

A Study on the Prevalence of Hypertension and Isolated Hypertension in Rural South India-Bhuvanagiri

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Original Research Article

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Article History

Received: 12.10.2018

Accepted: 22.10.2018

Published: 30.10.2018

DOI:

10.36347/sjams.2018.v06i10.066



Abstract: “You protect it, you promote it, and you extend it” these are in fact the basic principles of preventive medicine. As per WHO report for 1991, more than 69 million people worldwide have been found to have high blood pressure. In USA alone, as per 1991 WHO estimate, it affects about 50 million people, costing 29 million working days and 2 billion dollars per year. Of these 31.6% are unaware of their high blood pressure. In rural population also there is a steady increase in WHO defined hypertension. Studies carried out in different methodologies have revealed prevalence rates ranging from 3% to 15.2% among adult population and as shown by studies among subjects more than 60 years of age it has gone up from 4% to 19.2%. So the present study was aimed to find out prevalence of hypertension in rural population above 40 years and to know the prevalence of isolated systolic and diastolic blood pressure. In this study it is clear that as age increases, the prevalence of hypertension also increases. There is a steep increase in the age group 50-59 years as compared to 40-49 year (to 41% from 19%). Almost half of the persons above 70 years were hypertensive. Out of 1127 respondents, 48 were isolated hypertensive, 65 were isolated diastolic hypertensive and 91 were borderline isolated systolic hypertensive.

Keywords: hypertension, prevalence, isolated hypertension, isolated systolic hypertension, isolated diastolic hypertension, rural India.

INTRODUCTION

“You protect it, you promote it, and you extend it” these are in fact the basic principles of preventive medicine. From the worldwide population perspective, the problem of excessive blood pressure level for optimal cardiovascular health is immense and outgrowing. Higher blood pressure or hypertension defined by WHO as systolic pressure equal to or greater than 160 mm Hg and or diastolic pressure equal to or greater than 95 mm Hg [1] is an important worldwide health disorder.

As per WHO report for 1991, more than 69 million people worldwide have been found to have high blood pressure [2]. In USA alone, as per 1991 WHO estimate, it affects about 50 million people, costing 29 million working days and 2 billion dollars per year. Of these 31.6% are unaware of their high blood pressure [3].

In industrialized countries up to 25% adults have diastolic blood pressure above 95 mm Hg and in developing countries the prevalence of high blood pressure ranged from 10% to 20% among adults [4].

In India, hypertension is emerging as a major public health problem and has been reported to be second (after RHD) most common cardiac problem encountered in clinical practice [5].

Epidemiological studies carried out in both urban and rural populations of India indicate that problem of hypertension is on the increase, on comparison of mean levels of blood pressure from 1942 to 1995, it has been found that in urban men aged 40-49 years there is significant increase in systolic blood pressure [4].

In rural population also there is a steady increase in WHO defined hypertension. Studies carried out in different methodologies have revealed prevalence rates ranging from 3% to 15.2% among adult population and as shown by studies among subjects more than 60 years of age it has gone up from 4% to 19.2%.

Several decades of epidemiological research have established that blood pressure elevation is a common and powerful contributor to the entire major

cardiovascular disease including coronary heart disease, stroke, peripheral artery disease, renal disease and heart failure.

Hypertension not only contributes for morbidity but has been shown to be associated with high mortality. It is observed that patients with high blood pressure tend to die prematurely [6].

Studies carried out in south India have reported higher prevalence of hypertension in general population [4]. Occurrences of hypertension a decade earlier in Indian population complicate the picture. So the present study is aimed to find out prevalence of hypertension in rural population above 40 years and to know the prevalence of isolated systolic and diastolic blood pressure.

MATERIALS AND METHODS

This was a cross sectional study covering rural population above 40 years done for a period of 7 months from June 2001 to December 2001, in Bhuvanagiri, Cuddalore district, Tamil Nadu. The study was carried out in a sub centre of Bhuvanagiri primary health centre. The total population of the sub centre was 5832 out of which 1127 were above 40 years of age.

Three visits were made to cover the absentees. In spite of the three visits investigator could not contact 30% of the population, due to various seasons.

- Non-cooperation
- Locked houses
- Houses are unoccupied
- Adults went for jobs

The tools used in the study included a mercury sphygmomanometer, stethoscope, measuring tape and weighing machine. A semi-structured questionnaire containing details like age, sex, anthropometry (height, weight) was used. Blood pressure was recorded using a mercury sphygmomanometer and stethoscope. The subject was asked to sit comfortably and quietly for 5 minutes. The arm relaxed and the forearm was comfortably supported with cubital fossa at heart level. The standard cuff (12.5cm) was applied evenly to the exposed right upper arm. The cuff was first inflated and stethoscope was placed over the right brachial artery in the cubital fossa. The point at which the first Korotkoff's sound was heard was taken as SBP, and the point at which the sound disappeared was taken as the DBP. The respondents having systolic blood pressure of equal to or more than 160 mm Hg and diastolic blood pressure of equal to or more than 95 mm Hg were categorized as hypertensive. Subjects already who were known hypertensive was also included in the study for calculating prevalence of hypertension, even if the blood pressure record was within normal range. Respondents having SBP \geq 160 mm Hg, DBP \leq 90 mm Hg were considered as isolated hypertensive. Respondents having SBP < 160 mm Hg, DBP \geq 90 mm Hg were considered as isolated hypertensive. Respondents having SBP in the range of 140-159 mm Hg and DBP < 90 mm Hg were considered as borderline isolated systolic hypertensive.

RESULTS

This table 1 shows there were 902 illiterates, 12 were diploma holders, 53 were degree holders and 2 were professionals.

Table-1:

Education status	Number	Percentage
Illiterates	902	80
Primary school	40	3.5
Secondary school	118	10.5
Diploma	12	1.1
Degree	53	4.7
Professional	2	0.2
Total	1127	100

N=1127

Table-2

Age	Male			Female			Total		
	Number	HTN	%	Number	HTN	%	Number	HTN	%
40-49	193	26	13.5	233	56	24	426	82	19.2
50-59	126	47	37.3	168	72	42.8	294	119	40.5
60-60	123	45	36.6	138	62	44.9	261	107	41
\geq 70	81	34	41.9	65	37	56.9	146	71	48.6
TOTAL	523	152	29	604	227	37.5	1127	379	33.6

N=1127

Table: 2 shows that between 40-49 age group 82(19.2%) were hypertensive, 50-59 age groups 119(40.5%) were hypertensive. In 60-69 age group 107

(41%) were hypertensive. In \geq 70 age group 71(48.6%) were hypertensive. CHI SQUARE was done and the value was 55.04, the difference was 2 and obtained a

value of $P < 0.01$. This shows that as age increases hypertension also increases.

Table: 3 show out of 280 males 17 (6.1%) were isolated systolic hypertensive. In 264 females 31 (11.7%) were isolated systolic hypertensive.

Table: 4 shows among 280 males, 38 were isolated diastolic hypertensive. Out of 264 females, 27 were isolated diastolic hypertensive.

Table: 5 shows those 36 out of 280 males and 55 out of 264 females were borderline isolated systolic hypertensive.

Table-3

Sex	Isolated systolic hypertension	Total no: of persons	%
M	17	280	6.1
F	31	264	11.7
	48	544	17.8

Table-4

Sex	Isolated diastolic hypertension	Total no: of persons	%
M	38	280	13.6
F	27	264	10.2
	65	544	23.8

Table-5

Sex	Borderline isolated systolic hypertension	Normotensive	%
M	36	20	12.8
F	55	264	20.8
	91	544	16.7

DISCUSSION

The present study was conducted among rural population of 4116 in the sub centre Kezh Bhuvanagiri, Chidambaram taluk, Cuddalore district, Tamil Nadu. Out of which 1127 were above the age of 40 years. The proportion of males and females were 48.9% and 51.1% respectively. This is one of the epidemiological studies of hypertension using standardized methods in rural population. In present study up to 71% of the eligible subjects living in this area participated. This rural society, like most societies in developing countries, is undergoing a transition regarding pattern of diseases from traditionally infectious to chronic diseases along with the adoption of westernized life styles. It follows therefore that economic development and the consequent life style changes form the major reasons for the emergence of hypertension in the rural societies of developing countries. The prevalence of hypertension varies considerably depending on the cutoff point chosen and the methods of blood pressure measurement. The prevalence of hypertension is influenced by population characteristics such as age, race, gender and socioeconomic status.

The prevalence of hypertension in this study among the rural population was 33.6%. i.e. every 3rd person above 40 years is hypertensive. This prevalence rate is very high as compared to those in the studies carried in different rural area by Kutty [8] 17%, Chhabra [12] 16.89%-23.7% and Malhotra [13] 4.5%. This may be due to different age group selected and other operational definition factors. More over the year of the study has to be taken into consideration. But the

result of a study undertaken in 1997 by Marques-Vidal. P [7] *et al.* shows a similar prevalence rate (19-41%), like this study. From table: 2 it can be noted that in the present study more no: of females $n=227$ (37.5%) were hypertensive as compared to males $n=152$ (29%). The similar situation was observed in the study carried out by Mansour [14] and Malhotra [13] in Saudi and North India respectively. Whereas in other studies carried out by Gupta [9], Chaka [10] and Marques [7] the prevalence of hypertension was more in males than females.

The excess of hypertension among women in comparison to men, with the most affected age group being 50-59 years is in general accordance with previous studies. Almost 70% of hypertensive patients in the rural area were not diagnosed before the study. The high percentage of subjects with borderline hypertension in rural population is an indication of the possibility of a sharp rise in the prevalence of the disease. Out of 1127 subjects, 48 were isolated hypertensive, 65 were isolated diastolic hypertensive and 91 were borderline isolated systolic hypertensive. In this study from table: 2, it is clear that as age increases, the prevalence of hypertension also increases. There is a steep increase in the age group 50-59 years as compared to 40-49 years (to 41% from 19%). Almost half of the persons above 70 years were hypertensive. Studies conducted by Jen Mbanya [11], Majnour [14], Humerfelt [15] and WHO [16] have established the relation between age and prevalence of hypertension, they all concluded that as age increases the prevalence also increases more so in the over 40 years of age

group. The result of this study is also in agreement with the previous studies.

CONCLUSION

This study confirms that hypertension is emerging as an important public health problem among those who are 40 years and above. The increasing intrusion of physical inactivity leading to obesity along with increased sodium intake and stress levels among rural population has increased the prevalence of hypertension.

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