



PREVALENCE OF HYPERTENSION AND ITS ASSOCIATED RISK FACTORS IN MARKHEL, TQ. DEGLOOR, DIST. NANDED, MAHARASHTRA, INDIA. : A CROSS-SECTIONAL STUDY

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ABSTRACT:

Hypertension is a terrible, tenacious, largely symptomless disease. A majority of the Patients with hypertension in India are unknowing of their condition. This is because of Low levels of awareness.

Hypertension is the number one health related risk factor in India. Hypertension is the largest giver to the load of disease and death. A population-based cross-sectional study was over a period of 2 months during 20 April to 20 June 2022 at Markhel, Degloor (tq), Dist. Nanded. The study was carried out to know the significant association of risk factors like age, smoking, tobacco chewing and consumption of alcohol with prevalence of hypertension was analyzed. Data were collected through a pre-designed questionnaire. Alcohol Consumption, Tobacco Consumption, Physical Activity, Age were statistically significantly associated with the hypertension study of subject [$p < 0.05$]. Gender and salt consumption (more) factors were not statistically significantly associated with the hypertension study of subject [$p > 0.05$].

Key Words: Risk Factors, Hypertension, Salt Consumption, Cross-Sectional Study, Marital status.

INTRODUCTION:

Hypertension is a non-communicable and highly worrying disease in most of the population of India⁷. This is because High Blood Pressure promotes major cardiovascular risk factors disease that cause death in many adults^{1,3}. Hypertension occurred due to generate very high blood pressure in body as well as create increase risk of heart, kidney & brain diseases⁶. Hypertension also generate due to obesity and obesity linked with sedentary lifestyle as well as increasing urbanization. Hence, Physical activity and nutriment take an important part in Preventing and controlling the hypertension².

Hypertension is stated as when systolic blood pressure is ≥ 140 mmHg & diastolic blood pressure is ≥ 90 mmHg. It is mainly called as Stage 2 Hypertension⁸⁻¹¹. Other hand stage 1 hypertension occurred when systolic blood pressure is 130-139 mmHg & diastolic blood pressure is 80 – 89 mmHg. Normal blood pressure called When systolic blood pressure is ≤ 120 mmHg & diastolic blood pressure is ≤ 90 mmHg.

Awareness of the hypertension is more important factor and prevention is better than the treatment. For Maintain normal blood pressure the awareness about the hypertension is very important because when we measure the blood pressure time to time and take treatment as well as prevention¹⁰⁻¹². Which promotes to make healthy lifestyle over the hypertension disease and their prevalence⁵.

Mainly hypertension enter people lifestyle when their healthy lifestyle adopted Increase in age by increasing in their BMI, Intake of lots of alcohol, habits of consumption of tobacco and smoking. In addition, those who consume too much salt in their diet suffer from hypertension^{4,11}.

Objective of the study is Association between Hypertension and risk factors

MATERIAL AND METHODS :

Study Design:

This is a population-based cross-sectional survey designed to identify the prevalence of hypertension and its associated risk factors in the population of Markhel village.

Sample size:

The total eligible sample included 19- 79 aged 109 adults had their blood pressure measured successfully.

Place of Study :

We conducted Research Project study among the Rajarshi Shahu College of Pharmacy, Markhel (Between 20 April - 27 April 2022) and Netaji Subhash Chandra Bose College of Agriculture (Between 28 April - 5 May 2022) and Rajiv Gandhi Polytechnic College, Markhel (Between 6 May-14 May 2022), Shri Chatrapati Shivaji Junior College, Markhel (Between 14 May-21 May 2022) & Behalf Population of Village (Between 22 May-20 June 2022) at Markhel Village Tq-Degloor, Dist. Nanded, State- Maharashtra, Country-India.

Statistical Analysis Plan:

- I. Results were expressed as the mean \pm standard deviation for quantitative variables, whereas numbers and percentages were used for categorical variable.
- II. Association between Hypertension and risk factors were tested using chi-square test for association.
- III. Statistical significance will be considered at 5% level of significance.
- IV. IBM SPSS V2.1 will used for analysis.

Inclusion criteria:

- I. Age >19 years and Age <80 were included.
- II. Must have been residing in Markhel Village.
- III. Who gave consent for participation were included in the study.

Exclusion criteria:

- I. Age<19 and age>80 were excluded.
- II. Pregnant and breastfeeding women.
- III. Critical sick patients.

Variables:

Socio-demographic characteristics and behavioral risk factor data are collected through a pre-designed questionnaire, including blood pressure (BP) measurements, Gender, Age, Education, Marital Status, BMI, smoker, History of BP, Alcohol Consumption, Tobacco Consumption, Physical Activity, Salt Consumption (More).

Socio-demographic variables:

Included age, gender, marital status, education.

Age were categorized as 19-30, 31-40, 41-50, 51-60, 61-70, 71-80.

Gender were categorized as Male & Female.

Marital status were categorized as married, single, or others (divorced and widowed).

Participant's education were classified as; Illiterate, Primary, Secondary, Graduate.

Behavior risk factors:

Including Yes/No type based included smoking (Daily or Occasionally), Any Cardiovascular diseases history, History of High blood pressure, Alcohol Consumption, Tobacco Consumption, Physical Activity, Salt Consumption (More) was considered if the participant consumed at least five days.

Outcome variables:

Participants were screened for hypertension by blood pressure measurements using Automatic Blood Pressure Monitor (calibrated sphygmomanometers).

Blood pressure of individual respondent was measured in a sitting position with the help of the standard sphygmomanometer.

As per the JNC 8 guidelines individuals with BP ≥ 140 mmHg systolic and ≥ 90 mmHg diastolic were considered as hypertension.

- I. A normal adult has systolic blood pressure (SBP) below 120 mm Hg and diastolic blood pressure (DBP) of less than 80 mmHg.
- II. Pre-hypertension (recently named as elevated BP) is diagnosed with SPB of 120– 139 mmHg or DBP of 80–89 mm Hg .

BMI was calculated using the formula i.e. body weight (in kg) divided by body height (in m) and Body weight had measured by Digital Weighing Machine and Height is measured by Measuring Tape.

According WHO Growth Reference BMI values

- I. below 25 were evaluated as normal,
- II. while values between 25 and 29.9 were classified as overweight.
- III. BMI values of 30 and above called for obesity.

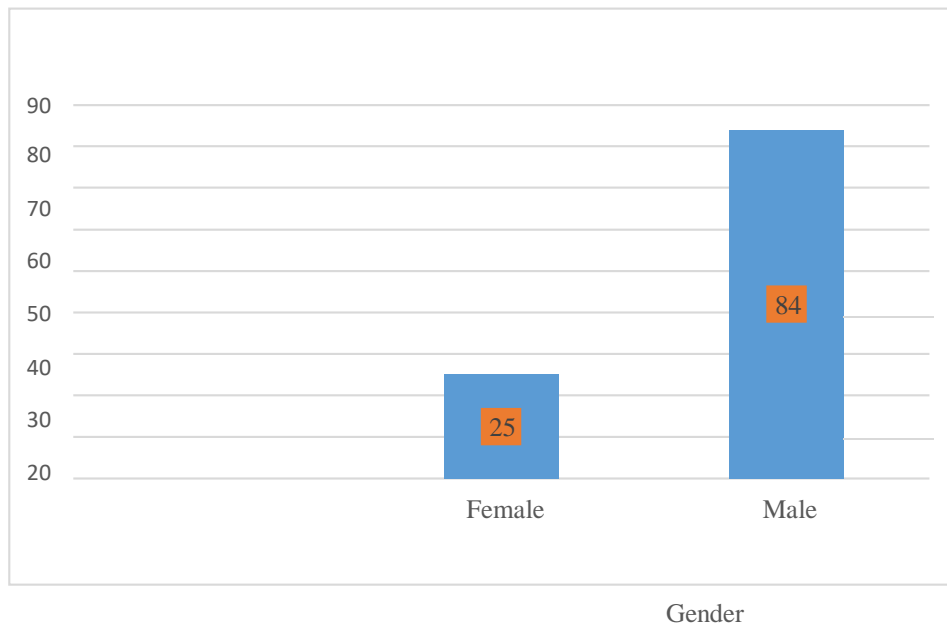
Result:

A total sample consist of 109 subjects were enrolled. Various risk factors of hypertension were studied in this research.

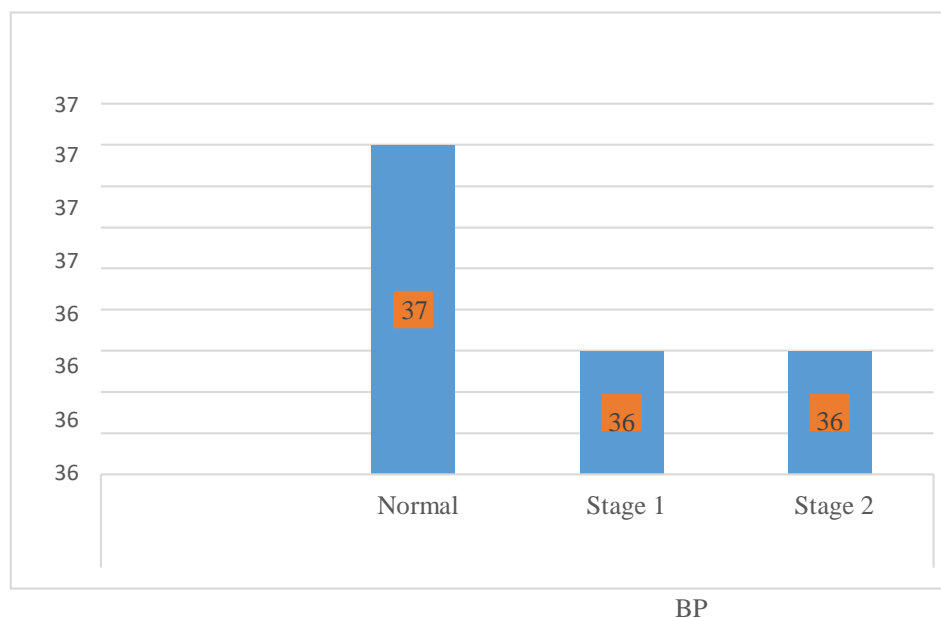
Table 1.**Socio-demographic characteristics and behavioral risk factor**

Variables		Frequency	Percentage	Variables		Frequency	Percentage
Gender				History of BP			
	Female	25	22.9		NO	97	89.0
	Male	84	77.1		YES	12	11.0
	Total	109	100.0		Total	109	100.0
BP				Alcohol Consumption			
	Normal	37	33.9		NO	81	74.3
	Stage 1	36	33.0		YES	28	25.7
	Stage 2	36	33.0		Total	109	100.0
	Total	109	100.0	Tobacco Consumption			
Education					NO	68	62.4
	Graduate	68	62.4		YES	41	37.6
	illiterate	31	28.4		Total	109	100.0
	Primary	10	9.2	Physical Activity			
	Total	109	100.0		NO	79	72.5
Marital Status					YES	30	27.5
	Married	93	85.3		Total	109	100.0
	Single	16	14.7	Salt Consumption (More)			
	Total	109	100.0		NO	69	63.3
BMI					YES	40	36.7
	Normal	62	56.9		Total	109	100.0
	Obese	6	5.5	Age			
	Over weight	41	37.6		19-30	23	21.1
	Total	109	100.0		31-40	11	10.1
Smoker					41-50	18	16.5
	NO	93	85.3		51-60	15	13.8
	YES	16	14.7		61-70	26	23.9
	Total	109	100.0		71-80	16	14.7
					Total	109	100.0

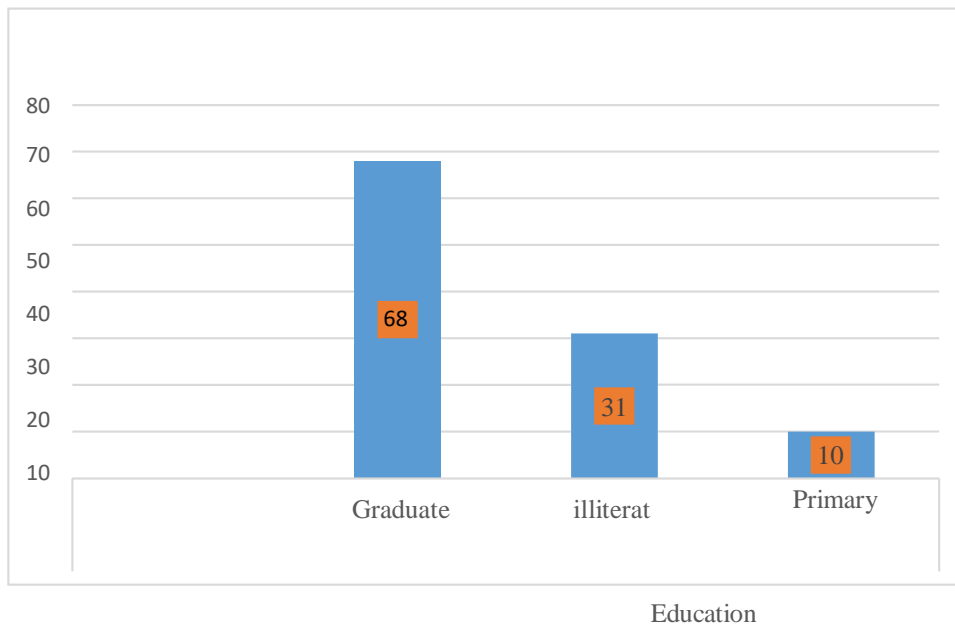
Distribution of subjects according to Gender : A total of 109 study subjects were interviewed for the study. Out of these, 84 (77.1%) were male subjects and 25(22.9%) were female.



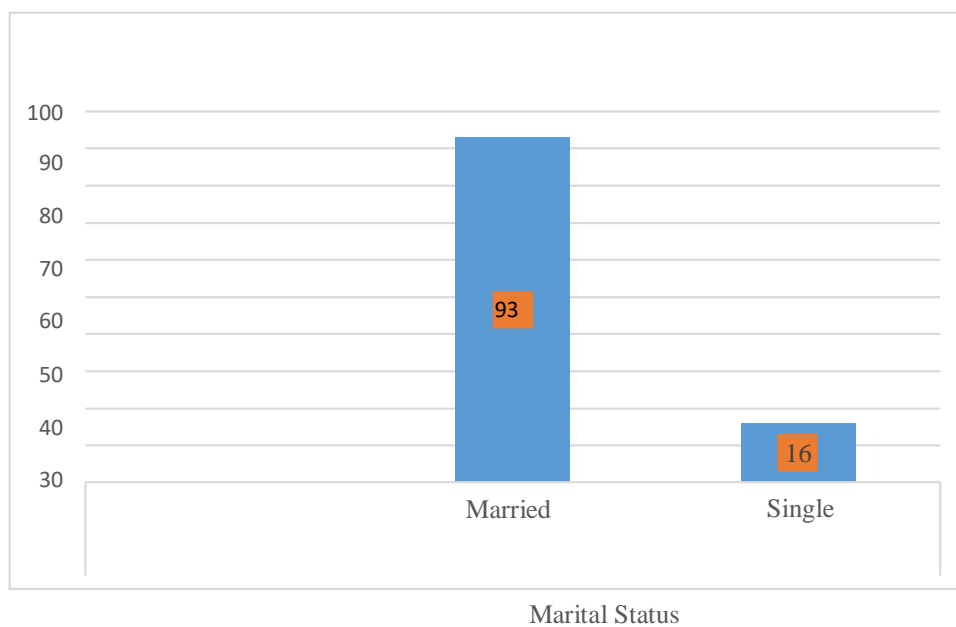
Distribution of subjects according to BP : A total of 109 study subjects were interviewed for the study. Out of these, 37 (33.9%) were Normal subjects and 36(33.0%) were stage 1 hypertension subjects and 36(33.0%) were stage 2 hypertension subjects



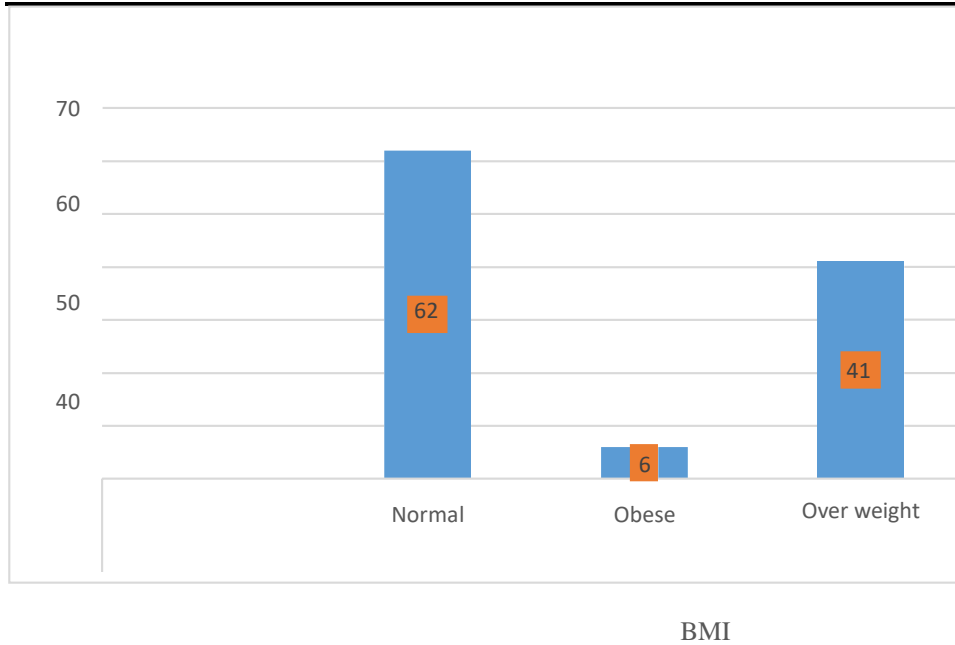
Distribution of subjects according to Education : A total of 109 study subjects were interviewed for the study. Out of these, 68 (62.4%) were Graduate and 31(28.4%) were Illiterate and 10(9.2%) were Primary subjects.



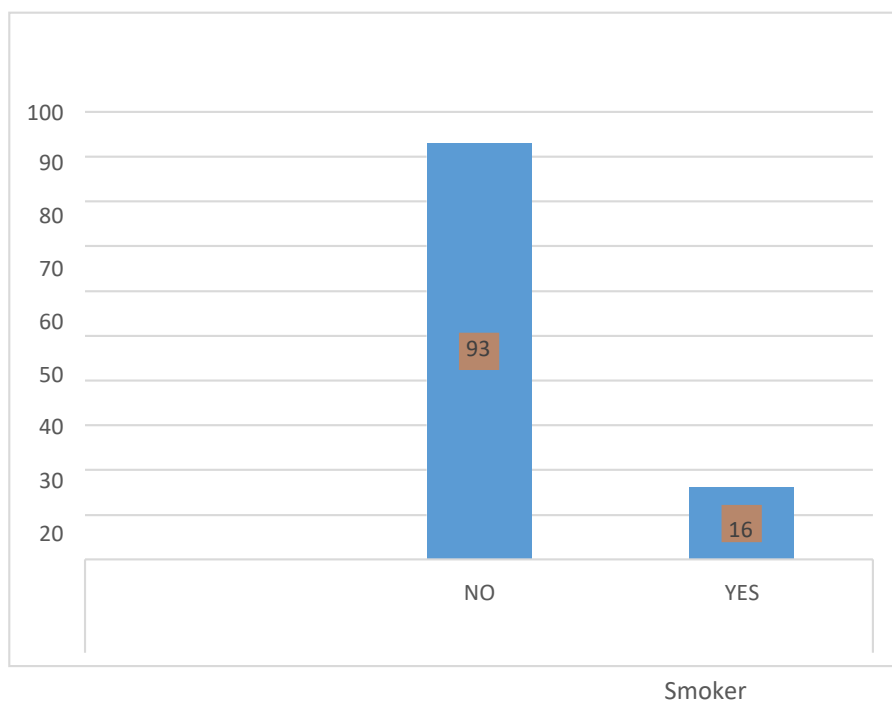
Distribution of subjects according to Marital Status : A total of 109 study subjects were interviewed for the study. Out of these, 93(85.3%) were Married Subjects and 16(14.7%) were Singles.



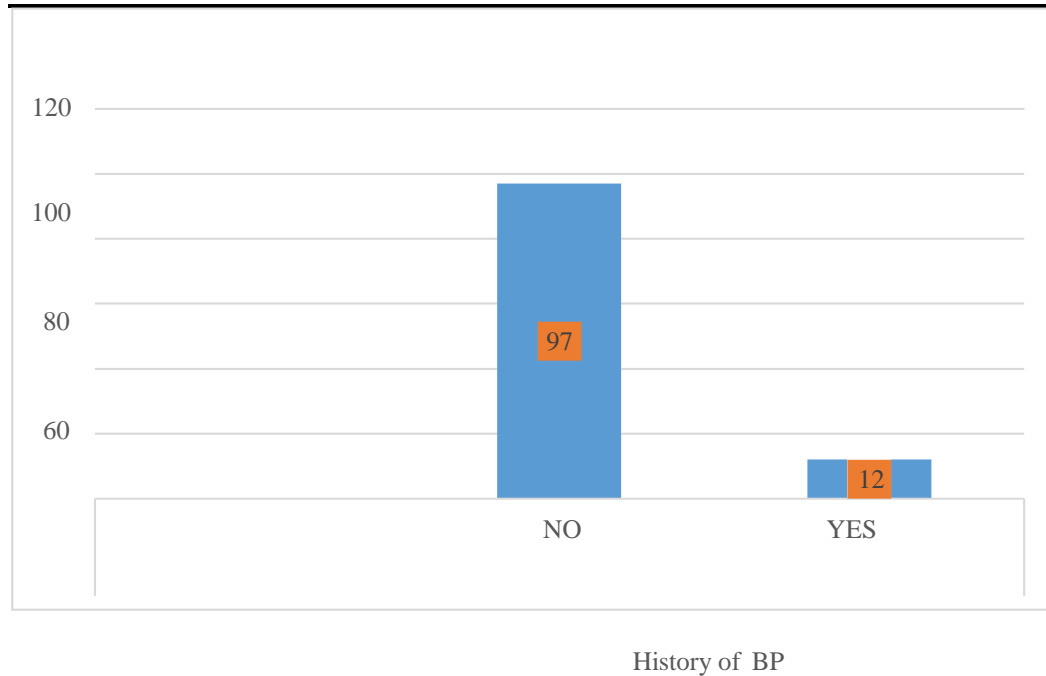
Distribution of subjects according to BMI : A total of 109 study subjects were interviewed for the study. Out of these, 62(56.9%) were Normal Subjects and 6(5.5%) were Obese and . 41(37.6%) were Over Weight Subjects.



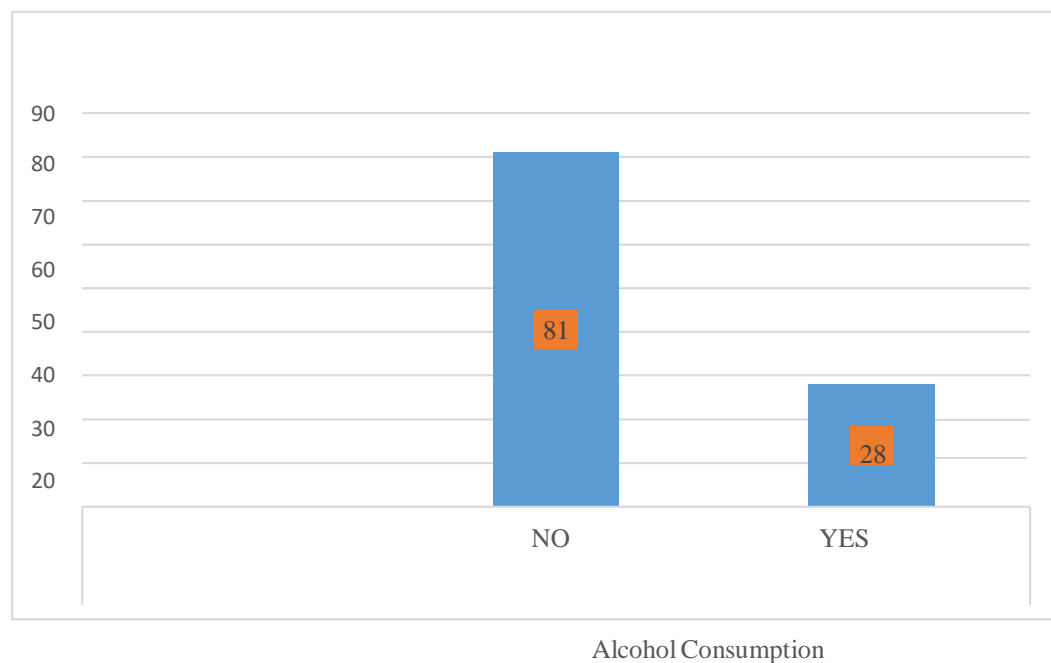
Distribution of subjects according to Smokers : A total of 109 study subjects were interviewed for the study. Out of these, 93(85.3%) were Non Smokers and 16(14.7%) were Smokers.



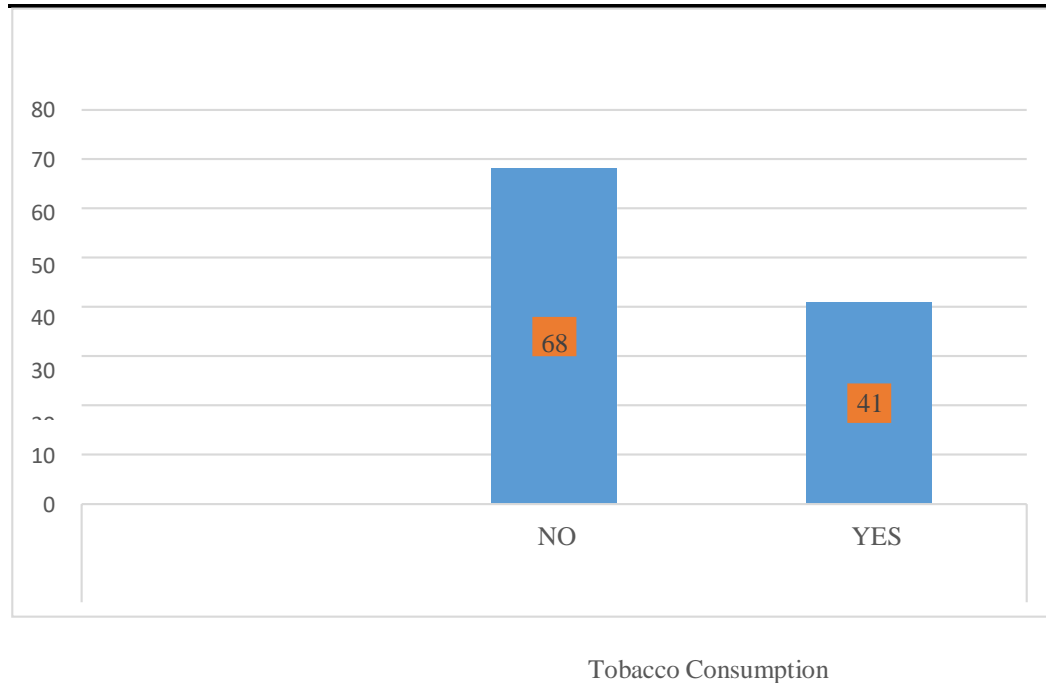
Distribution of subjects according to History of BP : A total of 109 study subjects were interviewed for the study. Out of these, 97(89.0%) were Don't have History of BP and 12(11.0%) were have History of BP.



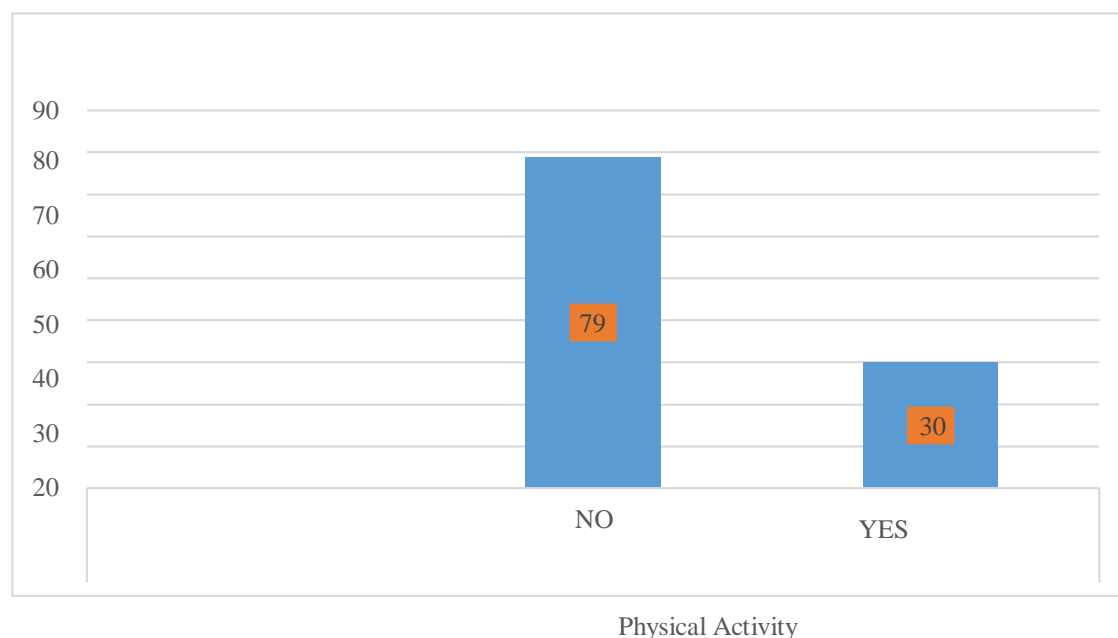
Distribution of subjects according to Alcohol Consumption : A total of 109 study subjects were interviewed for the study. Out of these, 81(74.3%) were Non alcoholic subjects and 28(25.7%) were alcoholic Subjects.



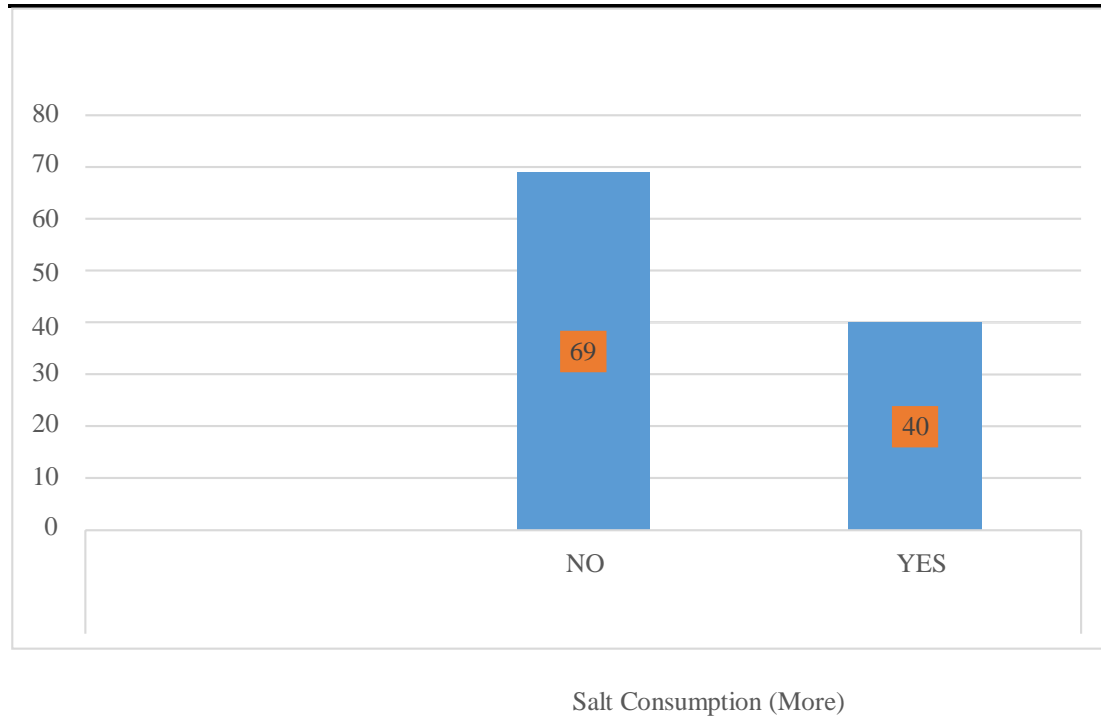
Distribution of subjects according to Tobacco Consumption : A total of 109 study subjects were interviewed for the study. Out of these, 68(62.4%) were non Tobacco users and 41(37.6%) were Tobacco users.



Distribution of subjects according to Physical activity : A total of 109 study subjects were interviewed for the study. Out of these, 79(72.5%) were don't do physical activity and 30(27.5%) were do physical activity.



Distribution of subjects according to Salt Consumption : A total of 109 study subjects were interviewed for the study. Out of these, 69(63.3%) were don't use more salt and 40(36.7%) were use more salt.



Distribution of subjects according to Age : A total of 109 study subjects were interviewed for the study. Out of these, 23(21.1%) were 19-30 age group subjects, 11(10.1%) were 31-40 age group subjects, 18(16.5%) were 41-50 age group subjects, 15(13.8.1%) were 51-60 age group subjects, 26(23.9%) were 61- 70 age group subjects and 16(14.7%) were 71-80 age group subjects.

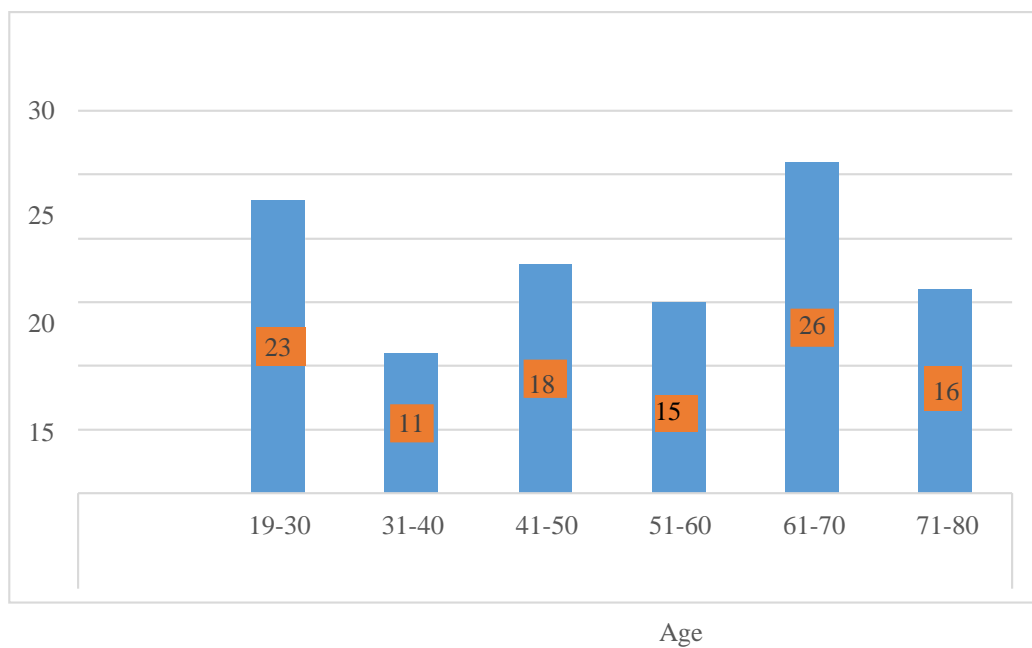


TABLE 2 :

The associated factors of normal BP, Stage 1 Hypertension and Stage 2 hypertension.

Variables		BP				Pearson ChiSquare (χ^2)	p- Value	df
		Normal	Stage 1	Stage 2	Total			
Gender	Female	7	9	9	25	.511a	0.774	2
	Male	30	27	27	84			
	Total	37	36	36	109			
Education	Graduate	25	29	14	68	20.839a	0.000	4
	illiterate	7	4	20	31			
	Primary	5	3	2	10			
	Total	37	36	36	109			
Marital Status	Married	27	30	36	93	10.812a	0.004	2
	Single	10	6	0	16			
	Total	37	36	36	109			
BMI	Normal	33	11	18	62	29.258a	0.000	4
	Obese	0	2	4	6			
	Over weight	4	23	14	41			
	Total	37	36	36	109			
Smoker	NO	36	32	25	93	11.849a	0.003	2
	YES	1	4	11	16			
	Total	37	36	36	109			
History of BP	NO	37	32	28	97	9.198a	0.010	2
	YES	0	4	8	12			
	Total	37	36	36	109			
Alcohol Consumption	NO	35	26	20	81	14.691a	0.001	2
	YES	2	10	16	28			
	Total	37	36	36	109			
Tobacco Consumption	NO	35	23	10	68	34.766a	0.000	2
	YES	2	13	26	41			
	Total	37	36	36	109			
Physical Activity	NO	24	21	34	79	13.394a	0.001	2
	YES	13	15	2	30			
	Total	37	36	36	109			
Salt Consumption (More)	NO	29	20	20	69	5.480a	0.065	2
	YES	8	16	16	40			
	Total	37	36	36	109			
Age	19-30	14	8	1	23	35.952a	0.000	10
	31-40	3	7	1	11			
	41-50	4	9	5	18			
	51-60	7	5	3	15			
	61-70	5	5	16	26			
	71-80	4	2	10	16			
	Total	37	36	36	109			

Table2 shows that Education, Martial Status, BMI, Smoker, History of BP, Alcohol Consumption, Tobacco Consumption, Physical Activity, Age were statistically significantly associated with the hypertension study of subject [$p < 0.05$].

Gender and salt consumption(more) factors were not statistically significantly associated with the Hypertension study of subject [$p > 0.05$].

In gender factor male were more stage 1(27) and stage 2(27) Hypertension as compare to female(9),(9).

In education factor stage 1 Hypertension was more in graduate(29) as compared to illiterate(4) and primary(3) subjects. Stage 2 Hypertension was more in Illiterate(20) subjects as compared to graduate(14)and primary(2).

In marital status factor married were more stage 1(30) and stage 2(36)Hypertension as compare to single people(6),(0).

In BMI factor Over weight people(23) were more in stage 1 Hypertension as compare to normal(11) and obese people(2)as well as normal people(18) were more in stage 2 Hypertension as compare to obese(4) and Over weight people(14).

Non-smokers were more in stage 1(32) and stage 2(25) Hypertension as compare to smokers(4),(11).

No History of BP Subjects were more in stage 1(32)and stage 2(28) Hypertension as compared to history of BP subjects(4),(8).

Peoples were non alcoholic subjects were more in stage 1(26)and stage 2(20)Hypertension as compare to alcoholic subjects(10),(16).

Peoples were non tobacco users(23) more in stage 1 Hypertension as compare to tobacco users(13) and peoples were tobacco users(26) more in stage 2 Hypertension as compare to non-tobacco users(10).

Peoples were not doing physical activity have more in stage 1(21) and stage 2(34) Hypertension as compare to peoples were doing physical activity (15),(2).

Peoples were less salt users were more in stage 1(20) and stage 2(20) Hypertension as compare to peoples were more salt users(16),(16).

Peoples were age between 41-50 (9) have more stage 1 Hypertension as compare to Peoples were age between 19-30(8),31-40(7),51-60(5),61-70(5),71-80(2) and

peoples having age between 61-70 (16) have more stage 2 Hypertension as compare to peoples have age between 19-30(1),31-40(1),41-50(5),51-60(3),71- 80(10).0(1),31-40(1),41-50(5),51-60(3),71- 80(10).

CONCLUSION :

The association of hypertension was significantly higher in men than in women and lack of awareness of Hypertension is a major problem. In the over 40 age group mainly due to high blood pressure related risk factors leading to high blood pressure which causes various CVS diseases which promotes leading to premature death,shorter mortality and shorter life expectancy.

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REFERENCES:

1. Carey RM, Muntner P, Bosworth HB, Whelton PK. 2018 .Prevention and Control of Hypertension: JACC Health Promotion Series. J Am Coll Cardiol. 11;72(11):1278-1293.
2. Leggio M, Lombardi M, Caldarone E, Severi P, D'Emidio S, Armeni M, Bravi V, Bendini MG, Mazza A. 2017 .The relationship between obesity and hypertension: an updated comprehensive overview on vicious twins. Hypertens Res.;40(12):947-963.
3. Prabhakaran D, Jeemon P, Roy A.2016. Cardiovascular Diseases in India: Current Epidemiology and Future Directions. Circulation.19;133(16):1605-20.
4. Rajkumar E, Romate J. 2020.Behavioural Risk Factors, Hypertension Knowledge, and Hypertension in Rural India. Int J Hypertens. 9;2020:8108202.
5. Ghosh S, Kumar M. 2020.Prevalence and associated risk factors of hypertension among persons aged 15-49 in India: a cross-sectional study. BMJ Open. 16;9(12):e029714.
6. Isabel C Pinto, Debora Martins 2017 .Review Prevalence and risk factors of arterial hypertension: A literature review. Journal of Cardiovascular Medicine and Therapeutics Volume 1, Issue 2.
7. Gupta R, Xavier D. 2018 .Hypertension: The most important non communicable disease risk factor in India. Indian Heart J;70(4):565-572.
8. R. Gupta, K. Gaur, and S. C. V. Ram, 2019. "Emerging trends in hypertension epidemiology in India," Journal of Human Hypertension, vol. 33, no. 8, pp. 575–587.
9. Singh S, Shankar R, Singh GP. 2017 .Prevalence and Associated Risk Factors of Hypertension: A Cross-Sectional Study in Urban Varanasi. Int J Hypertens. ;2017:5491838.
10. Anchala, Raghupathy et al. 2014 ."Hypertension in India: a systematic review and meta-analysis of prevalence, awareness, and control of hypertension." Journal of hypertension vol. 32,6 : 1170-7.

11. Bhatia M, Kumar M, Dixit P and Dwivedi LK 2021 .Diagnosis and Treatment of Hypertension Among People Aged 45 Years and Over in India: A Sub-national Analysis of the Variation in Performance of Indian States. *Front. Public Health* 9:766458.
12. Saju MD, Allagh KP, Scaria L, Joseph S, Thiyagarajan JA. 2020 .Prevalence, Awareness, Treatment, and Control of Hypertension and Its Associated Risk Factors: Results from Baseline Survey of SWADES Family Cohort Study. *Int J Hypertens*, 13;2020:4964835.