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Research Article

EFFECT OF CONTEMPORARY LIFESTYLE AND SOCIOECONOMIC STATUS ON HYPERTENSION IN EASTERN U.P., INDIA

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ABSTRACT
Recent studies have indicated an increasing prevalence of hypertension in rural and urban areas of India. A population-based survey was carried out during Jan-Dec 2012 in eastern U.P., Districts Varanasi, Chandouli, Jaunpur, Ghazipur, India etc in rural and non-industrialized villages to determine the prevalence of hypertension and its associated risk factors especially with reference to contemporary lifestyle and socioeconomic status. A total of 1967 individuals in the 30 to 70-year age group were interviewed using a screening form and pre-tested structured questionnaire to find out the lifestyle and socioeconomic status. Blood pressure (BP) readings were recorded with a random zero sphygmomanometer. Analysis showed that advancing age, sedentary lifestyle, low education, stress is the risk factors for hypertension in rural un-industrialized population of eastern U.P, India. On the basis of this study it can be said that rates of hypertension in the rural community under study are similar to those seen in high-income countries and in urban India. With the exception of age, all the risk factors identified were potentially modifiable.
Keywords: Hypertension, Socioeconomic factors, Blood Pressure, Life Style.

INTRODUCTION

India, the world's largest democracy, is a fast growing economy on the world map. This growth has been accompanied by demographic, lifestyle and cultural changes which have a large impact on the health profile of India's citizens and placed a significant strain on the country's healthcare system.[1-3] while such changes may be most obvious in metro cities, they are also likely to impact those living in the rural areas. Over 70 % of India's population lives in rural areas and India has the largest health budget in world, yet access to government healthcare in rural areas is much poor than in urban areas.[4] It is estimated that In India by 2020, CVDs (cardiovascular disease) will be the largest cause of mortality and morbidity in India.[5] Hypertension is a major risk factor for CVDs, including stroke and myocardial infarction, and its burden is increasing disproportionately in developing countries as they undergo demographic transition.[6-9] Using a cut-off of 140 mmHg or greater systolic blood pressure (BP), or 90 mmHg or greater diastolic BP, It was estimated that around two-thirds of those people with hypertension worldwide were living in developing countries (639 million) in 2000, and that this would rise to three-quarters living in developing countries (1.15 billion) by 2025. Hypertension is thought to be less common in rural areas, though data is limited and estimates vary widely depending on the methodology used.[10-13] Previously identified risk factors for hypertension in Indians include higher body mass index (BMI), abdominal obesity, advancing age, higher alcohol consumption, sedentary lifestyle and stress.[11,13] All of these risk factors, together with hypertension itself, have been identified as risk factors for both stroke and myocardial infarction worldwide by the Inter stroke and Inter heart study teams, and in this respect India appears to be no different to other parts of the world.[6,7] As rural India continues to undergo demographic transition, the contribution of such risk factors to hypertension in India is likely to change and studying these changes may give greater insight into how best to allocate resources to reduce the burden of hypertension on India's heath care system specially in a cost effective manner. The primary aim of this study was to identify the prevalence of hypertension in a rural Indian population by means of camp and door-to-door survey. A secondary aim was to identify the risk factors for hypertension.

MATERIAL AND METHOD

The study site was rural villages located around Varanasi, Chandouli, Ghazipur and Jaunpur, India. The study was chosen due to the established health and research center's programme under National Facility for Tribal and Herbal Medicine, IMS, BHU. The village chosen in every district is representative of all the villages within the region. Data was collected between Jan-Dec 2012.

Health Screening Questionnaire

The questionnaire used was based on the National Facility, Institute of Medical Sciences, BHU screening form which is already approved by the BHU-DST ethical committee and DCGI, Govt. of India. It was administered to participants in local languages (Hindi and Bhojpuri) by 10 field research teams. Each data collection team comprised of 2 persons (1 male and 1 female) who were either a JRF or a Master of Science (MSc). Each team was briefed and trained with the SOP developed for field study. Randomly questionnaires were checked by the Statistician. The questionnaire recorded basic demographic information (age, sex, education, income, marital status etc.) for each member of the household. Collecting accurate information on patient age was difficult, since very few people had a birth certificate. Age was calculated from birth year and confirmed using memory prompts, such as historical events, where the year of birth was in doubt. For those aged 18 years and above, information on tobacco use, alcohol intake, diet, history of hypertension, history of diabetes, psychosocial stress and disability were recorded. Briefly, stress was defined as feeling irritable, filled with anxiety, or as having sleeping difficulties as a result of conditions at work (question 1) or at home (question 2). We asked participants to report how often they had felt stress, using the following response options: 0> never, 1> some periods, 2> several periods or 3> permanent stress. An answer of (2 or 3) to the question was taken as evidence of stress.

Blood pressure (BP)

BP was recorded in a sitting position using a CM/L-0196043 Diamond BP monitor. One measurement was taken after five minutes of resting quietly. If this reading did not indicate hypertension then it was accepted, if it did indicate hypertension then a second reading was taken and this reading was reported for the purpose of the study. Hypertension was defined as BP ≥140 mmHg systolic or ≥90 mmHg diastolic BP, or a known hypertensive on medication. This is in accordance with the Joint National Committee (JNC) V criteria[14]. A higher cut-off of BP ≥ 160 mmHg systolic or 100 mmHg diastolic BP was used to identify those with severe hypertension.

Statistical Analysis

The data was analyzed using standard statistical software, SPSS-16.0. Hypertension was dichotomized into present or absent to compare associated variables. Cross tabulation, Chi-square and logistic regression analysis was used to identify independent predictors of hypertension. Significance was defined as P<0.01.

Observation

Within the study site, we identified 1967 people living in those villages. Assessment was carried out on all those aged 30 years and over (n = 1412, 71.7 %). Demographic data for those aged 30 years and over are shown in Table 1. Those aged 30 years and over, consented to participate in this screening programme assessment using the health screening questionnaire, questionnaire for demographic variables and Blood Pressure measurement. The association between lifestyle and hypertension is given in Table 2. In Table 3 and Table 4 we have evaluated the relation between education and socioeconomic status with hypertension. Under Table 5 we find the logistic regression and different odds ratios for the above said variables.

Table 1: Demographic and hypertension data by age band (for those aged 30 years and over) as seen in the study (Cross table: Association between Age and hypertension, chisq=16.9, p<0.01)

	Hypertension		Total
Age Group	**NO**	**Yes**	**.00**
30-40	329	193	522
	63.0 %	37.0 %	100.0 %
41-60	295	275	570
	51.8 %	48.2 %	100.0 %
60+	165	154	319
	51.7 %	48.3 %	100.0 %
Total	789	623	1412

Table 2: Data for lifestyle and hypertension (Cross table: Association between life style and hypertension, chisq=499.7, p<0.01)

	Hypertension		Total
Life-Style	**NO**	**Yes**	**.00**
Non-Sedentary	663	155	818
	81.1 %	18.9 %	100.0 %
Sedentary	126	468	594
	21.2 %	78.8 %	100.0 %
Total	789	623	1412
	55.9 %	44.1 %	100.0 %

Table 3: Cross table: Association between Education and hypertension, chisq=72.8, p<0.01

	Hypertension		
Education Level	**NO**	**YES**	**Total**
High School	260	377	637
	41 %	59 %	100 %
Inter	217	187	404
	54 %	46 %	100 %
UG	209	162	371
	56 %	44 %	100 %
Total	686	726	1412

Table 4: Cross table: Association between Socio-economic status and hypertension, chisq=161.9, p<0.01

	Hypertension		
Socio-economic Status	**NO**	**YES**	**Total**
High	120	211	331
	36 %	64 %	100 %
Middle	235	246	474
	50 %	52 %	101 %
Low	203	396	599
	34 %	66 %	100 %
Total	789	623	1412

Table 5: Risk measurement (odds ratio) for different associated factors with hypertension

Variable	Reference variable	Category	Odds ratio	Sig.
Age	30-40			
		41-60	1.568	0.004
		60+	1.746	0.002
lifestyle	Non-Sedentary			
		Sedentary	14.082	0
Socio-economic	Middle			0
		Lower	0.63	0.045
		Higher	1.562	0.039

RESULT AND DISCUSSION

On the basis of observations we found that Hypertension was present in 623 of the 1412 subjects who had BP recorded. The prevalence of hypertension increased with age as shown in (Table 1). There is a strong association (chisq = 16.9, p < 0.01) between age group and hypertension. We can see that as the age increases hypertension also increases in the population. Hypertension was seen 37 % in age group 30-40, 48.2 % in 41-60 and slight increase in age group 60 and above. The similar results have been found by the other reporters as 44 % of people aged 35 years and over being hypertensive.[14] The association between lifestyle and hypertension is given in (Table 2). It was seen that people with sedentary lifestyle have more prevalence of hypertension than those who are hardworking and only 18.9 % people of non-sedentary group were suffering from hypertension whereas this figure increases to 78.8 % in sedentary lifestyle group. The other study also showed a high prevalence of "sedentary lifestyle" and its associations with age.[15] The association between education and hypertension is given in (Table 3). It was observed that people with higher education are less suffering from the disease as compared to those who are less educated. Less educated people have more prevalence of hypertension (56 % in high-school passed) than those who are higher educated (44 % in graduate). According to Pandit AU *et al*. literacy was a significant independent predictor of blood pressure control, but only minimally explained the relationship between education and blood pressure.[16] The study was also focused on the socioeconomic status of the people of these villages and it was found that there is strong link between the status and hypertension. It was more prone in lower and higher income group than the middle class. The prevalence of hypertension is 64 % in higher and 66 % in lower income group. The other reports are also similar to our results that the rates seen in other low- and middle-income countries, with rates in adults of 29 % in rural, and 27 % in urban Ghana,[17] and 25 % in urban Cameroon[18]. As we found that age, lifestyle, education and socio-economic status are significantly associated with hypertension. Taking all these variables we run the logistic regression and found different odds ratios for the variables. 1) Age: As compared to reference age (30-40 years) there is 1.5 times more risk of having hypertension in age group 41-60 and 1.7 times more risk in age group above 60 years. So we can say that with increasing age, risk of hypertension also increases. 2) Lifestyle: As compare to non sedentary life style, sedentary lifestyle people are having 14 times more risk of having hypertension. 3) Socio-economic status: We found that higher socio-economic group has 1.6 times more risk than middle class. Future work should focus on comparing this data to other populations in India, such as those living in rural settings in other states. Long-term follow-up of this cohort is required and would provide important longitudinal data. In summary, the prevalence of hypertension in our rural study site appears to be similar to rates seen in high-income countries.

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