



Prevalence of Hypertension among 20-40 years in rural population Veerapandi

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Abstract

Background: Hypertension is the commonest cardiovascular disorder and a major risk factor for other cardiovascular disorders, stroke and myocardial infarction and its complications are increasing disproportionately in developing countries as they undergo demographic transition. An epidemiological shift in the prevalence of hypertension in developing countries as compared to developed countries has been observed.

Objectives: 1) To find out the prevalence of hypertension among the age group of 20 – 40 years, in rural population, veerapandi, Theni dt. 2) To find out the association between hypertension and selected risk factors (age, sex, exercise, obesity)

Methodology: A community based cross sectional study was done from January 2017 – December 2017 in rural Population of veerapandi, 600 participants aged 20-40 years were enrolled into the study. Each study subject was interviewed and examined for raised blood pressure, data on risk factors including exercise, obesity were also collected. Data were analysed by using SPSS version 20.0.

Results: The overall prevalence of hypertension was 20.8 %. 6% were pre hypertensive. Out of the study participants, 55.2% were females and 44.8% were males 22.3% were obese and 36.7% were doing exercise. The selected risk factors like physical activity and obesity were found to be significantly associated with hypertension.

Conclusion: Among the risk factors of hypertension, lack of exercise and obesity were found to be more associated with hypertension in this group. Therefore health intervention measures are warranted emphasizing on modifiable risk factors such as exercise and obesity to prevent hypertension in younger population.

Keywords: cross-sectional study, hypertension, prevalence, risk factors.

Introduction

Hypertension is the commonest cardiovascular disorder and one of the major risk factors for cardiovascular mortality which accounts for 20-50% of all deaths.¹ Globally, the overall prevalence of hypertension or raised blood pressure in adults aged 25 and above was about 40% in 2008.² It affects nearly 26% of the

population worldwide.³ Hypertension exhibits an ice-berg phenomenon.¹ Worldwide raised blood pressure is estimated to cause 7.5 million deaths and about 12.8% of the total of all annual deaths. It accounts for 3.7% of total DALYs.² Prevalence rates of hypertension in urban Indian population to be 29-45% in men and 25-38% in women.⁴

A study by Amrinder Singh et al in 2014, reported the prevalence of 10.7% and 19.8% in the age group of 20-29 years and 30-39 years respectively. A meta-analysis of prevalence studies on hypertension in India from January 2000 to July 2012 revealed high prevalence of hypertension in urban (40.8%) as well as rural population (17.9%).² It is estimated that by 2020, Cardiovascular diseases will be largest cause of mortality and morbidity in India.⁴ Hypertension is a major risk factor for cardiovascular disorders, stroke and myocardial infarction and its complications are increasing disproportionately in developing countries as they undergo demographic transition.⁴ The risk factor for hypertension are basically of two types – non-modifiable (age, sex, genetic factors, ethnicity) and modifiable (obesity, salt intake, saturated fat, dietary fibre, alcohol, physical activity).¹

An epidemiological shift in the prevalence of hypertension in developing countries as compared to developed countries has been observed.⁵ This study was done to find out the prevalence of hypertension among 20-40 years age group in urban population, Chidambaram and the association between hypertension and selected risk factors like age, sex, physical activity and obesity.

Methodology

This community based cross sectional study was carried out among the age group of 20 – 40 years in rural population, veerapandi, Theni dt between January 2017 to December 2017. Before the actual study, a pilot study was conducted between January 2017 to March 2017, and the prevalence was found to be 14%. Relative precision as 20% the sample size was calculated using the following formula

$$n = Z^2 * p (1-p) / (\text{£}p)^2$$

The sample size obtained was 589. However 600 subjects between 20-40 years has been selected for the study.

Out of the wards in rural veerapandi, one ward() was selected randomly. Within the ward 5

streets namely the street, st, st, st, st., were covered under the study by house to house visit. The persons in each house, who were in the age group of 20-40 years and had given consent were taken as study participants. In the study, persons who were unavailable even after 2 visits and those out of town were excluded. The basic demographic details and data on smoking, alcohol consumption and exercise were collected using a proforma. Their blood pressure and anthropometry were recorded using the following methods.

Blood Pressure was recorded by auscultatory method. Every individual was placed in a comfortable seating position with back supported well and uncrossed legs. The arm was supported at the level of right atrium i.e., midpoint of sternum. After the palpation of brachial artery in the anticubital fossa the chest piece of stethoscope was placed on. The cuff was placed in such a manner that the lower end was 2 to 3 cm above anticubital fossa to allow room for placement of chest piece. The cuff was inflated to 20 – 30 mm of Hg above the pressure at which the radial pulse disappeared to palpation. The cuff was gradually deflated at a constant rate of 2 – 3 mm of Hg per second. Systolic blood pressure was noted as the reading at which the first korotkoff sound heard and the diastolic blood pressure was noted at the point at which the sound disappeared. As per Joint National Committee (JNC) VII criteria, the subjects having systolic blood pressure = 140 mmHg or <160 mmHg and / or diastolic blood pressure = 90 mmHg or <100 mmHg were categorized as of mild grade hypertension. Those having systolic blood pressure = 160 mmHg and 180 mmHg and / or diastolic blood pressure = 100 mmHg but <110 mmHg were categorized as of moderate grade of hypertension and those having systolic blood pressure \geq 180 mmHg and diastolic blood pressure \geq 110 mmHg were categorized as of severe grade of hypertension.⁶

Height was measured without shoes, to the nearest 0.5 cm with participant standing erect against the wall with heels together and touching the wall, and head held in upright position. Weight was

measured with minimum cloths and no footwear on a standardized weighing machine marked from 0 to 130 kg and was recorded to the nearest 0.5 kg. Body Mass Index (BMI) was calculated using the formula $BMI = \text{Weight (kg)} / \text{Height}^2 \text{ (m)}$. Subjects were classified according to BMI ≤ 25 as normal >30 obese. The same inch tape and Bathroom weighing machine was used by a single person throughout the study.

Physical activity is defined as any bodily movement produced by contraction of skeletal muscles that increases energy expenditure above resting levels and comprises routine daily tasks such as commuting, occupational tasks or household activities as well as purposeful health enhancing movements⁷. Taking routine sleep as 8 hours, the remaining 16 hours taken and with the help of a questionnaire the duration of no, mild to moderate and vigorous physical activity were obtained from the study participants.

Results

Out of the 600 study participants, most of them (38.2%) belong to the age group of 35-40 years followed by 30-34 years (22.2%) and 25-29 years (21.8%). 55.2% of the study participants were females and 44.8% were males (Table: 1).

The prevalence of hypertension among 20-40 years age group was found to be 20.8% (Figure:1). Among hypertensives, majority of the study participants 64.8% (n=81) were in Stage 1 (Table:2). 22.3% of the study participants were obese and 36.8% (n=221) were not doing exercise (Table 3).

Obesity was found to be significantly associated with hypertension. When compared to non-obese individuals, obese individuals have 2 times risk of getting hypertension. The study participants who were doing vigorous physical activity for 2 or more hours were having 50% less risk of getting hypertension. (table 4).

Table no: 1 Age and sex wise distribution of the study participants

Age	Male		Female		Total	
	N	%	N	%	N	%
20-24	51	19	56	16.9	107	17.8
25-29	53	19.7	78	23.6	131	21.8
30-34	62	23	71	21.5	133	22.2
35-40	103	38.3	126	38.1	229	38.2
Total	269	44.8	331	55.2	600	100

Majority of study population are in the age group of 35-40 yrs followed by 30-34 yrs and 25 – 29 yrs.

Figure: 1 Percentage of distribution of hypertensives and non hypertensives

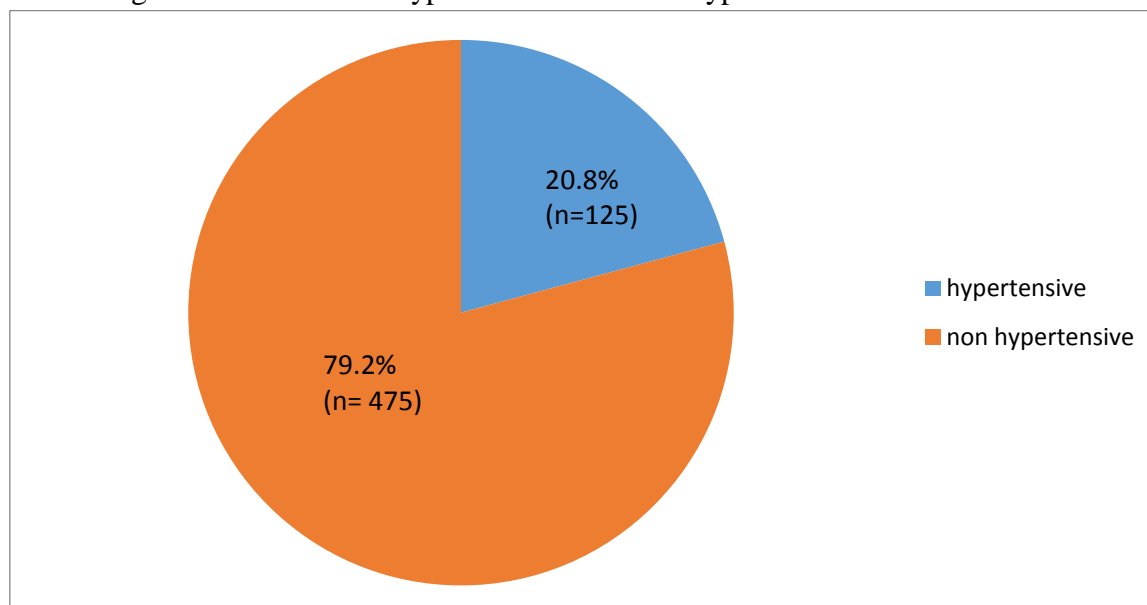


Table 2 Distribution of hypertension as per JNC VII criteria

	Male		Female		Total	
	N	%	N	%	N	%
Stage 1	43	53.1	38	46.9	81	64.8
Stage 2	17	41.5	24	58.5	41	32.8
Stage 3	2	66.7	1	33.3	3	2.4
Total	62	49.6	63	50.4	125	100

Among the hypertensives, majority of the study participants were in Stage 1.

Table 3 Distribution of risk factors among study participants

Risk factor		Male		Female		Total	
		N	%	N	%	N	%
Sex		269	44.8	331	55.2	600	100
Obesity	Yes	78	58.2	56	41.8	134	22.3
	No	187	40.1	279	59.9	466	77.7
Vigorous Physical activity	>=2	86	18.5	378	81.5	464	77.3
	<2	39	28.7	97	71.3	136	22.7

Table: 4 Relationship of risk factors with hypertension

Risk factor		Hypertensive		Non-hypertensive		X ²	P value	OR	CI
		N	%	N	%				
Sex	M	62	23	207	77	1.5	0.22	1.3	0.859-1.891
	F	63	19	268	81				
Obesity	Yes	78	58.2	56	41.8	13.7	<0.05	2.07	0.456-0.865
	No	187	40.1	279	59.9				
Vigorous Physical activity	>=2	86	18.5	378	81.5	6.5	0.01	0.56	0.365-0.878
	<2	39	28.7	97	71.3				

Discussion

Prevalence of hypertension

The prevalence for our study between the age group 20-40 years was 20.8%, which was similar to that of a study done by Q Wei et al in 2015 in China which found a prevalence of 19.3% among the age group of 18-44 years⁸. Another study by Sanjeet Panesar et al in 2013 in Delhi stated that the prevalence of hypertension in the age group of 20 – 29 and 30 – 39 years was 5.7% and 19.3% respectively⁹. Similar study from Senegal by Soulemane Pessinaba et al in 2013 reported a prevalence of 23% among the age group 25-34 years in Sub-Saharan Africa¹⁰. Manimunda SP et al 2011 stated that the prevalence of hypertension among age groups of more than 20 years to be 20.7% in Andaman and Nicobar Islands¹¹.

Age and hypertension

Our finding suggested that the risk of hypertension increases significantly with age which was similar to a study by Basu and Millet in 2013 in which stated that the risk of hypertension increases significantly with age with

odds ratio of 4.6 with confidence interval 3.0 – 7.1¹². Similar results were found in study done by Soulemane Pessinaba et al in 2013 which showed that the hypertension was significantly associated with age (p value =0.001) in Senegal¹⁰.

Sex and hypertension

Our study finding states that male and female are equally prone to hypertension. A meta-analysis study SAARC 2014¹³ and NNMB rural report 2006 stated that the prevalence of hypertension in male is more than that of females¹⁴. In contrast, Studies by Kusuma YS et al 2004¹⁵ and Tiwari et al 2008 reported an increased prevalence among females than that in males¹⁴. NNMB tribal report 2009 in Tamilnadu stated that the prevalence of hypertension is almost equal in both males and females aged more than 20 years, which was 18.4% and 18.2% respectively¹⁴.

Obesity and hypertension

In our study obese persons were 5.7 times at higher risk of getting hypertension than a non-obese person. This is similar to Basu and Millet study where obesity was significantly correlated

with hypertension with odds ratio of 3.7 and confidence interval of 2.1-6.8¹². Another study from Kabul, Afghanistan in 2014 done by Khwaja Mir Islam Saeed et al stated that the obese persons were 2.08 times greater risk of hypertension than non-obese person with p value <0.001; confidence interval 1.50- 2.89¹⁶. Similar study by Soulemane Pessinaba et al in 2013 in Senegal revealed that obesity was significantly associated with hypertension with p value <0.001¹⁰.

Physical activity and hypertension

In our study, the study participants who were doing vigorous physical activity or 2 hours or more were having 50% less risk of getting hypertension as compared to those who do not do exercises. However this difference is not statistically significant. Other studies done by David R. Basette Jr in 2002 in US stated that the hypertension prevalence was significantly less in most active group compared with their sedentary peer with OR = 0.73; confidence interval: 0.59 to 0.9¹⁷. A study done by S.S. Reddy et al in 2005 in adults aged 20 to 60 years revealed that significantly higher proportion of hypertension (15.8%) was associated with lack of physical activity with OR= 2.4 (Coinfidence Interval = 2.0 – 2.8)¹⁸. A study done by Soulemane Pessinaba et al in 2013 in Senegal revealed that physical inactivity is significantly associated with hypertension with p value <0.001¹⁰.

Conclusion

The present study found that the prevalence of 20.8% hypertension among 20-40 years age group. Among the risk factors of hypertension, lack of exercise and obesity were found to be more associated with hypertension in this group. Therefore health intervention measures are warranted emphasizing on modifiable risk factors such as exercise and obesity to prevent hypertension in younger population.

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