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Research Article

A study of hypertension among tribal adults in a block of Mandla district, Madhya Pradesh, India

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ABSTRACT

Background: Hypertension is one of the most Important Public Health challenges worldwide. In India, there is no composite estimate on prevalence of hypertension among indigenous tribes, but the increasing prevalence of hypertension across the time among tribes has been observed by independent researchers. Further studies among the tribal population may reduce morbidity & mortality patterns, also ample avenues of prevention of such silent killer disease could well be explored. We did this study to find out the Magnitude of Hypertension and Pre Hypertension among Tribal adults with associated risk factors.
Methods: A cross sectional study using Multi stage Sampling Method with house to house visits & study was conducted in Narayanganj block of Mandla District during 1st October to 30th September 2015. Sample size came out to be 300. Personal Interview, Anthropometric measurements & Clinical Examination was done and a Pre-designed Questionnaire form was filled from every study subject. Analyzed on SPSS (Version 20, IBM, USA).
Results: The Magnitude of hypertension and Pre Hypertension was found at 22.0% and 32.7 % respectively in tribal subjects. The association of Hypertension with increasing Age was found to be significant (P< 0.001). Association of gender and hypertension was significant showing association of hypertension with tribal males. P< 0.001.The association of hypertension with alcohol Consumption was significant. P = 0.0050.
Conclusions: Hypertension & Pre hypertension is increasing in tribals. The disorder is mostly silent and needs to be addressed at this incipient stage to prevent its long term effects.

Keywords: Tribal, Hypertension, JNC 7, Pre-hypertension

INTRODUCTION

Hypertension is one of the most Important Public Health challenges worldwide because of its high frequency & concomitant risks of cardiovascular & Kidney diseases. It has been identified as a leading risk factor for mortality and ranked third by WHO as a cause of disability adjusted life-year.[1] As per world health statistics 2012 report, one in three adults worldwide has raised blood pressure - a condition that causes around half of all deaths from stroke and heart disease.1Hypertension is a major modifiable risk factor, which significantly and independently increases the risk of developing CV disease complications. In addition to coronary heart diseases and stroke, complications of raised blood pressure include heart failure, peripheral vascular disease, renal impairment, retinal hemorrhage and visual impairment. Treating systolic blood pressure and diastolic blood pressure until they are less than 140/90 mmHg is associated with a reduction in cardiovascular complications.[2]

According to WHO the prevalence of hypertension in India was about 36.0 in males & 34.2 in females in 2008.[3]

India has the second largest concentration of tribal population in the world. Indian tribes constitute around 8.3% of nation's total population.[4]

In India, there is no composite estimate on prevalence of hypertension among indigenous tribes, but the increasing prevalence of hypertension across the time among tribes has been observed by independent researchers.

NNMB Tribal Survey - 2008-09 estimated the prevalence of Hypertension among Tribals as 24% (men-25%, women-23%).[5]

S. A. Rizwan et al; (2014) in a study 'prevalence of hypertension in Indian tribes: a systematic review and meta-analysis of observational studies' found. The pooled estimate of hypertension prevalence was 16.1%.[6]

Isolated studies carried out in these populations like among Lepchas of Sikkim Himalayas, tribes of Andhra Pradesh, Rajasthan, and Orissa have documented the hypertension prevalence in the range of 15 to 42 per cent.[7]

Above mentioned studies [5,6,7] suggests that the prevalence of hypertension in these aboriginals is considerably high. Further studies among the tribal population may improve the morbidity & mortality patterns, also ample avenues of prevention of such silent killer disease could well be explored. Epidemiological studies to assess the magnitude of hypertension are urgently needed to determine the baseline against which future trends in risk factor levels can be assessed and preventive strategies planned to promote health among the tribal population.

METHODS

This study plan has got Ethical clearance from the Institutional Ethical Committee of NSCB Medical College Jabalpur, Madhya Pradesh, India. Informed & written consent was taken from each participating subjects and in case of any illiterate subjects this consent was read out to him/her.

METHEDOLOGY

A cross sectional study was conducted in Narayanganj block of Mandla Tribal District of Madhya Pradesh during 1st October to 30th September 2015. Multistage random sampling method was used to select the study subjects. The sample size was drawn by applying calculation method for quantitative data with 25 % prevalence rate & with 5 allowable error that came out to be 288 that was rounded to 300, hence 300 total subjects.

A pretested & pre- designed questionnaire was filled with house to house method.

Having chosen the block on first stage, 20 villages were selected randomly and lastly from every village 15 tribal subjects were chosen randomly by house to house visit method where a pre tested & pre designed questionnaire were filled containing information about socio demographic profile and addiction habits of the subjects along with anthropometric measurements & clinical examination.

Blood pressure of the study subjects was recorded at the time of interview by using calibrated BP Measuring Instrument. It was classified according to JNC 7 Criteria.[8] Measurement was taken only when the persons were seated quietly for at least 5 min in a chair and who avoided caffeine, exercise and smoking at least 30 min prior to measurement. Blood pressure measurements were made on the subject's left arm using a cuff of appropriate size at the level of the heart. Altogether, two measurements were made and the average was recorded. In case where the two readings differed by over 10 mm of Hg, a third reading was obtained, and the three measurements were averaged.

Inclusion criteria

All the tribal subjects above 18 years of age who are permanent resident.

Exclusion criteria

1. Terminally ill patient& Mentally Retarded Individuals who couldn't respond to the items in Questionnaire.

2. Pregnant females, lactating others, post-partum females.

3. Adults not willing to be the part of study/those who denied.

4. Patients of hypertension on medication.

Operational definition of hypertension

The operational definition of hypertension was taken from The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure.[8]

Statistical analysis-Analysis was done using SPSS (Version 20, IBM, USA).

RESULTS

In our study, out of total 300 tribals studied, (Table 1) most of subjects were in the age group of 18-29 years (31.6%) and least numbers of people were found in the age group of above 60 years (7.0%). Mean age of the subjects was observed to be 39.07 (±4.25) years. A total of 127 (42.3%) males & 173 (57.7%) females were found. The higher proportion of female were only due to their availability at home at the time of interview/survey and most of the time males of these families have

temporarily migrated for their wage earning. All the studied tribal subjects were Hindu by religion. The proportion of illiteracy (26.3%) was found to be more, subjects completing till middle school were found to be more in study group (Table 1). The level of higher education was low in Tribals (5.0%). Most of the Tribals belonged to class IV & V of the Modified B.G Prasad's Classification (2014) of Socioeconomic Scale. Smokeless tobacco chewing in plain form or other forms such as khaini or Gutkas whether daily or occasional was found to be 60.7% (Table 2), about 29.3% of the subjects consumed alcohol.

In distribution of Blood pressure, (Table 3) total 66 subjects were found to be hypertensive out of 300 (22.0%). Mean SBP and DBP were significantly higher with increase in age and mean SBP was 123.0±16.03 & mean DBP was 79.92±9.86.

The association of hypertension with age among Tribals (Table 4) was found to be significant.

Table 1: Distribution of socio demographic variables.

Socio-demographic variables of the subjects	Distribution (n=300)
Age in years a) 18-29 b) 30-39 c) 40-49 d) 50-59 e) ≥ 60 **Mean age = 39.07±4.25**	 95 (31.6%) 76 (25.3%) 62 (20.6%) 46 (15.3%) 21 (7.0%)
Gender a) Male b) Female	 127 (42.3%) 173 (57.7%)
Education a) Illiterate b) Primary d) Middle e) High school & higher secondary f) Graduate & above	 79 (26.3%) 50 (16.7%) 98 (32.7%) 58 (19.3%) 15 (5.0%)
Socio-economic class (According to Modified B.G Prasad's Classification) Class III Class-IV Class-V	 19 (6.3%) 148 (49.3%) 133 (44.4%)
BMI (Kg/M^2) ≤ 18.49 18.5-24.99 25.0-29.99 ≥ 30	 64 (21.3%) 219 (73.0%) 16 (5.3%) 1 (0.34%)

In the age group of 18-29 years, 8 subjects were found to be hypertensive out of total 95 (9.5%). Most of the Hypertensive subjects (27.3%) were found in the age group of 50-59 years. In the age group of 60 years & above 11 out of 21 (52.3%) were found to be hypertensive showing a linear trend of age with hypertension.$\chi 2$ linear trend = 31.03, P<0.001.

Table 2: Distribution of addiction.

Substance of addiction	Distribution (n= 300)
Alcohol	Yes - 98 (29.3%) No - 202 (70.7%)
Tobacco smoking	Yes - 19 (6.3%) No - 281 (93.7%)
Smokeless Tobacco	Yes - 182 (60.7%) No - 118 (39.3%)

Table 3: Distribution of blood pressure levels among study subjects.

Blood pressure categories	Frequency (%) (n=300)
Normal	136 (45.3%)
Pre-hypertension	98 (32.7%)
Stage I hypertension	45 (15.0%)
Stage II hypertension	21 (7.0%)
Total	300 (100%)

Table 4: Distribution of hypertension cases.

Variables	Distribution of Hypertension Cases (n = 66)	Statistical significance
Age in years a) 18-29 b) 30-39 c) 40-49 d) 50-59 e) ≥ 60	 08 (12.1%) 12 (18.2%) 17 (25.7%) 18 (27.3%) 11 (16.7%)	*χ2* linear trend in Tribals = 31.03, P<0.001
Gender a) Male b) Female	 41 (62.12%) 25 (37.88%)	*χ2 Tribal Males Vs Tribal Females = 13.57, P< 0.001*
Addiction a)Alcohol b)Tobacco (Both Smokeless &Smoking)	 Yes - 31 (47%) No - 35 (53%) Yes - 49 (74.24%) No - 17 (25.76%)	 χ2 = 7.85 , df =1, P= 0.0050 ; OR=2.208, 95% CI 1.26-3.86 χ2 trend among tribals = 3.177 , df =1, P= 0.07 ; OR=1.737, 95% CI 0.9423 -3.203
BMI (Kg/m^2) ≤ 18.49 18.5-24.99 25.0-29.99 ≥ 30	 19 (28.8%) 45 (68.2%) 2 (3%) 0	*χ2* trend among Tribals with hypertension & Non Hypertensive Tribals with BMI = 3.573 , P= 0.058

Association of hypertension with gender (table 4) among study subjects was found to be significant ($\chi 2$ Tribal Males vs. Tribal Females = 13.57, P<0.001). Among 127 tribal male subjects, 41 males were found to be hypertensive (32.3%) & out of 173 females, 25 females were hypertensive (14.4%). The association of hypertension with alcohol was significant. χ^2 = 7.85, P= 0.0050. The association of hypertension with BMI & Tobacco consumption was not significant in the study subjects (Table 4).

DISCUSSION

In distribution of blood pressure (Table 3) total 66 subjects (22%) were found to be hypertensive and 98 (31.7%) were found to be pre hypertensive out of 300. Mean SBP among Tribal was 123.0±16.03 & mean DBP was 79.92±9.86. NNMB Tribal Survey-2008-09 conducted by National Institute of Nutrition, ICMR, Hyderabad found the overall prevalence of hypertension among Tribal adults as 24% (men 25%, women 23%), which are near to our findings.[5] Kokiwar Prashant et al (2012) also found Prevalence of hypertension was 19.04% in rural central India.[9] While S. A. Rizwan et al;(2014) in a study 'Prevalence of Hypertension in Indian Tribes: A Systematic Review and Meta-Analysis of Observational Studies' found The pooled estimate of hypertension prevalence was 16.1%.[10]

Basavanagowdappa et al. Hypertension among Jenu Kuruba Tribe (2013) also found overall prevalence of hypertension was 21.7%.[11]

Recent study by Sachdev et al. (2011) among tribal population of Rajasthan showed 16% to 30% prevalence of hypertension among different tribes.[12]

Regarding Association of hypertension with Age, the Association of Hypertension with age among tribals (Table No.4) was found to be significant. In the age group of 18-29 years, 8 subjects were found to be hypertensive out of total 95 (12.1%). Most of the Hypertensive subjects (27.3%) were found in the age group of 50-59 years. In the age group of 60 years & above 11 out of 21 (52.3%) were found to be hypertensive showing a linear trend of age with hypertension ($\chi 2$ linear trend = 31.03, P<0.001). Manimunda et al. Hypertension among Nicobarese tribe (2011) found increasing trend in the prevalence of hypertension with increasing age.[13] Non-Communicable Disease Risk Factor Survey, 2007-08, Madhya Pradesh found Overall prevalence among rural population was 20% and the pattern was increasing with age (11% in 15-24 to 43% in 55-64).[14]

Basavanagowdappa et al found that Hypertension among JenuKuruba Tribe (2013) observed that a linear trend is observed with increase in age.[12]

Prashanth et al found that as the age increased, the prevalence of hypertension also increased. With the advance in age from 28 to 49 years, the prevalence was higher in males and, afterwards, the females took over.[10]

Haldiya et al (2004) also reported that the prevalence of hypertension was increasing with increase in the age.[15]

Regarding association of hypertension with gender among 127 tribal male subjects 41 males were found to be hypertensive (32.3%). Whereas we found out of 173 females 25 females were hypertensive (14.4%). Basavanagowdappa et al. Hypertension among Jenu Kuruba Tribe (2013) found the prevalence of hypertension was higher (28.2%) among men and (16.5%) among women, respectively.[12]Anshuman et al (2015) found higher prevalence of Hypertension & Pre-hypertension in males in a rural study of hypertension in Madhya Pradesh.[16]

According to Gupta et al (2004), among the rural populations, hypertension prevalence is 24% in men & 17% in women.[17]

NNMB in its Technical Report No: 24, NIN, Indian Council of Medical Research (ICMR) also reported that Alcohol consumption were significantly (p<0.001) associated with hypertension among tribal population in their study in nine states of India, thus supporting our findings.[18]

Todkar SS et al (2009) found a significant association of Alcohol intake & Hypertension among Rural people.[19]

Praveersaxena et al (2012) in an epidemiological study of hypertension in Rural Tehri Garhwal found alcoholism was significantly associated with hypertension.[20] Rest of the Variables didn't show any significance.

CONCLUSION

As found in our study hypertension is emerging as a significant health problem among the Tribal population in this block which is entirely rural (and some areas are relatively inaccessible). So the health services are required to be strengthened to focus more on the changing health needs specifically for hypertension & its associated risk factors.

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