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Original Article

Prevalence and spectrum of hypertension in a rural area

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Abstract

Aims and Objectives: The objective of the study was to find the prevalence and spectrum of hypertension in a rural area of Varanasi, India.

Materials and methods: This was a cross sectional study carried on 3600 subjects ≥30 years of age and residents of three villages around Varanasi.The period of study was from April 2002 to January 2003.

Results: The overall prevalence of hypertension 13.6%.As much as 25.05% of the total subjects were in the category of High Normal. Among the hypertensives 80.5% had Stage 1 hypertension. With advancing age the prevalence of hypertension increased significantly.

Conclusion: It is alarming to note that 1/4th of the study subjects had blood pressure in the range of High Normal and are a potential risk group. Of the hypertensive, 80% had Stage 1 hypertension which can be prevented and normalised by adopting lifestyle modification.

Key words: hypertension, prevalence, spectrum, rural area.

Hypertension is a major contributor to cardiovascular morbidity and mortality in the world including India and Nepal. It is now firmly established as a risk factor for cardiovascular and cerebro-vascular diseases e.g. coronary artery disease, congestive heart failure, renal failure, stroke, and peripheral vascular diseases[1]. Epidemiological transition with increasing life expectancy and demographic shifts in population age profile combined with change in life style pattern increases the level of cardiovascular risk factors thereby accelerating the epidemic of Coronary Heart Disease (CHD) in the Indian subcontinent[2]. In these countries nearly one-fourth of the total world population is in the process of nutritional transformation from poverty to affluence, due to rapid economical development[3]. Essential hypertension, a grossly underestimated condition in rural communities is likely to be an important public health problem due to changing socio-cultural context and urban influence. In fact, the life pattern of people dwelling in proximity to cities is atypical in the sense that it is neither rural nor urban.

Objective

With this background this study was undertaken in three selected villages of Chiraigaon Community Development Block of Varanasi district. This study was primarily directed towards estimating the magnitude, pattern and spectrum of essential hypertension.

Materials and methods

This study was conducted by adopting a community based cross sectional research design. Sample size for estimating the magnitude of systemic hypertension was fixed by taking a prevalence of hypertension at 10% and permissible level of error at 10%. The sample size was calculated using the formula

$$n = \frac{4PQ}{L}$$

n = Sample size = 3600

P = Prevalence of hypertension among persons more than 30 yrs of age

Q = 100-P

L = Permissible level of error which is developed as 10%

Three villages were selected by simple random sampling. In each selected village a house to house survey was conducted and subjects ≥30 years of age of both sexes were enrolled into the study. In the event of non availability of the subjects during the first visit, two additional visits were made. In all 3569 (92.17%) participated in the study.

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Blood Pressure of each study subject was classified and graded adopting Joint National Committee VI Classification USA[4]. When systolic and diastolic blood pressure fell in different categories, the higher category was used to classify the individual's blood pressure.

Results

Overall prevalence of systemic hypertension in adults (≥30 yrs of age) in the study area was 13.06% (11.95 - 14.17%). Prevalence of hypertension was least (7.32%) in the age group of 30 – 39 years and maximum in subjects ≥60 years of age. With advancing age the magnitude of hypertension increased.

As much as 61.89% and 25.05% subjects were in the category of normal and high normal respectively. Of the 466 hypertensives, 376 (80.69%) had Stage 1 hypertension.

Table 1: Age and sex wise prevalence of Hypertension

Age Group (Years)	Male			Female			Total No. Examined	Hypertensives	
	No. Examined	Hypertensives		No. Examined	Hypertensives			No.	% (CI)
		No.	%		No	%			
30 – 39	667	53	7.95	644	43	6.68	1311	96	7.32(5.91-8.73)
40 – 49	500	58	11.60	458	55	12.01	958	113	11.80(9.76-13.84)
50 – 59	325	56	17.23	301	57	18.93	626	113	18.5(15.04-21.06)
≥ 60	332	73	21.99	342	71	20.76	674	144	21.36(18.27-24.45)
Total	**1824**	**240**	**13.16**	**1745**	**226**	**12.95**	3569	466	13.6(11.95-14.17)
Test of Significance	X^2=44.26;df=3;p<0.001;			X^2=52.03;df=3;p<0.001				X^2=39.38;df=3;p<0.001	

Male verses Female Z = 0.18; p>0.05

Table 2: Distribution of study subjects according to their blood pressure category

Spectrum	Male		Female		Total	
	No	%	No.	%	No.	%
Normal	1125	61.68	1084	62.12	2209	61.89
High Normal	459	25.16	435	24.93	894	25.05
Stage 1 Hypertension	200	10.97	176	10.09	376	10.54
Stage 2 Hypertension	35	1.92	41	2.35	76	2.13
Stage 3 Hypertension	5	0.27	9	0.51	14	0.39
	1824	100.00	1745	100.00	3569	100.00

X^2 = 2.84; df = 4; p>0.05

Discussion

Although hypertension was considered primarily an urban phenomenon[5, 6, 7, 8, 9], a number of studies conducted in rural areas have revealed that it is a problem in rural areas as well[10, 7, 11, 12, 13, 14]. But in all these studies the cut off age was different. The present study is in agreement with the cut off age limit of that of Goel 1994[15]. The prevalence of hypertension was higher in the present study than that reported in the above mentioned studies. The higher prevalence of hypertension in this study can be probably attributed to the fact that

1. The study area is in proximity to the city of Varanasi,
2. There may be some demographic changes in the population age profile which may be again due to increase in life expectancy and
3. There may be life style related changes due to urban influence coupled with improved socioeconomic status.

There is no significant sex wise difference in the prevalence of hypertension which agrees with other studies[15, 13].

There is significant increase in the prevalence of hypertension with increase in age which is supported by the study of Gupta et al 1996[8].

Conclusion

It is alarming to note that one fourth of the study subjects had blood pressure in the range of High Normal category. Although they are free from hypertension they are at potential risk of the disease. Majority (80%) of the hypertensives were categorised as Stage 1 which is still reversible. Considering the fact that hypertension is an important problem in rural areas, subjects ≥30 years of age should undergo periodic health and blood pressure check up in addition to adopting life-style modification. Stress management techniques and life style modification should be advocated and taught to the subjects belonging to potential risk category as well as Stage 1 category. As the prevalence of hypertension is increasing, population based strategy and high risk strategy should be directed to the population at large because a small reduction in the average blood pressure of a population would produce a large reduction in the incidence of cardiovascular complications such as stroke and CHD[16].

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