

## EPIDEMIOLOGICAL FACTORS ASSOCIATED WITH HYPERTENSION AMONG TRIBAL POPULATION IN GUJARAT

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### ABSTRACT

Cardiovascular diseases are recognized as major public health problems by WHO. Very few studies have been carried out among tribal population in India. A cross sectional study was carried out in 2005 to find out the magnitude of hypertension among 154 tribal adult of South Gujarat. WHO classification of hypertension was taken as operational criteria and data was collected in pre-designed, pretested schedule. Blood pressure measurement was done twice on each subject using mercury sphygmomanometer. Overall magnitude of hypertension was found to be 16.9%, and only smoking was found to have significantly associated with it.

**Keywords:** Hypertension, tribal population, risk factor

### INTRODUCTION

World is in the stage of epidemiological transition and the non-communicable diseases are overtaking the communicable diseases. This phenomenon is not only seen in developed countries but is also evident in the developing countries like India. Among the major non-communicable diseases, cardiovascular diseases are recognized as major public health problems by WHO.<sup>1</sup> Though several studies have been carried out among different population with sedentary lifestyle to assess the risk factors for NCD, but very few studies have been carried out among tribal population especially in India. One argument towards this can be non exposure to risk factors like decreased physical activity and obesity among the tribal by virtue of their lifestyle but other side of the coin suggests that the risk factors like smoking and alcohol consumption is increasing among the lower socio-economic strata.

With this background the present study was carried out to find out the prevalence of hypertension as well as different cardiovascular risk factors and to assess association of different risk factors with hypertension if any.

### METHODOLOGY

The present cross-sectional study was carried out in 2005 among different tribes of Surat region of Gujarat. The selected villages have about 30,000 tribal population; mostly being engaged in labour farm work. From the sampling frame of labour population aged 20 years and above, 154 study subjects were included by simple sampling random technique in the present study. Pre-designed, pre-tested schedule was used to collect data regarding demographic characteristics and different risk factors like smoking and alcohol.

For the present study all those who have smoked at least one cigarette or bidi in the last one-month period were considered as current smoker while those who have left smoking since  $\geq 1$  year were considered as ex-smokers. For the purpose of ever smokers the current smokers and ex-smokers were added together. Similarly those who reported to have taken alcohol at least once in last one month were considered as current alcohol users. This was followed by measurement of blood pressure, height and weight. Two blood pressure readings were obtained on left arm after the subject had rested for at least 5 minutes in a seated position using

mercury sphygmomanometer, 10 minutes apart. Finally average of two readings was taken. SBP  $\geq$  140 mm Hg and/or DBP  $\geq$  90 mm Hg and/or treatment with anti-hypertensive medication were labeled as hypertensive.<sup>2</sup> Subjects having hypertension were referred to nearby Primary Health Centre for further management. Body weight was measured on the weighing scale, wearing minimum outerwear (as culturally appropriate) and without any footwear. Height was measured using a non-stretchable tape with the subject in an erect position against a vertical surface, with the head positioned so that the top of the external auditory meatus was level with the inferior margin of the bony orbit. Body mass index was calculated by dividing the weight in kilograms with the square of height measured in meters. WHO classification of obesity was used for the categorization.<sup>3</sup> Percentages was

calculated and chi-square test was done using Epi Info software.

## OBSERVATIONS AND DISCUSSION

Out of 154 subjects, 59.1% were male while 40.9% were female. Majority of the study subjects belonged to less than 25 years of age. Overall magnitude of hypertension was found to be 16.9%.

38.5% of the subjects were ever smokers while only 5.5% have taken alcohol. Only 9 (5.4%) subjects were overweight-pre-obese. The mean BMI for the females was found to be  $19.3 \pm 3.5$  kg/m<sup>2</sup>. The distribution of hypertension according to the risk factors is shown in Table 1. Except for smoking all other factors were found to be non-significant.

**Table 1:** Distribution of hypertension according to different risk factors

Risk Factors	Number	Hypertensive No (%)	$\chi^2$	df	p-value
Age (in years)					
<45	132	23 (17.4)			
$\geq$ 45	22	3 (13.6)	0.017;	1;	>0.05
Sex					
Male	91	15 (16.5)			
Female	63	11 (17.5)	0.025,	1,	>0.05
Smoking history					
*Ever smokers	35	9 (25.7)			
Never Smokers	56	6 (10.7)	3.52;	1;	<0.05
Alcohol use					
*Present	5	1 (20.0)			
Absent	86	13 (15.1)	0.407;	1;	>0.05
Body mass index					
Overweight-pre-obese	9	-			
Non-obese	145	26 (17.9)	-	-	-

\* Included only males

In the present study the overall magnitude of hypertension was found to be 16.9%. However a study among tribal "Oraon" population of Orissa revealed lower prevalence of hypertension (4.6/1000 population).<sup>4</sup> Similar finding (prevalence 5.8%) was also noted by Chadha SL et al<sup>5</sup> among Gujaratis residing in Delhi. In contrast a study among primitive tribes of Orissa reported prevalence of hypertension among males and females as 31.8% and 42.2%, respectively.<sup>6</sup> Recent studies have shown that Asian Indians are particularly susceptible to non-communicable diseases.

Comparison with studies shows that there is a clear increase in magnitude of hypertension in urban Indians from 6.2% in 1970 to 26.9% in 2000.<sup>7,8</sup> This can be attributed to the epidemiological transition and changing lifestyles.

Although the magnitude of hypertension is age related, being highest in those over 50 years of age<sup>9,10</sup> but the non-significant association of age with hypertension in present study can be attributed to comparatively young age group of study population; mean age being  $31.7 \pm 10.1$  years. All the hypertensive subjects were non-obese and this could be due to very low

magnitude of obese in the study population. However the mean BMI of the females was similar to that reported in NFHS survey data while the proportion of those females having BMI<18.5 kg/m<sup>2</sup> was found to be 38.1% which was lower than 47.7% as reported in NFHS survey.

Magnitude of smoking is higher in this study and smoking has been found a significant factor for the occurrence of hypertension. There is a plethora of studies suggesting the tobacco smoking as an important and independent risk factor for hypertension and cardiovascular diseases.<sup>11</sup>

Thus to summarize, this study reveals that the magnitude of hypertension in the tribal population is comparable to the magnitude found in the other Indian studies. It is likely that a systematic and larger study may give better understanding of the prevalence and the underlying risk factors among these populations.

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