

Original Research Article

A cross-sectional study of predictors of hypertension among tribal women in Western Maharashtra

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ABSTRACT

Background: Hypertension is a major public health problem and also major risk factor for cardiovascular diseases. The prevalence and severity of hypertension increases with age, and it becomes difficult to control blood pressure with increasing age particularly in women. Thus present study aims to explore the risk factors contributing for hypertension among women.

Methods: A cross-sectional study was carried out in the field practice area of Rural Health Training Centre of Community Medicine Department for one month duration September to October 2017. All the women reporting to general OPD for routine visit to RHTC were included. Informed consent was obtained. The participants who were already known hypertensives and were already on medication were excluded. Total 200 subjects were included in the study. Percentages, chi-square test and P-value were calculated using Epi Info software.

Results: Out of total 200 women maximum were in the age group of 40-60 years (64%) followed by (22.5%) in 60-70 years. 40% of women were found to be normotensive, 16% were in stage one 12% were in stage two and 32% were showing elevated blood pressure. Hypertension was found to be significantly associated with modifiable risk factors like BMI, physical activity, waist circumference. 66.66% of women who were obese were found to be hypertensive. 91.91% of women who had family history of hypertension were themselves hypertensive and 97 (48.5%) women who had diabetes out of them 82.47% were both diabetic as well as hypertensive.

Conclusions: Screening, detection and treatment of NCDs, are key components of the response to non-communicable diseases.

Keywords: Hypertension, Tribal, Women

INTRODUCTION

Non-communicable diseases, especially cardiovascular diseases (CVD) are showing an increasing trend in developing countries including India due to epidemiological, nutritional, demographic, socio-economic and lifestyle transition.¹ 41 million people are killed due to non-communicable (NCDs) each year which is equivalent to 71% of all global deaths.² Hypertension is a silent killer and it is an important modifiable risk factor

for cardiovascular diseases. It is an important public health problem not only urban and rural areas but in tribal area as well in India. According to 2011 census tribal population constitute 8.61% of the total population.³ Maharashtra state has second largest tribal population in the country. Maharashtra accounts for 10.06% of the scheduled tribe population of India harbouring 47 tribes including 3 Particularly Vulnerable Tribal Groups (PVTG).³ Being among the poorest and most marginalised groups in India, tribes experience extreme level of health deprivation. The tribal community lags

behind the average on the several vital public health indicators, with women and children being the most vulnerable.

Women also manifest different symptoms of some NCDs than men, and hence be more likely to experience delayed diagnosis and treatment. This delay occurs in part because, historically, male patients have been more widely used as the reference in medical research while female patients have been understudied. This situation means that women are more vulnerable than men once the diseases have developed, and it offsets their lower exposure to the risk factors relative to men.⁴ Against this backdrop, the present study thus explores the risk factors of hypertension among tribal women seeking healthcare from a rural health centre of Western Maharashtra.

METHODS

This cross-sectional study was carried out in the field practice area of Rural Health Training Centre (RHTC) of Community Medicine Department from September 2017 to October 2017. All females above 18 years of age attending general OPD for routine visit at RHTC and willing to participate in the study after informed consent were included in the study. On an average daily 15 women come to general OPD. Total 375 women reported to general OPD in a duration of one month. The participants who were already known hypertensives and were already on medication and who were not ready to give consent were excluded. Thus, total 200 subjects were included in the study. Pre-designed, pre-tested questionnaire was used to collect data regarding demographic characteristics and different risk factors i.e. smoking, alcoholism, etc.

Blood pressure was recorded in the sitting position in the right arm to the nearest 2mmHg using the mercury sphygmomanometer. Two readings were taken 5 minutes apart and mean of two was taken as the blood pressure. JNC 8 (Joint National Committee on Prevention, Detection, Evaluation and Treatment of Hypertension) criteria were used to diagnose hypertension.⁵ Newly diagnosed hypertensive patients were counselled for life style modification (dietary changes, physical activity, treatment compliance, warning signs in case of uncontrolled hypertension etc.). Eligible patients were started on medication and suggested blood pressure monitoring and follow-up at regular interval.

Anthropometric measurements including weight, height, waist and hip measurements were obtained using standardized techniques. Body mass index (BMI) was calculated using the formula: weight (kg)/height (m).² BMI of equal to or more than 25 was regarded as Overweight and above or equal to 30 was considered as obese.⁶ Waist circumference of ≥ 80 cm and waist to hip ratio (WHR) of ≥ 0.80 were considered cut off points for defining an abdominal obesity as per Asian cut off.⁷

Physical activity was assessed on the basis of occupation they are involved in. Daily salt intake was decided on the basis of monthly consumption and number of members in the family. Socioeconomic status was calculated using B G Prasad scale (2019).

Data was compiled using Microsoft Excel 2016. Percentages, chi-square test and P-value were calculated using Epi Info software.

RESULTS

Table 1: Sociodemographic profile of respondents.

Age Group	Number	Percentage
30-40 years	36	18
40-50years	46	23
50-60years	46	23
60-70years	45	22.5
>70years	27	13.5
Religion		
Hindu	123	61.5
Muslim	42	21
Others	35	17.5
Education		
Illiterate	34	17
Primary	75	37.5
Secondary	76	38
Higher secondary and above	15	7.5
Marital status		
Married	167	83.5
Widow	30	15
Unmarried	3	1.5
Socioeconomic status		
Middle(III)	66	33.33
Lower middle (IV)	89	44.5
Lower (V)	45	22.5

Out of total 200 women maximum were in the age group of 40-60 years (64%) followed by 60-70 years (22.5%). Maximum women in the study belonged to Hindu religion 123 (61.5%). Here 17% women were illiterate and maximum women were from socioeconomic class IV (44.5%). 83.5% of the women were married (Table 1).

Out of 200, 80 (40%) women were in normal range while others were either pre-hypertensive or hypertensive. Here 32 (16%) were in stage 1 and 24 (12%) in stage 2. 12 (44.43%) women who were above 70% of age and 14 (31.1%) in 60-70 years were found to be hypertensive. (Table 2). Here 56.6% women who were overweight were found to be hypertensive along with 66.66% women who were obese. 71 (66.35%) women who not doing any physical activity were found to be hypertensive. 66.66% of women who were addicted to tobacco in any form were hypertensive.

A significant association was seen between waist circumference and presence of hypertension. Almost 83% of women having waist circumference above or equal to 80 were found to be hypertensive (Table 3).

Table 2: Distribution of study participants according to age and their blood pressure.

Age (years)	Normal	Elevated	Stage 1	Stage 2	Total	Statistical analysis
30-40	25 (69.44%)	5 (13.88%)	5 (13.88%)	1 (2.77%)	36	P<0.01
40-50	23 (50%)	11 (23.91%)	7 (15.21%)	5 (10.86%)	46	
50-60	18 (39.13%)	16 (34.78%)	7 (15.21%)	5 (10.86%)	46	
60-70	8 (17.77%)	23 (51.11%)	6 (13.33%)	8 (17.77%)	45	
>70	6 (22.22%)	9 (33.33%)	7 (25.92%)	5 (18.51%)	27	
Total	80 (40%)	64 (32%)	32 (16%)	24 (12%)	200	

Table 3: Association of hypertension with various modifiable risk factors variables.

Risk factor	Normal (n ₁ =80)	Hypertensive (n ₂ =120)	Total (N=200)	Statistical analysis
BMI				
<18.5	12 (92.30%)	1 (7.69%)	13	Chi square=17.38 p<0.01
≥18.5 and<25	40 (33.61%)	79 (66.38%)	119	
≥25 and <30	23 (43.39%)	30 (56.60%)	53	
≥30 and <35	5 (33.33%)	10 (66.66%)	15	
Physical activity				
Sedentary	36 (33.33%)	71 (66.35%)	107	Chi square =3.872 p <0.05
Heavy/moderate	44 (47.31%)	49 (52.68%)	93	
Addiction				
Tobacco (any form)	10 (33.33%)	20 (66.66%)	30	Chi square =0.6968 p>0.05
Alcohol	5 (38.46%)	8 (61.53%)	13	
Non addicted	65 (41.40%)	92 (58.59%)	157	
Waist circumference				
≥80cm	18 (16.98%)	88 (83.01%)	106	Chi square=49.79 p<0.01
<80cm	62 (65.95%)	32 (34.04%)	94	
Waist: hip ratio				
≥0.80	10 (9.80%)	92 (90.19%)	102	Chi square=79.08 p<0.01
<0.80	70 (71.42%)	28 (28.57%)	98	

Table 4: Association of hypertension with non-modifiable risk factors.

Risk factor	Normal (n=80)	Hypertensive (n=120)	Total	Statistical analysis
Education				
Illiterate	10 (29.4%)	25 (73.52%)	34	Chi square=2.309 p>0.05
Literate	70 (42.16%)	95 (57.22%)	166	
Marital status				
Married	69 (41.31%)	98 (58.68%)	167	Chi square 2.26 p>0.05
Unmarried	2 (66.66%)	1 (33.33%)	3	
Widow	9 (30%)	21 (70%)	30	
Socioeconomic status				
III	20 (30.30%)	46 (69.69%)	66	Chi square =4.992 p>0.05
IV	37 (41.57%)	52 (58.42%)	89	
V	23 (51.11%)	22 (48.88%)	45	
Family history of hypertension				
Yes	8(8.08%)	91(91.91%)	99	Chi square=83.32 p<0.01
No	72(71.28%)	29(28.71%)	101	
Diabetes				
Present	17(29.82%)	80(82.47%)	97	Chi square=3.439 p>0.05
Absent	63(44.05%)	40(38.83%)	103	

We can see that 73.52% of women who were illiterate were hypertensive and 70% of women who were widow were found to be hypertensive. Hypertensive women were almost equally distributed in all three socioeconomic classes. 91.91% of women who had family history of hypertension were themselves hypertensive. Out of 97 (48.5%) women who had diabetes, 80 (82.47%) were detected with hypertension as well (Table 4).

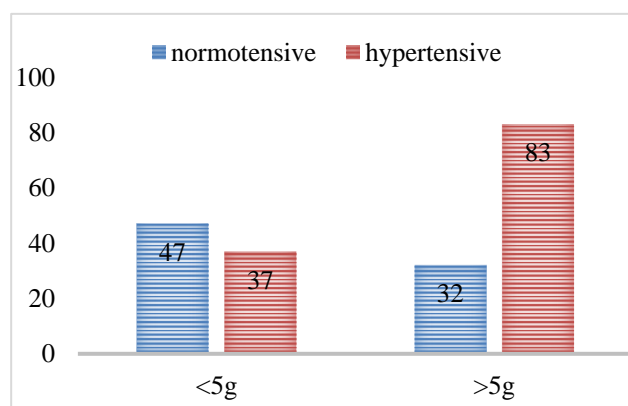


Figure 1: Association of salt intake with blood pressure.

DISCUSSION

In developing countries due to urbanization not only rural and urban area even tribal communities are affected which has led to changes in their lifestyle. Therefore, assessment of tribal health with focus on non-communicable diseases is of prime importance. Hypertension is itself an important modifiable risk factor for various non-communicable diseases. The present study observed that 28% of women who were attending the general OPD either had elevated blood pressure or they were in Stage 1 or 2 which is a major concern. Study done by Gupta et al found that prevalence of hypertension was 27.1% in central India. Tribes of western India had hypertension ranging from 16 to 30%.⁹ A study done by Manimunda et al showed that Nicobarese an aboriginal tribes had a higher prevalence (50.5%).¹⁰ In our study, it was found that age was significantly associated with hypertension in which most women were found to be either in stage one or two after 40 years of age. As age was increasing women affected with hypertension was increasing. Similar to the findings of Kandpal V et al age was found to be a significant risk factor with individuals of 35 years and above group being at almost three fold risk (O.R=2.89, 95% C.I.=1.58-5.29) for hypertension.¹¹

In the present study, among the modifiable risk factors BMI, physical activity, abdominal obesity, waist to hip ratio were significantly associated with the hypertension. In our study 53 women were overweight and 15 were obese. A study on tribe of Western India reported 22.5%

individuals being abdominally obese.¹² On the other hand, a tribe from eastern India revealed 11% to be affected with central obesity.¹³

Obese women having BMI above 30 had double the risk of hypertension. One of the probable reasons behind this may be urbanization which cause changes of dietary habits and reduced physical activity which leads to obesity and subsequently resulting in hypertension.¹⁴ Similar to the findings of Sumitra G et al who found that overweight or obese persons were significantly more likely to suffer from hypertension (OR=2.02, p<0.001 and OR=3.22, p<0.001, respectively).¹⁵ In this study family history was significantly associated with hypertension. Similar results were found by Radhakrishnan et al among the tribal population of Tamil Nadu Naresh et al also found positive family history was strongly associated with hypertension in rural population.^{16,17}

Socioeconomic status was not found to be associated to hypertension. This may be because majority of tribal population in our study belongs to low socioeconomic status. However, some lower prevalence of hypertension was observed among higher socio-economic groups, while others observed higher prevalence among higher socio-economic group.^{18,19}

Most of the hypertensive (66.35%) was found among sedentary worker, which was found statistically significant (p<0.05) similar to Rahim et al.²⁰ A significant association was seen between salt intake and hypertension was also found in the study. More than 70% women who were taking >5 g of salt in their diet were found hypertensive.

CONCLUSION

Although this is a centre-based small-scale study, it reiterates the need to explore the burden and determinants of non-communicable diseases in tribal population. Conditions like hypertension and diabetes are themselves risk factors for various cardio-vascular, renal, ophthalmic and neurological complications.

Delay in seeking treatment attributed to lack of awareness, health seeking behaviour and poor access to advanced speciality medical care can contribute to existing burden of morbidities and mortalities because of epidemiological transition.

To bridge this gap, health care delivery system in tribal area needs to be equipped with components like awareness about non-communicable diseases, screening, timely detection, treatment and palliative care. Interventions focussing on life cycle approach in non-communicable disease prevention and control among tribal population need to be explored further.

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