% of the respondents whereas in a study in Nigeria²³ and Pakistan²⁴ stress was the most common identified the respondents. Obesity was the risk factor known to majority of respondents in a study in UAE²⁵. Dizziness is the symptom known to majority of respondents as seen in Pakistan study²⁴. In this study, stroke was the most commonly known complication as seen in studies in Nigeria and Pakistan^{23,24}. Most of them don't know any of the risk factors, signs and symptoms and complications of hypertension which is a worrying finding.

About 17% of the respondents have never measured their BP in their lifetime and only 8% of the hypertensives have measured their BP within past one month. In a study done on hypertensives in Mumbai²⁶ about 40% of the respondents measured their BP every month.

Prevalence of hypertension increases with age which is a consistent finding in all the studies⁸⁻¹⁹. Prevalence of hypertension is significantly higher among males as seen in most of the studies^{11,12,14,16,17} in contrast to some other studies^{9,10,13,15} where females have higher prevalence.

Tobacco and alcohol consumption are known significant risk factors of hypertension from many studies^{11,13,16} and is also proved in this study. The problem of tobacco consumption has to be addressed here because about 30% of the respondents consume tobacco daily. About 41% of the respondents were in the obese category and increasing BMI level is significantly associated with hypertension which is also a known risk factor found in other studies^{8,11,13-19}.

As seen in studies all over the world^{9,11,12,16,17,18,19} awareness, treatment and control rates were poor except in few studies done in US²⁷, Canada²⁸ and Brazil²⁹, where it was higher. In this study it was 42.5, 30.8 and 11.4 percent. In a study in Mumbai¹⁰ it was 38.5, 36.4 and 13.6 percent, while it was 33 32 12.5 percent in Karnataka¹⁴

Strength of the study was that response rate was good (96.4%). Limitation was that data collection done during working hours, hence large fraction of the respondents were females.

Conclusion

Prevalence of hypertension and its risk factors are high. But people have poor knowledge about hypertension and are unaware of their own hypertensive status. It is recommended to advice the community about the risk factors of hypertension and regular BP check up should be done among the community for early detection of hypertension and also for preventing complications.

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TABLES:

Table 1: General characteristics of the respondents

Characteristic	Males (%)	Females (%)	Total (%)
Age			
25 to 34 yrs	84(35.6)	152(64.4)	236 (25.6)
35 to 44 yrs	86(36.3)	151(63.7)	237 (25.6)
45 to 54 yrs	62(35.6)	112(64.4)	174 (18.9)
55 to 64 yrs	48(35.0)	89(65.0)	137 (14.8)
> 64 yrs	56(40.3)	83(59.7)	139 (15.1)

Table 2: Knowledge of hypertension

Response	Number	Percentage
Have you ever heard of high BP?		
Yes	766	83.0
No	157	17.0
Normal BP level		
Correct	323	35.0
Incorrect	138	15.0
Don't know	462	50.1
Risk factors for high BP (multiple answers allowed)		
High salt intake	203	22.0
Stress	190	20.6
Junk food	184	19.9
Physical inactivity	97	10.5
Excess oil intake	40	4.3
Meat intake	48	5.2
Obesity	11	1.1
Alcohol	6	0.6
Smoking	4	0.4
Don't know	321	34.8
Signs/symptoms of high BP (multiple answers allowed)		
Dizziness	367	39.8
Headache	150	16.3
Nausea/vomiting	59	6.4
Fatigue	42	4.6
Blurring of vision	32	3.5
Palpitation	21	2.3
Sweating	11	1.1
Breathlessness	7	0.8
Don't know	353	38.2
Complications of high BP (multiple answers allowed)		
Stroke	305	33.0
Paralysis	116	12.6
Heart problem	119	12.9
Unconsciousness	70	7.6
Death	22	2.4
Kidney failure	28	3.0
Don't know	423	45.8

Table 3: Practice of measuring BP

Response	Number	Percentage
Have you ever measured your BP?		
Yes	766	83.0
No	157	17.0
When was BP last measured?		
< 1 month	229	24.8
1 to 6mts	229	24.8
6mts to 1yr	129	14.0
1 to 2 yrs	49	5.3
2 to 5 yrs	51	5.5
>5 yrs	25	2.7
Can't remember	54	5.9
Never measured	157	17.0
When was BP last measured? (among hypertensives, n=341)		
< 1 month	27	7.9
1 to 6mts	106	31.1
6mts to 1yr	76	22.3
1 to 2 yrs	53	15.5
2 to 5 yrs	14	4.1
>5 yrs	14	4.1
Can't remember	10	2.9
Never measured	41	12.0

Table 4: Bivariate association of Hypertension with selected variables

Variable	Presence of Hypertension		P-value
	Yes (%)	No (%)	
Age			
25 to 34 yrs	45 (19.1)	191 (80.9)	0.000
35 to 44 yrs	73 (30.8)	164 (69.2)	
45 to 54 yrs	80 (46.0)	94 (54.0)	
55 to 64 yrs	75 (54.7)	62 (45.3)	
More than 64 yrs	68 (48.9)	71 (51.1)	
Gender			
Male	165 (49.1)	171 (50.9)	0.000
Female	176 (30.0)	411 (70.0)	
BMI			
<18.5	9 (15.8)	48 (84.2)	0.000
18.5 to 22.9	78 (26.6)	215 (73.4)	
23 to 24.9	72 (38.7)	114 (61.3)	

≥ 25	182 (47.0)	205 (53.3)	
Tobacco consumption			
Daily	147 (52.9)	131 (47.1)	
1-6 times a week	16 (38.1)	26 (61.9)	
Few times a month	11 (35.5)	20 (64.5)	0.000
Occasionally	44 (28.2)	112 (78.2)	
Never users	103 (27.0)	279 (73.0)	
Past users	20 (58.8)	14 (41.2)	
Alcohol consumption			
Daily	31 (68.9)	14 (31.1)	
1-6 times a week	12 (63.2)	7 (36.8)	
Few times a month	8 (42.1)	11 (57.1)	0.000
Occasionally	32 (36.8)	55 (63.2)	
Never users	245 (33.8)	480 (66.2)	
Past users	13 (46.4)	15 (53.6)	

Table 5: Multivariate association of hypertension with significant variables*

Variable	Adjusted OR	(95% CI)	P-value
Age in years			
25 to 34 yrs	1.00	1.00	
35 to 44 yrs	1.77	(1.11-2.81)	0.01
45 to 54 yrs	3.30	(2.03-5.36)	0.00
55 to 64 yrs	5.82	(3.46- 9.78)	0.00
>64 yrs	4.16	(2.48- 6.97)	0.00
Gender			
Male	2.41	(1.67-3.48)	0.00
Female	1.00	1.00	
BMI			
<23.00	1.00	1.00	
23.00-24.99	2.18	(1.42-3.36)	0.00
≥25.00	3.23	(2.26-4.63)	0.00
Tobacco consumption			
Daily	2.92	(2.03- 4.20)	0.00
1-6 times a week	1.66	(0.78 -3.54)	0.19
Few times a month	1.67	(0.73- 3.84)	0.22
Occasionally	1.10	(0.70-1.74)	0.68
Never	1.00	1.00	
Past user	3.49	(1.51-8.03)	0.0

Table 5 continued...

Variable	Adjusted OR	(95% CI)	P-value
Alcohol consumption			
Daily	2.49	(1.17-5.28)	0.02
1-6 times a week	1.94	(0.70-5.39)	0.21
Few times a month	1.21	(0.40-3.48)	0.77
Occasionally	0.72	(0.40-1.26)	0.24
Never	1.00	1.00	
Past user	0.69	(0.28-1.71)	0.43

FIGURE:

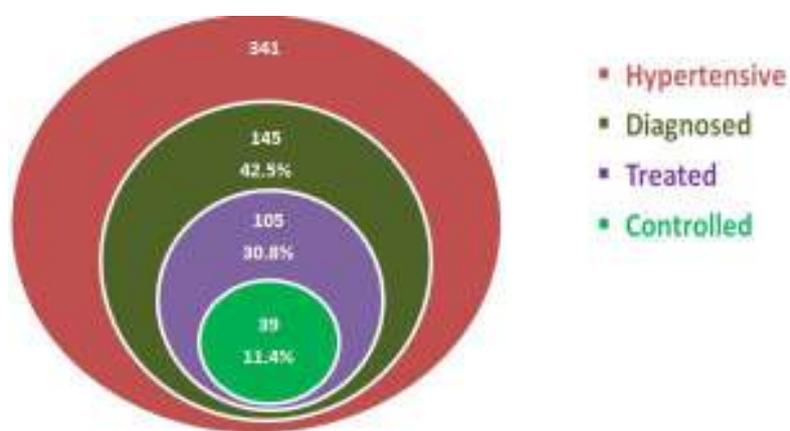


Fig 1: Awareness among Hypertensive patients.