ORIGINAL RESEARCH PAPER

Volume-7 | Issue-8 | August-2018 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

PREVALENCE AND FACTORS ASSOCIATED WITH HYPERTENSION IN A RURAL AREA OF CENTRAL KERALA, SOUTH INDIA : A CROSS SECTIONAL STUDY.

Community Medicine

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ABSTRACT

Background: With changes in life styles occurring, non-communicable diseases are on the rise. Hypertension has now evolved as a leading cause of mortality and morbidity because of complications associated with it. Objective: To find out the prevalence and factors associated with hypertension in adults aged over 18 years in a rural area of Peruvamba panchayath in Palakkad district in Kerala.

Methods: A population based cross sectional study was conducted among 145 adults over 18 years with semi-structured questionnaire and measurement of blood pressure using mercury Sphygmomanometre. The data were analysed using SPSS 17 and results were expressed as prevalence measured as proportion and association tested using chi-square.

Results and conclusion : Prevalence of hypertension in the present study is 58.6% . 47% of the hypertensives identified were newly diagnosed cases. Of the previously diagnosed cases only 64.4% were taking medication and only 10.4% were under control. Of the various factors tested for association, hypertension was found to be significantly associated with age, socioeconomic status, co existence of diabetes mellitus and hyperlipidemia.

KEYWORDS

Hypertension, Pre- Hypertension, Risk Factors, Screening .

Introduction

As the world is witnessing epidemiologic transition, the developing countries are facing a double burden of diseases with an increase in non-communicable diseases. Non communicable diseases like cardiovascular diseases, diabetes mellitus, and cancers are now becoming leading causes of mortality when the death tolls due to their complications are on the rise. Hypertension, which is a major global public health issue is the most important risk factor identified for developing coronary heart disease.

Prevalence of hypertension is increasing due to increasing longevity and prevalence of contributing factors such as physical inactivity and unhealthy dieatary habits. The accelerating epidemic of hypertension in India was estimated by studies done at various places across the country. According to a community based survey carried out in eight states in India (including Kerala) under state based Integrated Disease Surveillance Project, prevalence of hypertension was varying from 17% to 21% with marginal rural–urban difference [1].

The current study is aimed at finding out the prevalence of hypertension among adult population in a rural area of central Kerala, in South India with its association to major identifiable risk factors.

Methods

The current study was conducted in Peruvamba Panchayat of Palakkad district in Kerala state ,which is the field practice area under the Depeartment of Community Medicine, Goverment Medical College, Palakkad. Two wards of the Panchayath were selected by simple random method from a total of 14 wards. Adults of age > 18 years who were permanent residents of the Panchayat and who gave informed consent were included in the study. The sample size estimated was 135, using the formula for a cross sectional study, considering the prevalence of hypertension in rural area as 42% with 95% confidence limit and the power of the study being 80% [2] .Considering 10% non respondent rate the final sample size was fixed to be 145 . House to house visit was done and if the house had more than one adult above 18 years all were selected. Only single visit was done and locked houses were excluded. The study was completed in one month period starting from first of July 2016.

After selecting the study participants, informed consent was taken in local language. Data was collected using interview technique by semi structured questionnaire and blood pressure was measured using mercury sphygmo manometers. Data were analysed using SPSS 17 after coding and entering into Microsoft excel.

Operational definitions

Prehypertension :

Newly diagnosed cases of Systolic Blood Pressure between 120-139mm Hg and/or Diastolic Blood Pressure between 80-89 mm Hg.

Hypertension :

Newly diagnosed cases of Systolic Blood Pressure equal to or above 140mm Hg and/or Diastolic Blood Pressure equal to or above 90 mm Hg or Previously diagnosed cases of hypertension with or without blood pressure under control (<120/80 mm of Hg).

Results

Mean age of the study participants was 51 +16.9 years. Majority of the participants belonged to age 31-60 years (52.8%). 60% of them were females . Most of them had education of upper primary schooling . Home makers constituted 38.9% of the study population. Majority belonged to APL (76%). 93% of the participants were belonging to Hindu religion. Distribution of sociodemographic characteristics is given in Table no.1.

Table.1 Distribution of study participant according to sociodemo graphic variables.

Sociodemographic variables	*Number(%)*
Age groups	
18-30	21 (14.58%)
30-60	75 (52.08%)
>60	48 (33.33%)
Gender distribution	
Males	58 (40.00%)
Females	87 (60.00%)
Socio-Economic Status	
APL	109 (76.76%)
BPL	33 (23.23%)

Educational Status	
High School and above	83(57.24%)
Middle	32(22.06%)
Primary	18(12.41%)
lliterate	12(8.2%)
Occupational category	
Profesional	9(6.3%)
Skilled Worker	28(19.40%)
Semiskilled	13(9%)
Unskilled	18(12.5%)
Home Maker	56(38.90%)
Unemployed	20(13.9%)
Religion	
Hindu	135(93.10%)
Muslim	9(6.2%)
Christian	1(0.70)%

Among the total 145 study population, 33 (22.8%) were diagnosed of diabetes and 18(12.4%) had hyperlipidemia. 7 (5%) gave history of coronary heart disease.The distribution of study participants according to presence other systemic diseases is given in Table.2

Table2. Distribution of other systemicdiseases in th study participants

Systemic disease	*Number (%)*
Diabetes Mellitus	33 (22.8%)
Hyperlipidemia	18 (12.4%)
Coronary heart disease	7 (5%)
Renal disease	4 (2.8%)
Stroke	2 (1.4%)

In the present study , 85 individuals were found to be hypertensives out of 145, thus making the prevalence of hypertension 58.6%. Of the total 85 persons identified as hypertensives 40 were newly diagnosed cases (47%). Of the remaining 45 previously diagnosed cases of hypertension ,29 (64.44%) were taking medications and 3 subjects (10.4%) had their blood pressure under control at time of measurement. 9.4% of the participants were pre-hypertensives. The distribution of study participants according to their blood pressure is given in Fig.1.

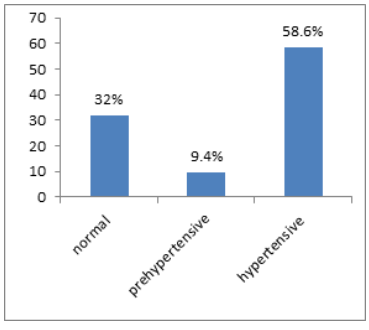

Fig.1 Distribution of participants according to blood pressure

Hypertension was found to be significantly associated with age, socioeconomic status, co existence of diabetes mellitus and hyperlipidemia. Prevalence of hypertension was found to be significantly high in higher age groups (30-60years OR=6.3, p=0.002, and >60 years OR=11, p=0.001) and BPL families (OR=2.3,p=0.04) . It is more prevalent among those who had hyperlipidemia and diabetes mellitus (OR=4.1,p=0.02 and OR=3.4,p=0.007 respectively).There was a significant association between low consumption of pickle and hypertension (p=0.05). (Tables 3 and 4)

Table 3. Association of hypertension with different variables

Variable	*Hypertension Yes No(%)*	*No No (%)*	*OR (95%CI)*	*P value*
Age				
18-30	4 (19)	17 (81)	1	
30-60	45 (60)	30 (40)	6.3(1.9-20)	0.002
>60	35(72.9)	13 (27.1)	11 (3.2-40)	0.001
(n=144)				
Gender				
Male	32(55.2)	26 (44.8)	1	0.052
Female	52 (60.5)	34 (39.5)	1.2(0.6-2.4)	
(n=144)				
SES				
APL	58 (53.2)	51(46.8)	1	0.04
BPL	24 (72.7)	9 (27.3)	2.3(1-5.5)	
(n=142)				
Hyper-lipidemia				
no	69(54.8)	57 (45.2)	1	
Yes	15 (83.3)	3(16.7)	4.1(1.1-14)	0.02
(n=144)				
Diabetes				
No	58 (52.3)	53(47.7)	1	0.007
Yes	26 (78.8)	7 (21.2)	3.4(1.3-8.4)	
(n=144)				
Family history of hypertension				
No	57 (60)	38 (40)	1	
Yes	26(54.2)	22 (45.8)	0.8(0.4-1.5)	0.50
(n=143)				

Table 4. Association of hypertension with dietary habits

Variable	*Hypertension Yes No No(%) No(%)*		*OR (95%CI)*	*P value*
Pickle consumption (n=140)	41	17 (29.3)	1	0.02
Never	(70.7)	28 (50)	0.4 (0.2-0.9)	0.07
1-3 times/week	28 (50)	13 (27.1)	0.04(0.1-1.1)	
4-7 times/week	13 (50)			
Papad consumption (n=142)	28	11 (28.2)	1	0.11
Never	(71.8)	35 (43.2)	0.5(0.2-1.2)	0.04
1-3 times/week	46	12(54.5)	0.3(0.1-0.9)	
4-7 times/week	(56.8)			
	10(45.5)			
Dried salted fish consumption	48	33(40.7)	1	0.88
(n=142)	(59.3)	21 (42)	0.9(0.5-1.9)	0.82
Never	29 (58)	5 (45.5)	0.8(0.2-2.9)	
1-3 times/week	6			
4-7 times/week	(54.5)			
Added salt (n=138)	74	45 (37.8)	1	0.17
Never	(62.2)	6 (60)	0.4(0.1-1.5)	0.30
1-3 times/week	4(40)	5 (55.6)	0.4(0.1-1.9)	
4-7 times/week	4(44.4)			
Fruit consumption (n=145)	5 (41.7)	7 (58.3)	1	0.52
Never	51(51.5)	48(48.5)	1.5(0.4-5)	0.29
1-3 times/week	20	14(41.2)	2.0(0.5-7.4)	
4-7 times/week	(58.8)			
Vegetable	12	10(45.4)	1	0.66
consumption(n=143)	(54.5)	49 (40.5)	1.2(0.5-3.0)	
1-3 times/week	72			
4-7 times/week	(59.5)			
Physical activity (n=144)	49(66.2)	25(33.8)	1	0.05
Yes	35(50)	35(50)	0.5(0.2-1)	
No				

Discussion

The present study brought out prevalence of hypertension in Peruvamba panchayath as 58.6%. In a study by Meshram et al among tribal adults of age more than 20 years in Kerala prevalence of hypertension was 40% [3]. Another study by NM Sebastian et al among adults more than 30 years in Perinthalmanna showed prevalence of hypertension as 32.3% [4] . Our study shows a higher prevalence of hypertension (58.6%) and a lower prevalence of prehypertension (9.4%)compared to other studies[4,5]. It may be because of the single measurement of Blood pressure. The possibility of prevalence remaining high can not be ignored since it is found out in our study, that by self reporting itself, 22.8% had Diabetes,17.8% had Hyperlipidemia, 7.3% had Coronary Heart Disease and 2.1% had stroke which shows a high prevalence of non communicable diseases in the area. Studies in Kerala has reported 37% prevalence of hypertension among 30-64 years as early in 1998.[6] And there are serial epidemiological studies carried out in India which showed rising prevalence of hypertension over years. [7,8,9].

Only 63.2% had checked their Blood pressure atleast once within last one year. 15.2% had never checked their Blood pressure in life time, which shows the importance of intensification of screening

programmes as early detection can prevent many dreaded complication.

Of the people who knew that they were Hypertensives only 64.4% were taking treatment, a convincing evidence in support of the school of thought of the rule of half . But the level of control of hypertension was achieved only by 3 individuals of those who had been taking medication (10.3%), which is a problem to be addressed. Since Hypertension is a chronic condition which is asymptomatic most people will not take proper treatment with regular follow up visits which may lead to serious and irreversible complications.

In this study 4 people in the age group of 18 to 30 years had Hypertension. 45 people in the age group of 30 to 60 years and 35 people in the age group more than 60 years were also hypertensives. There was a significant association between age and hypertension with prevalence increasing as age advances. Similar results were obtained in various studies including Sreedevi et al [2]. Study by Meshram et al also shows that hypertension increases with increasing age among both gender [3]. Elevated Blood pressure in the younger age group less than 30 years shows the significance of screening of Blood pressure even in younger age group. Tracking of Blood pressure from young age itself will help in early diagnosis and reduction of further complications.

Our study shows that there is significant association between socioeconomic status and hypertension. Prevalence of hypertension was more among BPL community. Study by Meshram et al also found that risk of hypertension is lower in higher socioeconomic status ($p<0.001$) [3]. This leads us to assumption that the affluent community is well aware of prevention and control methods of hypertension.

The present study has shown a significant association between hypertension with diabetes and hyperlipidaemia . It is similar to many a studies which showed significant association of hypertension with other risk factors of it [10,11] .Considering relation with dietary practice there is no significant association in our study. Unhealthy dietary pattern was seen among those who don't have high Blood pressure. It could be because of the change in dietary habits of the people who already diagnosed of hypertension. According to the study by N M Sebastian et al 76% of hypertensives were practicing dietary restriction [4]. It indicates a possible risk of hypertension for apparently healthy people and calls for the need of lifestyle changes among them.

Similarly, there was no significant association between physical activity and hypertension in our study and 53% of Hypertensive were engaged in physical activity. It may be a part of life style changes adopted by hypertensive people. Study by Meshram et al shows, sedentary activity had 1.3 times risk of hypertension and that Alcohol consumption had 1.4 times high risk of hypertension [3]. Another study by chethan et al showed that prevalence is more in past smokers (82.4%) followed by current smokers (51.5%) compared to non smokers (27. 6%) [11]. Our study asked about the current habits and couldn't find association of smoking ,alcohol consumption and smokeless tobacco usage with hypertension. It could also be because of the higher health consciousness and change in behavior of diagnosed cases of Hypertension compared to unhealthy risk behaviours of apparently healthy people.

Conclusion and Recommendation

Prevalence of hypertension in Peruvamba in the present study is 58.6% . Of the total 85 persons identified as hypertensives 40 were newly diagnosed cases (47%). Of the previously diagnosed cases only 64.4% were taking medication and only 10.4% were under control.63.2% of the study participants had their blood pressure check up within one year, remaining being above one year (22.2%) and never (14.6%). Of the various factors tested for association, hypertension was found to be significantly associated with age, socioeconomic status, co existence of diabetes mellitus and hyperlipidemia.

Based on the results, we recommend intensification of screening activities , conduct of periodic screening camps, with special address to low socioeconomic set up, and appropriate treatment measures be initiated to diagnosed cases. Encourage all adults of 30 years to attend the NCD clinics and camps. All diagnosed patients should be educated thoroughly about the treatment compliance and life style modification, through individual interactions and distribution of patient information materials. Health care workers , anganwadi workers and ASHAs are to ensure and motivate the treatment compliance during their field visits or group gatherings. Maintanance and updation of NCD registers should be ensured and contacting patients who fail frequently to follow up can be considered.

Health education sessions are to be conducted at community level regarding importance of screening for life style diseases, following healthy diet and regular physical activity, undergoing periodic check up and maintaining treatment compliance. Since all the activities are coming under the purview of NPCDCS, the program needs an intensification with regular monitoring and thorough evaluation.

Limitation

Single time measurement of blood pressure due to resource constraints.

Acknowledgements

The authors express our sincere gratitude to the Medical officer in charge of Primary Health Centre, Peruvamba and the field staff under department of community medicine,Govt. Medical College Palakkad. We are also thankful to the students of MBBS 2014 batch , Government Medical College Palakkad as the idea was conceived and implemented during their posting in Community medicine department. We are also thankful to the senior faculty in the department for their valuable suggestions.

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