Original Research Paper

Community Medicine

PREVALENCE OF HYPERTENSION AND ITS SOCIO-DEMOGRAPHIC FACTORS AMONG ADULT POPULATION IN A RURAL COMMUNITY OF KANTI BLOCK, MUZAFFARPUR

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ABSTRACT Hypertension is a major contributor to the cardiovascular morbidity and mortality in industrialized countries. The recent reports suggest that hypertension is rapidly increasing in developing countries like India. Non-communicable diseases (NCDs) are the leading causes of death globally and also the leading cause of adult mortality and morbidity worldwide now days. The NCD like hypertension is emerging as a major health problem in India with increasing prevalence significantly in both urban and rural population. The objectives of the study were to find out the prevalence of hypertension and its association with socio-demographic factors among the study subjects, if any. A community-based cross-sectional study was conducted in rural communities of Kanti block, Muzaffarpur, Bihar from May, 2020 to April, 2021. We studied among 671 individuals, aged 21 years or above of both sexes except pregnant and seriously ill subjects. The data were collected about education, type of family, family history of hypertension, income etc. The overall prevalence of hypertension was 25.7% (male 21.7% and female 29.8%). Prevalence increased with increase in age group. Muslim religion, less education and sedentary life styles were found to be significantly associated with hypertension; while socio-economic status had no association with hypertension.

Summary: The prevalence of hypertension in the rural population was found to be on the higher side compared to previous reports from India. Strong public health measures need to be seriously implemented to combat hypertension and its consequences.

KEYWORDS : Hypertension, Prevalence, Adult, Community, Rural

INTRODUCTION:

Hypertension is a major public health problem due to its high prevalence all around the globe [1-4]. Around 7.5 million deaths or 12.8% of the total of all annual deaths worldwide occur due to high blood pressure [5]. It is predicted to be increased to 1.56 billion adults with hypertension in 2025 [6]. Raised blood pressure is a major risk factor for chronic heart disease, stroke, and coronary heart disease. Elevated BP is positively correlated to the risk of stroke and coronary heart disease. Other than coronary heart disease and stroke, its complications include heart failure, peripheral vascular disease, renal impairment, retinal hemorrhage, and visual impairment [5].

Hypertension (or HTN) or high blood pressure is defined as abnormally high arterial blood pressure. According to the Joint National Committee 7 (JNC7), normal blood pressure is a systolic BP < 120mmHg and diastolic BP < 80mm Hg. Hypertension is defined as systolic BP level of ≥140mmHg and/or diastolic BP level ≥ 90mmHg. The grey area falling between 120–139mmHg systolic BP and 80–89mmHg diastolic BP is defined as "prehypertension" [7,8]. It is a silent killer as very rarely any symptom can be seen in its early stages until a severe medical crisis takes place like heart attack, stroke, or chronic kidney disease [9, 10]. Since people are unaware of excessive blood pressure, it is only through measurements that detection can be done. Although majority of patients with hypertension remain asymptomatic, some people with HTN report headaches, lightheadedness, vertigo, altered vision, or fainting episode [11].

Hypertension is a significant public health problem in urban as well as in rural areas of India. The prevalence of hypertension has increased by 30 times among the urban population over a period of 55 years and about 10 times among the rural population over a period of 36 years. The increasing trend of hypertension is very soon going to be built up as a colossal problem not only in the urban areas of India but also in the rural areas.

There is no robust, appropriate and organized health education programmes either at individual or at community level to overcome the lack of awareness of the basics of prevention and control of hypertension and its risk factors among the general mass. Moreover, there is scarcity of studies related to hypertension in rural areas especially in this part of the country. With this backdrop, the study was undertaken to find out the Prevalence of hypertension and its socio-demographic factors among adult population in a rural community of Kanti block, Muzaffarpur.

MATERIALS AND METHODS:

STUDY AREA:

The cross sectional study was conducted in the Muzaffarpur district, Bihar and the protocol was approved by the Institutional Ethics Committee of Sri Krishna Medical College, Muzaffarpur. A community based, epidemiological study was conducted from May 2020 to April 2021, among adult population aged 21 years or above residing in rural communities of Kanti block of Muzaffarpur, Bihar, which is the rural field practice area.

DATA

Sample Size:

In a recent community based study on hypertension among adults in a rural community of central India, prevalence of hypertension was found to be 19.04% [12]. Now considering this prevalence with 20% relative allowable error sample size becomes 409 after applying the formula: $Z_\alpha^2 \, pq/L^2$; where, Z_α= 1.96 (Standard normal deviate at a desired confidence level at 95%); p= previous prevalence; q= 100–p; L= allowable error. Since multi-stage random sampling technique was followed to select study population, a "design effect" of 1.5 and also an additional 5% increase required to compensate for any non-response among study subjects [13]. So, sample size for the study was calculated to be 665 and finally 671 samples were collected for the study.

Sampling Design:

Two-stage random sampling method was followed for the selection of study subjects. In the first stage, 25% villages were selected randomly out of 56 villages of the study area; i.e., the primary sampling units were villages. In the second stage, from the selected villages required number of adult individual were selected randomly. Therefore, the final sampling units were the subjects aged ≥21 years.

Selection Criteria:

All the inhabitants aged 21 years and more were included, while unwilling individuals, pregnant women and moribund patients were excluded from the study. Pre-designed and pre-tested schedule, mercury sphygmo-manometer and stethoscope. Interview of the study subjects, followed by blood pressure measurement (using JNC 7 guidelines) [8] and review of past records like OPD tickets, doctor's prescription etc.

METHODS:

The study of the subjects was interviewed at their family setting after explaining the academic nature of this research and they were assured

that information collected from them would be kept confidential. At least 3 attempts were made to interview a particular individual if the person could not be accessed the first time or (s) he was suffering from any acute illness on the days of the earlier visits. During the study, individuals with blood pressure level more than equal to 140/90 mm Hg were advised to visit the nearest rural health centers situated at Kanti block, Muzaffarpur for further investigations and treatment.

Approval for the study was taken from the Sri Krishna Medical College Hospital, Muzaffarpur. Informed written/ verbal consent in local language was obtained from every interviewee. Hypertension was defined as systolic blood pressure (SBP) ≥140 mm of Hg and or diastolic blood pressure (DBP) ≥90 mm of Hg. An individual previously diagnosed as hypertensive and presently under treatment was also considered as hypertensive.

RESULTS:
Among 671 participants majority (31.7%) belonged to 21-30 years age group, followed by 21.2% in 30-40 years age group and least (7.9%) were in 60 years and above; 46.9% were male and 52.5% were female. The mean age of the population was 38.3±14.1 years. In this study most of the subjects (93.7%) were Hindu and only 6.3% were from Muslim community; 57.1% study subjects belonged to nuclear family and the remaining 42.9% were from joint family. Among the study subjects, 76.7% were currently married followed by 19% who were never married. Least number of study subjects (4.3%) comprised of widow, widower or separated. 33% had a literacy status up to primary school completion followed by 25.2% middle school completion and 15.2% were illiterate.

As per "Classification of activities based on occupations" of National Institute of Nutrition where occupations have been classified as heavy, moderate and sedentary worker; revealed that 74.7% were sedentary workers and remaining 25.3% moderate worker [14]. While carrying out this study by occupation, 42.4% of study populations were housewife and 15.8% farmers. Majority participants (47%) belonged to Class IV socio-economic category followed by 45.3% in Class V socioeconomic category as per modified B. G. Prasad□s scale 2013[15]. Among the study participants, 172 (25.7%) were found to be hypertensive and the remaining 499 (74.3%) were non-hypertensive. Overall, mean SBP was found to be 125.71±16.09 mm Hg with a range of 98-210.

Table-1 Distribution Of The Hypertensive And Non-hypertensive Study Subjects According To Socio-demographic Characteristics (n=671)

Characteristics		Hypertensive n (%)	Non-Hypertensive n (%)	Total n (%)
Age	<37 years	42 (12.9)	283 (87.1)	325 (100)
	≥37 years	128 (39.3)	198 (60.7)	326 (100)
Gender	Male	67 (21.8)	240 (78.2)	307 (100)
	Female	103 (29.9)	241 (70.1)	344 (100)
Religion	Hindu	153 (24.9)	461 (75.1)	614 (100)
	Muslim	17 (45.9)	20 (54.1)	37 (100)
Caste	SC, ST	70 (33.3)	140 (66.7)	210 (100)
	OBC. General	100 (22.7)	341 (77.3)	441 (100)
Marital status	Unmarried	8 (7.7)	96 (92.3)	104 (100)
	Married & Others	162 (29.6)	385 (70.4)	547 (100)
Education	Primary and Below	99 (29.7)	234 (70.3)	333 (100)
	Above primary	71 (22.3)	247 (77.7)	318 (100)
Occupation	Moderate	33 (20)	132 (80)	165 (100)
	Sedentary	137 (28.2)	349 (71.8)	486 (100)
Types of family	Nuclear	73 (20.7)	280 (79.3)	353 (100)
	Joint	97 (32.6)	201 (67.4)	298 (100)
S-E status	PCI≤833	92 (25.5)	250 (74.5)	332 (100)
	PCI>833	98 (26.7)	251 (73.3)	339 (100)
Total		172 (25.7)	499 (74.3)	671 (100)

mm Hg and mean DBP was 80.35±8.37 mm Hg with a range of 60-110 mm Hg. Among 172 hypertensive subjects 82 (47.9%) were already known hypertensive. The findings showed that majority (47.8%) were pre-hypertensive, followed by 25.7% with normal blood pressure and 10.7% and 2.5% were in hypertension stage I and II respectively.

The systolic and diastolic blood pressure in five different age groups where mean SBP and DBP increased with the increase in age except in the ≥60 years age group, where DBP is low comparison to the previous age group. Correlation coefficient with age was found to be 0.485 for SBP and 0.292 for DBP.

DISCUSSION:
In this cross-sectional study, our aim was to explore the prevalence of hypertension in the rural population of Kanti block of Muzaffarpur, Bihar. In rural India, developmental changes like road communication, electrification and mechanized cultivation in recent years have greatly influenced the lifestyle of the rural people. The prevalence of hypertension (25.7%) observed in this study was higher than some previous findings of others. [16, 17]. This current study finding did not match with others might be due to different study setting in ethnic tribal populations [18]. Our study showed that with the increasing age progressively more subject with hypertension and that was similar findings with some recent studies. In present study, aged populations showed mean SBP and mean DBP increases with the increase in age except in the ≥60 years age group where DBP is low comparison to the previous age group. In addition, a lack of uniform definition of hypertension, and the large variations in the age of the study participants in the included studies can potentially limit the comparability of our findings. In this study we observed that the prevalence rate of hypertension in male was 21.7% and in female was 29.8% respectively which was statistically significant and was similar findings with some recent studies, but didn't match with few other results showed slightly higher prevalence in males than females [19]. There was an association between socio-economic status and hypertension was similar but did not matched with others studied [20]. Hypertension was found more (32.6%) in those study subjects who were from joint family. This current study finding was similar with the studies of Kannan et al where they considered about the number of the family members in a family rather than type of family [21].

CONCLUSIONS:
The prevalence of hypertension in the rural population was found to be on the higher side compared to some previous reports and other studies. It shall be important to follow this population in the future to see the trend of BP in the rural communities of our country. The study also has indirectly pointed out that even though there is existing programme, there is inadequacy from the perspective of public health and that we have not been able to do enough to prevent the problem. So, India needs to seriously implement programmes to address hypertension and its consequences.

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