Original Research Article

Assessment of incidence and awareness of hypertension in catchment area of tertiary health care facility located in Raigad district in relation to behavioural changes

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Abstract

Background: Hypertension is a major public health problem and important area of research due to its high prevalence and being major risk factor for cardiovascular diseases and other complications**.** ***Objectives***. (1) To assess the prevalence of hypertension and its relation to the behavioural changes in the population and (2) to estimate awareness**.** ***Methods and Materials***. A community based interventional study was conducted among the population of Raigad district. A sample size of 310 was done. Patient who are not diagnosed for hypertension are only included in the study ***Results.*** The prevalence of hypertension was 38.4% (male: 48.3%, female: 29.9%). Higher odds of being hypertensive were found in male subjects, who had family history of hypertension, subjects of upper socioeconomic status, did not take regular excercise. Tobacco and alcohol consumption, users of oral contraceptive pills**.** ***Conclusion***. 38.4% of the participants were hypertensive and the associated behavioural changes show that positive co -relation with hypertension.

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INTRODUCTION

Hypertension is attributable to 10.8% of all deaths in India[1], the overall prevalence of hypertension in Maharashtra was around 25%.[2] The *Global brief on hypertension authored by WHO* published on the occasion of World Health Day 2013, writes nearly 80% of deaths due to cardiovascular disease occur in low- and middle-income countries Early detection and treatment of hypertension and other risk factors, as well as public health policies that reduce exposure to behavioural risk factors, have contributed to the gradual decline in mortality due to heart disease and stroke in high-income countries over the last three decades. For example, in 1972, preventive interventions were initiated in a community project in North Karelia, in Finland. At that time Finland had an extremely high mortality rate from heart disease. Within five years, many positive changes were already observed in the form of dietary changes, improved hypertension control, and smoking reduction. Accordingly a decision was made to expand the interventions nationally. Now, some 35 years later, the annual cardiovascular disease mortality rate among the working- age population in Finland is 85% lower compared to the rates in 1977.[3] Premature death, disability, loss of income, and healthcare expenditure due to hypertension, take a toll on families, communities and national finances. Households often then spend a substantial share of their income on hospitalization and care following complications of hypertension, including heart attack, stroke and kidney failure. Families face catastrophic health expenditure and spending on

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health care, which is often long term in the case of hypertension complications, pushing tens of millions of people into poverty. Moreover, the loss of family income from death or disability can be devastating.[3]

"Not addressing hypertension in a timely fashion will have significant economic and social impact."[3]

Review of Literature

Hypertension is an" iceberg" disease. It became evident in 1970 that only half of the hypertensive subjects in the general population of most developed countries were aware of the condition, only of about half of those aware of the problem were being treated, and only about half those treated were considered adequately treated.

This rule holds true till date which is proved by studies conducted recently, such as, Existence of rule of halves in hypertension: An exploratory analysis in an Indian village, By Nafis Faizi (MD, MPH). Assistant Professor in Community Medicine, J N Medical College, Aligarh Muslim University (AMU), India [5]. The result of the study states, "the present study in residents more than 40 years of age in the Mirzapur village in Aligarh found that the prevalence of hypertension in the study population was 41.9%, with a higher prevalence in older age groups. The mean blood pressure of the study population was found to be 100.03±13.17 mm Hg. The high prevalence reported in the present study reflects and reaffirms the increasing trend of hypertension in not only the urban, but also rural India, at least in the older age group. The problem of hypertension, due to its silent and asymptomatic nature, frequently depicts a rule of halves in places with weaker health system and an equally weaker health awareness and information among populations and the same is true for this village."[5] According to the 2008 estimates of the WHO, the prevalence of high BP among Indians is 21.1%, with 21.3% among males and 21% among females.[6]A systematic review on the prevalence of hypertension in India reported ranges of 13.9–46.3% and 4.5–58.8% in urban and rural areas of India, respectively.[7]

Aim: To assess incidence and awareness of hypertension

Objective: **1.** To assess the demographic profile of subjects. **2.** To assess the knowledge among subjects about behavioural risk factor leading to hypertension**. 3.** To refer to the tertiary health care centre for further evaluation, if found hypertensive

MATERIAL AND METHOD

Type of Study: Community Based study

Study of design: Interventional study

Study Period: April-May 2019

Study Area: The study was conducted in the catchment area of tertiary health care centre located in the Raigadh district.

Study population: Target Population- All the young adults above age of 35 years in the catchment area of the tertiary health care facility.

Sample size:

Estimation of prevalence / proportion:

Prevalence of hypertension population P= 24%

Therefore, Q= 100-24=76%

Confidence interval of study = 95%

Therefore, Z=1.96

Therefore, level of significance, L= 5%

Therefore, Formula for sample size estimation is

$$N = \frac{Z^2PQ}{L^2}$$

$$= \frac{(1.96)^2 \text{ X } (25) \text{ X } (75)}{(5) \text{ X } (5)}$$

N = 285.1

Therefore, Total sample need to study=N+ (N X10%)

=285 + 28.5 ≅ 310

Selection criteria:

Inclusion Criteria- Subjects who are willing to participate. Non migrant and permanent resident of Raigadh district. Patient who are not diagnosed for hypertension.

Exclusion Criteria- subjects who knew they were hypertensive and were receiving treatment for the same. Any guest who is temporarily staying in the area.

Research Tools: Instrument used: Electronic Sphygmomanometer. I had taken an informed consent of the subject for taking part in the research project. I gave a preformed, pre-validated questionnaire to the subject willing to participate in the study to fill his/her information

Methodology: I started my research project after getting an approval from Institutional Ethics Committee.

The questionnaire contained following information of the subject: Name, Age, Sex, Family history of hypertension, Religion, Smoking, Alcohol , Heart Rate, Physical activity, Socioeconomic Status, Oral contraceptive pills, if women[6] etc..

I checked the blood pressure of patient on the left brachial artery by the help of electronic sphygmomanometer and if I found that the patient was hypertensive then I waited for 10-15 minutes, let the subject relax completely and again checked the blood pressure, if the patient is still hypertensive then I noted down his Blood pressure , if not so then my first reading of blood pressure was just a random high blood pressure and the subject was not suffering from hypertension. If the patient is confirmed for hypertension, then I referred him/her to tertiary health care for further evaluation and management.

AHA HYPERTENSION CLASSIFICATION 2017

BP Category	Systolic BP MMHG		Distolic BP MMHG
Normal	>120	And	<80
Elevated	120-129	And	<80
Hypertension			
Stage 1	130-139	Or	80-99
Stage 2	≥140	Or	≤90
Hypertensive Crisis	>180	And/or	>120

Quality control

Only electronic sphygmomanometer was used to record blood pressure, to rule out personal error. I used the same electronic sphygmomanometer on every subject, to rule out instrument error. The blood pressure was taken on left brachial artery of every subject only, to rule out variation in reading due to variation blood pressure on various anatomical site.

Confidentiality

Strict confidentiality was maintained on the identity of the subjects taking part in the research and it was not to be disclosed to anyone not related to the research.

Statistical Analysis Plan

1) Data was collected by standard method and stored in MS-Excel for compilation and validation
2) Basic Descriptive statistics and graphs was analysed by MS-Excel
3) Vital statistics like Percentage, Prevalence, Mean, Median, Mode was use to summarize each variable.
4) Chi-square test, P- value was also used to assess the study

RESULTS AND DISCUSSION

Table 1: Age and sex distribution of the study

Age	Total Male	Total Female	Hypertensive Male	Hypertensive Female	Hypertensive Male	Hypertensive Female	P-value	Result
35-45	56	62	21	30	37.5%	48.4%	< .00001	significant
46-55	12	56	6	11	50.0%	19.6%	< .00001	significant
56-65	68	31	42	9	61.8%	29.0%	< .00001	significant
66-75	7	12	0	0	0.0%	0.0%	NaN	NaN
76-85	0	6	0	0	0.0%	0.0%	NaN	NaN

167 participants are female and 143 participants are male, 119 participants were suffering from hypertension, hence 38.4 % were hypertensive. 167 participants are female and 50 suffer from hypertension,29.9% of the female participants were suffering from hypertension. 143 participants are male and 69 suffer from hypertension, 48.3 % of the male participants were suffering from hypertension. In the age group 35-45, 46-55, 56-65, the P- value is <0.00001 hence the result are significant, while for the age group 66-75, 76-85 no participants are hypertensive hence the result is not applicable here.

According to the study, Hypertension and aging done by Thomas W. Budford shows positive co- relation between age and hypertension.[8]

According to the study, Sex differences in the risk profile of hypertension: a cross-sectional study, Saswata Ghosh, Simantini Mukhopadhyay, and Anamitra Barik shows that prevalence of hypertension for females in this study is lower than males at a younger age but exceeds males when older.[9]

Table 2: Co-relation between Family history and Hypertension

Family History of Hypertension	No. of Hypertensive Participants
Present	**76**
Absent	**43**

76 hypertensive participants have a family history of hypertension and 43 hypertensive participants have no family history of hypertension. It is seen that there is positive co relation between hypertension and family history. 74 hypertensive participants have a family history of hypertension and 43 hypertensive participants have no family history of hypertension. In the study, Co-Relation of Family History of Hypertension with Hypertension in the Young Male Adults in Western Rajasthan done by Priya Jangid, Khemlata Tilwani, Madhurima Maheshwari, Mukesh Nagal, N.D. Soni, the result showed 9.25% were hypertensive and among this family history of hypertension was present in 27.75% subjects.[10]

Table 3: Co-relation between exercise and hypertension

	Number of participants suffering from hypertension
Don't do regular exercise	87
Do regular exercise	31

99 participants do regular exercise 31 of which are suffering from hypertension, hence 31.3 % of the participants who perform regular exercise are suffering from hypertension

211 participants don't do any regular exercise out of which 87 suffer from hypertension, hence 41.2% of the participants who don't perform regular exercise are suffering for hypertension.

It is seen that people doing regular exercise are less likely to suffer from hypertension than those not doing exercise. According to the study, Physical Inactivity and Its Association with Hypertension in Adult Female Population of Srinagar, India: a Community-Based Cross-Sectional Study done by Abdul Rouf, Mahbooba Rasool, Mohammad Salim Khan, Mohd Saleem Sheikh the result shows Prevalence of Physical Inactivity of 50.2%. Overall prevalence of Hypertension was 65.1% (Stage1=38.6% and Stage2=26.5). There was a linear positive correlation between Age with Diastolic Blood Pressure and Systolic Blood Pressure. The bivariate logistic regression indicated that risk of Physical inactivity increased with increasing age, marital and blood pressure status after adjusting for the effect of other variables in the model.[11]

Table 4: Co-relation between socioeconomic status and hypertension

	Hypertensive	Non Hypertensive	Chi- square	P- value	Result
Upper Class	43	31	24.7986	<0.000001	Significant
Upper Middle and Lower Middle Class	62	106			
Upper Lower and Lower Class	12	56			

74 participants belong to upper class and 43 are hypertensive, 58.1 % of the upper class participants are suffering from hypertension.

68 participants belong to lower and upper lower class and 12 are hypertensive, 17.6% of the lower and upper class are suffering from hypertension.

168 participants belong to upper middle and lower middle 62 are hypertensive, 36.9 % of the upper middle and lower middle are suffering from hypertension.

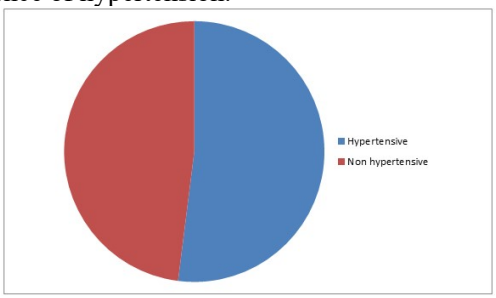
The chi-squared value is 24.7986, p- value is < 0.000001 and result is significant here. According to the study,Association of Household Wealth Index, Educational Status, and Social Capital with Hypertension Awareness, Treatment, and Control in South Asia , done by Rajeev Gupta, Manmeet Kaur, Shofiqul Islam, Viswanathan Mohan, Prem Mony, Rajesh Kumar, Vellappillil Raman Kutty, Romaina Iqbal, Omar Rahman, Mohan Deepa, Justy Antony, Krishnapillai Vijaykumar, Khawar Kazmi, Rita Yusuf, Indu Mohan, Raja Babu Panwar, Sumathy Rangarajan, Salim Yusuf shows that Prevalence was significantly greater in urban locations, older subjects, and participants with more wealth, greater education, and lower social capital index.[12]

Table 5: Co – relation between smoking and alcohol with hypertension

	Hypertensive	Non Hypertensive	Chi-square	P-value	Result
Smokers	43	44	5.2076	0.073992	Not significant
Alcohol Drinker	25	43			
Smokers and Alcohol Drinker	25	18			

The study has total 87 smokers, 43 smokers are hypertensive, 49.4% of smokers in this study are hypertensive. 68 participants drink alcohol, 25 people who drink alcohol are hypertensive, 36.8% of the participants who drink are hypertensive 43 participants who smoker and drink alcohol also,25 participants who smoke and drink alcohol are hypertensive,58.1% of the participants who drink and smoke are hypertensive. The chi-square value is 5.2076,0.073992 is the p-value and hence the result is not significant. According to the study on associated risks of smoking, alcohol and smokeless tobacco on hypertension among advocates done by Shanthi Edward, Praveena Periasamy shows the following results that around 263 (87.66%) study participants were non-smokers and 37 (12.33%) were tobacco smokers. Among the tobacco smokers, a majority of 24 (64.86%) were found to be hypertensives whereas only 37.64% non-smoker participants were found to be hypertensives. that out of 300 study participants, 47 (15.67%) were alcohol consumers and 253 (84.33%) were non-consumers of alcohol. Among the alcohol consumers, a majority of 26 (55.32%) were hypertensives and among the non-consumers of alcohol,

38.34% were hypertensives.[13] Smoking and alcohol intake in a rural Indian population and correlation with hypertension and coronary heart disease prevalence done by R Gupta , S Sharma, V P Gupta, K D Gupta shows the following results It was found that group which comprised of smokers-non-alcohol consumers had a significantly higher prevalence of hypertension and of ECG Q-waves. Alcohol intake-smoker group had a significantly higher prevalence of hypertension.[14]



Pie Chart no.1: Co relation between use of oral contraceptive pills and hypertension

25 women take oral contraceptive pills out of which 13 are suffering from hypertension. 52% of the participants who were taking oral contraceptive pills are suffering from hypertension. Oral Contraceptive Pills Use and Hypertension done by Sara Azima, M.Sc., Department of Midwifery, School of Nursing and Midwifery, Shiraz University of Medical Sciences, Shiraz, Iran and Samaneh Mousavi, M.Sc., Student Research Committee, Shiraz University of Medical Sciences, Shiraz, Iran The estrogen existing in OCPs causes a significant increase in the plasma level of angiotensin close to that in normal pregnancy . The purpose of this study was to determine the effects of OCPs on women's blood pressure. According to the results, there was a significant difference in the subjects' mean systolic blood pressure one year after using OCPs. However, no significant difference was observed in their mean diastolic blood pressure 6 months and one year after OCPs consumption[15]

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