



A STUDY ON THE PATTERN OF BLOOD PRESSURE , MAGNITUDE OF HYPERTENSION & ITS ASSOCIATED RISK FACTORS IN ADULTS RESIDING IN RURAL AREA OF ARANG BLOCK , RAIPUR (C.G) INDIA

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ABSTRACT **Background:** Hypertension is one of the most Important Public Health challenges worldwide. In India, variations in blood pressure among people living in different locations has been observed by independent researchers. Further studies among the rural population may reduce morbidity & mortality patterns, also ample avenues of prevention of such silent killer disease could well be explored.

Methods: A cross sectional study using Multi stage Sampling Method with house to house visits & study was conducted in Arang block of Raipur District during 2nd Jan to 28th Feb 2019. 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 these 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 males. $P < 0.001$. The association of hypertension with alcohol Consumption was significant. $P = 0.0050$.

Conclusions: Hypertension & Pre hypertension is increasing in rural areas. The disorder is mostly silent and needs to be addressed at this incipient stage to prevent its long term effects.

KEYWORDS : Hypertension, blood pressure , rural

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.¹ Hypertension 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

Further studies among the rural 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 rural population.

MATERIALS & METHODS

Ethical Consideration - This study plan has got Ethical clearance from the Institutional Ethical Committee .Informed Written Consent was taken from each participating subjects and in case of any illiterate subjects this consent was read out to him/her.

METHODOLOGY

A cross sectional study was conducted in Arang block of Raipur District of Chhattisgarh during 2nd Jan to 28th Feb 2019 . 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 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.⁴ 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 subjects above 18 years of age who are permanent resident of Arang block

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.⁴

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

RESULTS

In our study, out of total 300 subjects 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 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 (5.0%). Most of the Subjects 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 (Table 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 (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. χ^2 linear trend = 31.03, $P < 0.001$. Association of hypertension with gender (table 4) among study subjects was found to be significant (χ^2 Males vs. Females = 13.57, $P < 0.001$). Among 127 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. $\chi^2 = 7.85$, $P = 0.0050$. The association of hypertension with BMI & Tobacco consumption was not significant in the study subjects (Table 4)

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 was 123.0±16.03 & mean DBP was 79.92±9.86 mm of Hg

Discussion

NNMB Survey-2008-09 conducted by National Institute of Nutrition, ICMR, Hyderabad found the overall prevalence of hypertension among 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.⁶

NNMB in their Third rural survey (2011-12)⁷ found direct correlation between age & hypertension, prevalence of Hypertension was found more in middle age group & elderly both in men & women Anshuman et al (2015) found higher prevalence of Hypertension & Prehypertension in males in a rural study of hypertension in Madhya Pradesh.⁸

Prevalence of Hypertension was found more in adult men than women by NNMB in their third rural survey.⁹

Todkar SS et al (2009) found a significant association of Alcohol intake & Hypertension among Rural people.¹⁰

Praveer saxena et al (2012) in an epidemiological study of hypertension in Rural Tehri Garhwal found alcoholism was significantly associated with hypertension.¹¹ 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 rural population in this block . 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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Declarations

Funding: None

Conflict of interest: None

Ethical approval: Yes

Table No.1 Distribution Of Socio Demographic Variables

S.No.	Socio-Demographic Variables of the subjects	Distribution (n = 300)
1.	Age in years a) 18 – 29 b) 30 – 39 c) 40 – 49 d) 50 – 59 e) ≥ 60	95 (31.6%) 76 (25.3%) 62 (20.6%) 46 (15.3%) 21 (7.0%) Mean Age = 39.07 ±4.25
2.	Gender a) Male b) Female	127 (42.3%) 173 (57.7%)
3.	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%)
4.	Socio-economic class (According to Modified B.G Prasad's Classification) a) Class III b) Class-IV c) Class-V	19 (6.3%) 148 (49.3%) 133 (44.4%)
5.	BMI (Kg/M2) a) ≤ 18.49 b) 18.5-24.99 c) 25.0-29.99 d) ≥ 30	64 (21.3%) 219 (73.0%) 16 (5.3%) 1(0.34%)

Table No. 2

Distribution Regarding Consumption Of Addiction Substances Among Study Subjects

S.No.	Substance of Addiction	Distribution (n= 300)
1	Alcohol	Yes - 98 (29.3%) No - 202 (70.7%)
2	Tobacco Smoking	Yes - 19 (6.3%) No - 281 (93.7%)
3.	Smokeless Tobacco	Yes - 182 (60.7%) No - 118 (39.3%)

Table No.3

Distribution Of Blood Pressure (bp) Levels Among Study Subjects

BP 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 No. 4

Table No. 4 Distribution Of Hypertension Cases

S. No.	Variables	Distribution of Hypertension Cases (n = 66)	Statistical Significance
1.	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%)	χ^2 linear trend = 31.03, $P < 0.001$
2.	Gender a) Male b)Female	41 (62.12%) 25 (37.88%)	χ^2 Males Vs Females = 13.57, $P < 0.001$
3.	Addiction a)Alcohol b)Tobacco (Both Smokeless &Smoking)	Yes - 31 (47%) No - 35 (53%) Yes - 49 (74.24%) No - 17 (25.76%)	$\chi^2 = 7.85$, $df=1$, $P= 0.0050$; $OR=2.208$, 95% CI 1.26-3.86 χ^2 trend = 3.177 , $df=1$, $P= 0.07$; $OR=1.737$, 95% CI 0.9423 -3.203
4.	BMI (Kg/m ³) a) ≤ 18.49 b)18.5-24.99 c) 25.0-29.99 d) ≥ 30	19 (28.8%) 45 (68.2%) 2 (3%) 0	χ^2 trend BMI = 3.573 , $P= 0.058$

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