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A STUDY TO ASSESS THE THERAPEUTIC COMPLIANCE FROM HYPERTENSIVE PATIENTS AT TERTIARY CARE HOSPITAL, BATHINDA

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ABSTRACT

Objective: To assess the Patient knowledge about their disease.To assess the compliance of patients to antihypertensive drug.To assess the factors affecting therapeutic ompliance of patients to antihypertensive drugs.

Methods: Methods: In order to know the medication adherence (MA) of the patient towards treatment they were provided with specially designed questionnaire i.e., Morisky Medication Adherence scale of 8-item questions, and also their follow up of the medication adherence has rechecked.

Result: Of 275 respondents, total 69.1% were found to have low adherence (score 3-8) to their medication, while 24.0% were having medium adherence (score 1-2) and just 6.9% were having high level of adherence (score =0) to their medication. This study found that among total respondents N=275, 39% (f=108) of respondents not complying with therapy medication adherence and mostly either forgot to take their medications, or travelling and leaving their medications at home or even miss their medications for other reasons than forgetting. This study shows that there is significant association between occupation, residency, education, family history and dietary habits like salt intake and therapeutic compliance to the medication among hypertensive patients. For unemployed patients were found to have high adherence to their medication than employed respondents. Rural residents were significantly adhere to their medication than urban residents.

Literate respondents were significantly adhere to their medication than illiterate respondents and family history of hypertension. And similarly, the salt intake habits by respondents is having significant association with the adherence of the medication.

There was no significance association found between the level of adherence and other demographic variables like sex, age, and medication intake, frequency of medicine intake, smoking, and quantity of salt/day.

Conclusion: In conclusions, this study concludes that among 275 respondents, total 190 (69.1%) were found to have low adherence (score 3-8) to their medication, while 66 (24.0%) were having medium adherence (score 1-2) and just 19 (6.9%) were having high level of adherence (score =0) to their medication. This study found that among total respondents N=275, 39% (f=108) of respondents not complying with therapy medication adherence and mostly either forgot to take their medications, or travelling and leaving their medications at home or even miss their medications for other reasons than forgetting
Key word Hypertension, compliance, adherence, lifestyle, perception

INTRODUCTION:

Hypertension is a global public health concern because of its high prevalence and associated risks of cardiovascular and kidney diseases (Kearney et al., 2005).Of all the degenerative diseases and preventable causes of death, the World Health Organization (WHO) ranks hypertension as the number one cause of mortality, accounting for about 17 million deaths per year worldwide (WHO, 2013). A hypertensive individual is described as one with an average systolic blood pressure ≥140 mmHg, or diastolic pressure ≥90 mmHg. The clinical diagnosis of hypertension as measured now is based on the methodology of Russian scientist Nikolai Korotkoff; and this measure is the average of two or more seated systolic and diastolic measures taken on different occasions (Chobanian et al., 2003). Based on the classification proposed by the Seventh Joint National Committee (JNC 7) on Prevention, Detection, Evaluation and Treatment of Blood Pressure report, blood pressure is grouped into four, defined by various levels of systolic and diastolic blood pressures (Chobanian, Bakris & Black, 2003; Convertino, 2012). Normal levels are indicated by BP combination of < 120/80mmhg, Prehypertension with combinations 120-139/80-89 mmHg, Stage 1 hypertension with combinations 140-159/90-99 mmHg and Stage 2 hypertension with combinations ≥160/≥100mmHg (Chobanian et al., 2003; WHO, 2013). For optimal blood pressure control, a class of drugs known as antihypertensive drugs together with other antihypertensive therapy initiatives have been designed purposely to prevent blood pressure complications. The drugs are usually recommended more frequently for individuals with Stage 1 or 2 hypertension; and work by either removing excess salt or fluids from the body, or by slowing the heart beat via relaxing or widening blood vessels to increase blood flow (WHO, 2013). Poor compliance to prescribed antihypertensive drugs is a major contributor to poor blood pressure control (Gupta, Arshad, & Poulter, 2010. Research has identified factors such as patients concerns about the long term effects of the drugs as well as beliefs and perceptions about the necessity of the prescribed drug as predictors of compliance (WHO, 2013). Illness perceptions and patient beliefs have by far outweighed other factors as major predictors for compliance (Sabaté, 2003).Patients have their individual perceptions about the prescribed therapy and services provided by the health personnel. They also have their own beliefs about treatment therapies especially in relation to the necessity of medication, the side effects of the drug and fear of complications (Aikens & Piette, 2009). These beliefs and perceptions are usually informed by knowledge gathered from an individual‘s background or culture. Exploring these factors will give insight into a patient‘s compliance behaviour with respect to antihypertensive medication. Although the benefits of antihypertensive drugs in controlling BP have been well established, some patients are still failing in keeping their BP levels normal. Poor compliance is usually the main reason for this problem. For a treatment to be effective, Haynes et al. (1979), proposed that a patient needs to be about 80% compliant to prescribed medication. In the USA, studies on patient compliance to antihypertensive drugs converge at 50% level of compliance (WHO, 2013). In Taiwan, a study determined a compliance level of 52.5%, and another in Pakistan

determined compliance to be 53% (Al-Ramahi, 2014; Li et al., 2012). Information on the level of compliance in African countries is sparse, although one study carried out in Nigeria found only 31.2% of patients on antihypertensive drugs being compliant (Busari et al. 2010). The ultimate outcome of poor compliance is treatment failure and its associated morbidity with regards to blood pressure complications like strokes and kidney diseases (WHO, 2013). These adverse outcomes place a burden on individual and government budgets because of the high costs that go into treatment of blood pressure complications. In 2001, the burden of healthcare costs placed by poor blood pressure control on Ghana alone was estimated at two billion dollars (Bosu, 2010). Thus, determining the factors that drive compliance behaviour among patients is an area for further scientific research. Studies have identified a high number of perceived problems in the daily life of hypertensive people regarding their treatment. Patients differ in their behaviour towards the treatment in terms of beliefs, attitudes and perceptions about antihypertensive therapy (Nilsson, 2009). In the treatment of hypertension, patient perceptions about the disease and treatment therapies can influence blood pressure control, prognosis of the disease and thus the mortality of the patient (WHO, 2013). Haynes et al. (1979), carried out a study to improve patient compliance when a high medical and economic burden was placed on government and individual budgets as a result of the increase in hypertension morbidities. Poor medication compliance is a general problem the world over but for countries like Ghana, with a weak health system, this problem is more severe. Several decades of research into compliance has not been successful in solving this problem; and today, noncompliance remains a universal challenge in treatment therapies (WHO, 2013).

MATERIAL AND METHOD:

The prospective observational study was conducted in Medicine Department Bathinda after getting approval from the Ethical Committee of Adesh University (Letter No. AU/CoE/TP/Pharm/05/135(a)) and Written consent in the language known to the patient were taken before including the patient in this study. The data was collected using the pre-designed structured questionnaire form. This data collection tool used for study was an interview schedule that was held at the institute with assistance from faculty members and other experts. Before distributing the questionnaire the purpose of the study and the contents of the questionnaire were clearly explained to the selected subjects and they were ensured confidentiality regarding their data. The selected subjects were hypertension patients of medicine department at Adesh hospital. A written consent from was obtained from the hypertension patients who were willing to participant in the study.

Statistical Analysis:

Data were collected and analysis was done using SPSS for Windows version 20.0 software (SPSS, Inc., Chicago, IL, USA). Frequency and percentage were used to represent gender, age group, number of interaction and number of drugs used by the patients.

RESULT

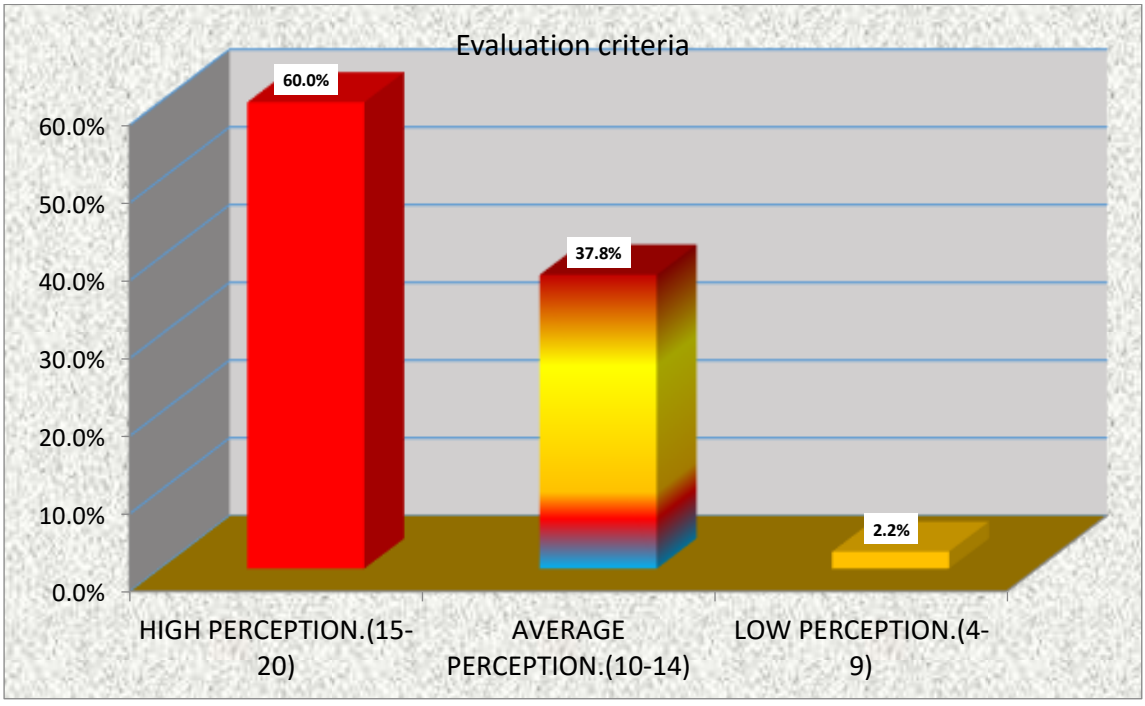
Table 1: **Table Showing Level of Scores of Perception of medication adherence.**

CRITERIA MEASURE OF PERCEPTION SCORE		
Level of Scores N= 275	**Percentage**	**Frequency**
HIGH PERCEPTION.(15-20)	60.0%	165
AVERAGE PERCEPTION.(10-14)	37.8%	104
LOW PERCEPTION.(4-9)	2.2%	6

Maximum =20 Minimum=4

The above table shows the level of perception score among the hypertensive patients (N=275). Among the total 275 patients, 60.0% with frequency of 165 patients are having high perception rate, while 37.8% with frequency of 104 are having average perception level and only 2.2% with frequency of 6 are shown to have low perception score. The minimum score taken as 4 and the maximum level of score was taken as 20.

Figure 1: Diagram showing Level of Score of the perception among the hypertensive patients.



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rate, while 37.8% with frequency of 104 are having average perception level and only 2.2% with frequency of 6 are shown to have low perception score. The minimum score taken as 4 and the maximum level of score was taken as 20.

: Frequency Distribution of Demographic variables.

N=275

Variables	Opts	Percentage (%)	Frequency(f)
Sex	Male	58.2%	160
	Female	41.8%	115
Age (yrs)	10-30 Years	3.3%	9
	31-50 Years	17.1%	47
	51-70 Years	54.5%	150
	71 Years or Above	25.1%	69
Occupation	Employed	50.2%	138
	Non employed	49.8%	137
Residency	Urban	46.9%	129
	Rural	53.1%	146
Education	Literate	58.5%	161
	Illiterate	41.5%	114
Family History	No	58.2%	160
	Yes	41.8%	115
Take Medicine for Hypertension	No	16.0%	44
	Yes	84.0%	231
How often you take your Medicine	Once	13.8%	38
	Twice	24.4%	67
	Thrice	61.8%	170
Do you smoke?	No	49.1%	135
	Yes	50.9%	140
Dietary Habits	Low salt	22.9%	63
	High Salt	77.1%	212
Quantity of salt per day	1 teaspoon	59.3%	163
	< 1 teaspoon	30.5%	84
	> 1 teaspoon	10.2%	28

Table no. 4, above show that the Total of 275 hypertensive patients were interviewed and results showed that majority of subjects were between the ages of 51-70 Years (54.5%), followed by those between the ages of above 70 years, (25.1%), with the least number of respondents being less than 31-50 years (17.1%) and a mean age of total respondents being 65 years. About 41.8% of the total respondents were females; the remaining 58.2% were males. Majority of the total respondents were employed from forming 50.2% of total respondents,

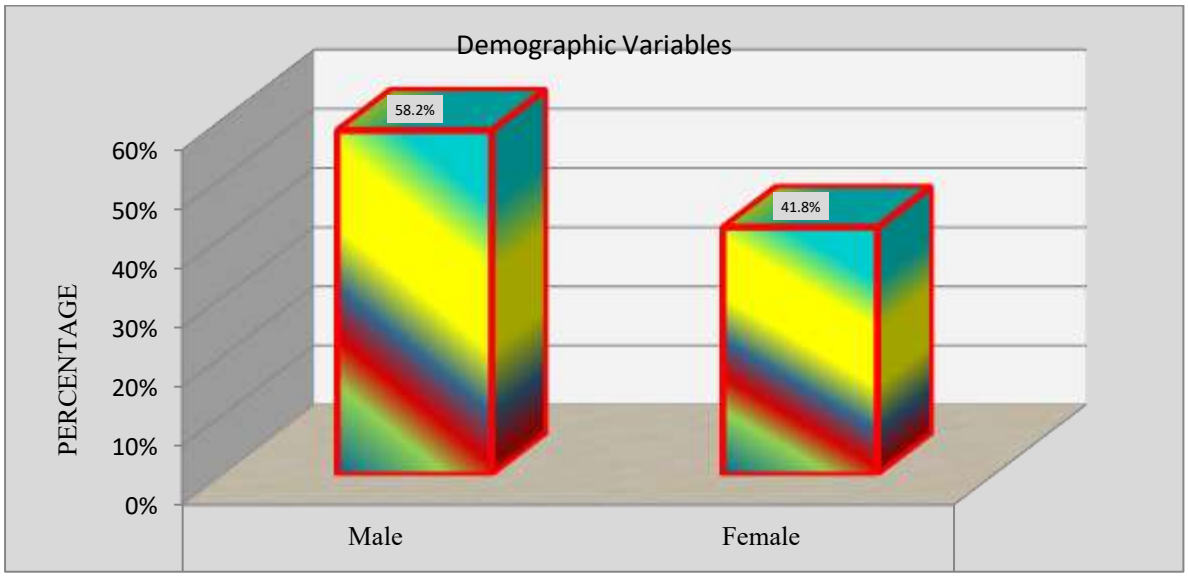
while 49.8% were non-employed.

Of the total 275 respondents, about 58.5% were literate, while 41.5% were illiterate by education. About 129(46.9%) of the total respondents were urban, while 146 (53.1%) were rural. Of a total of 275 respondents, about 160 (58.2) had no family history of hypertension, and about 115 (41.8%) had history of family hypertension.

Similarly, out of the total respondents, a majority 135 (49.1) did not smoke and 140 (50.9%) use to smoke. The results showed that about 231 (84.0%) of respondents were taking medicine for hypertension, while the remaining 44 (16.0%) were not taking any medicine for hypertension. Out of total 275 respondents, 170 (61.8%) were taking their medication once, while 67 (24.4%) were taking the medication twice a day and the remaining 38 (13.8%) were taking their medication thrice a day.

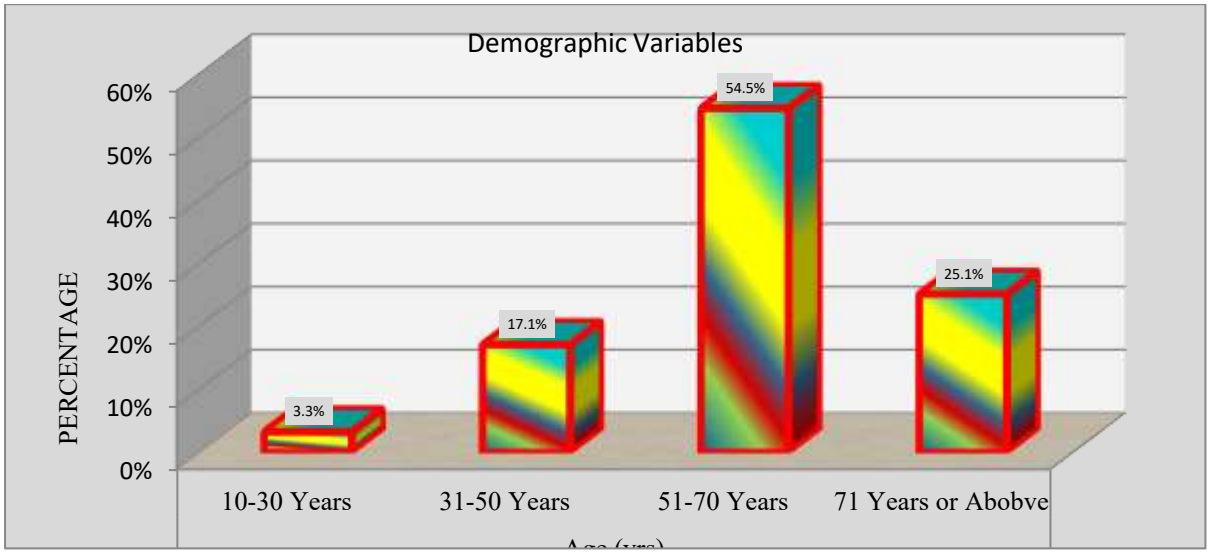
Similarly, the data in table no.4 shows that of the total 275 respondents, 212 (77.1%) patients had history of taking high salt in their diet and the remaining 63 (22.9%) patients were taking low salt in their daily diet. Among them 163 (59.3%) respondents were taking about one teaspoon full salt per day, while 84 (30.5%) were taking < 1 teaspoon of salt per daily and remaining 28 (10.2%) were taking > 1 teaspoon of salt per day.

: Diagram showing frequency Distribution of Demographic variables of sex.

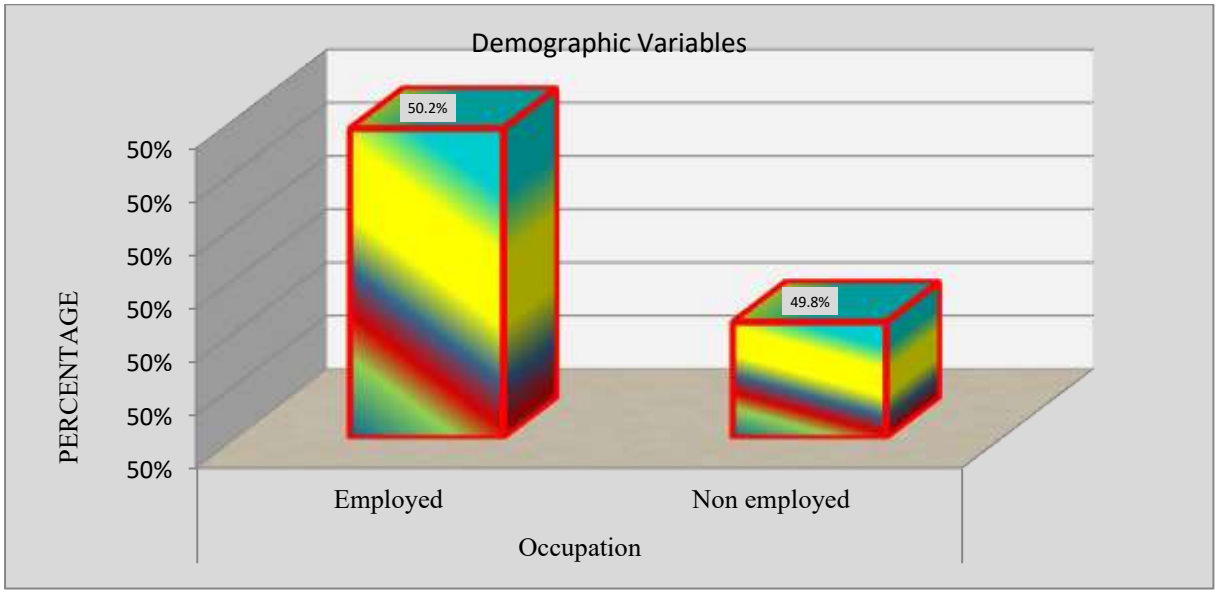


The above figure shows that about 58.2% of the total respondents were males; the remaining 41.8% were females.

Figure 2: shows the percentage and frequency of the demographic value of age in different age groups.

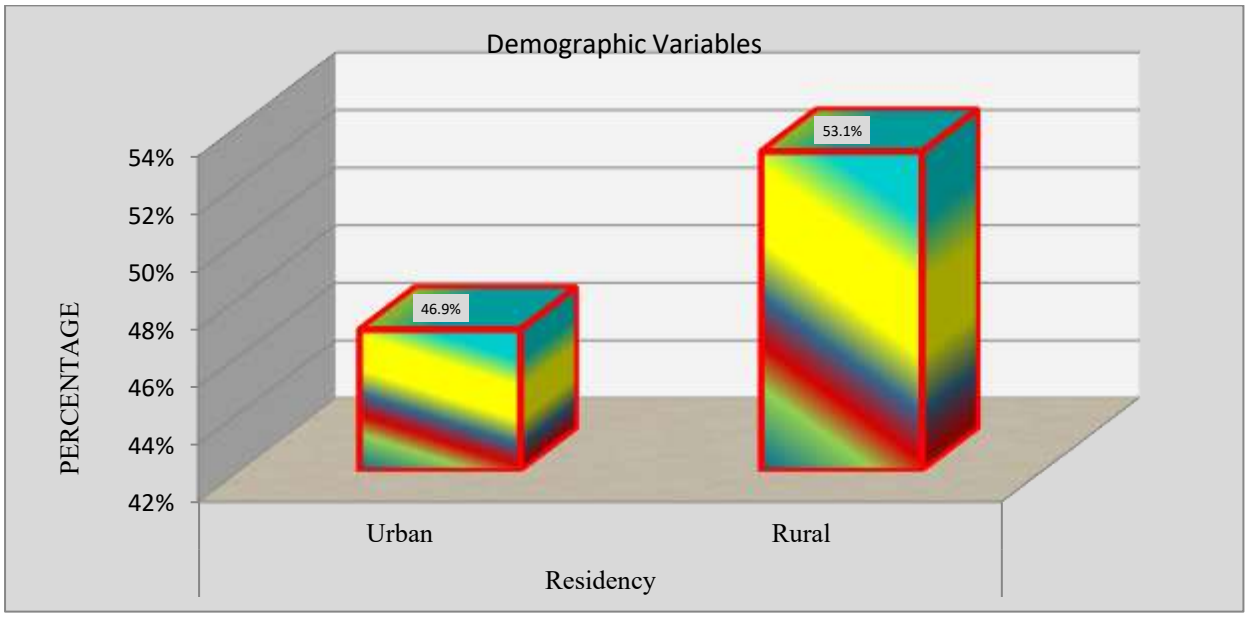


: shows the percentage of demographic value of occupation.



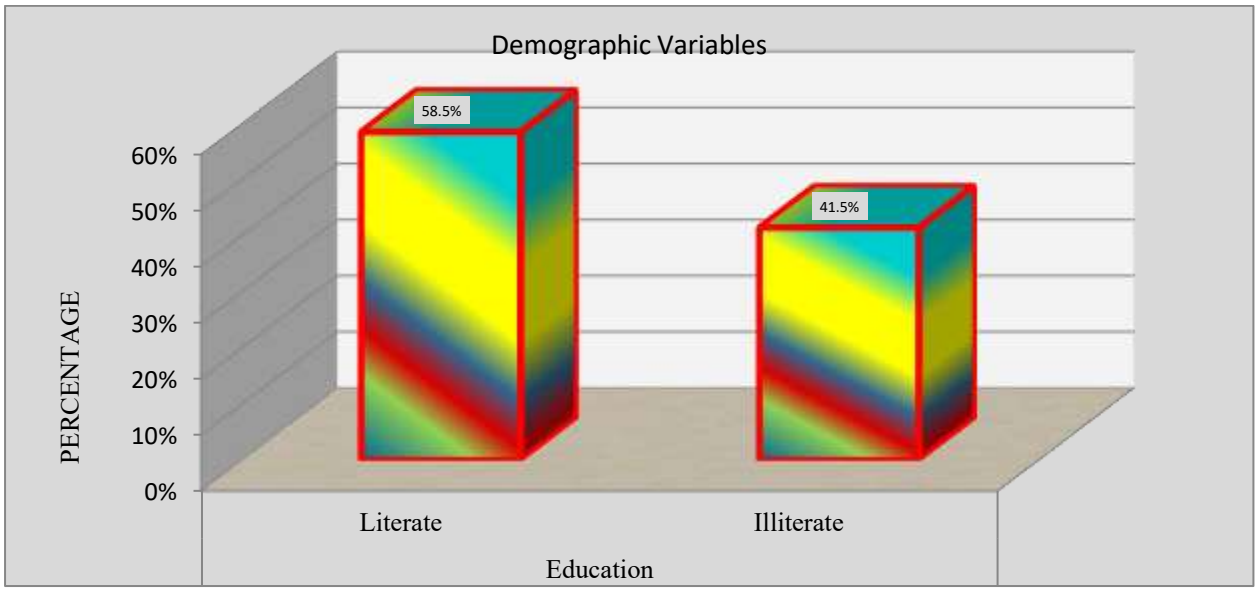
The above figure shows Majority of the total respondents were employed from forming 50.2% of total respondents, while 49.8% were non-employed.

: shows the percentage value of the demographic variable of residency.



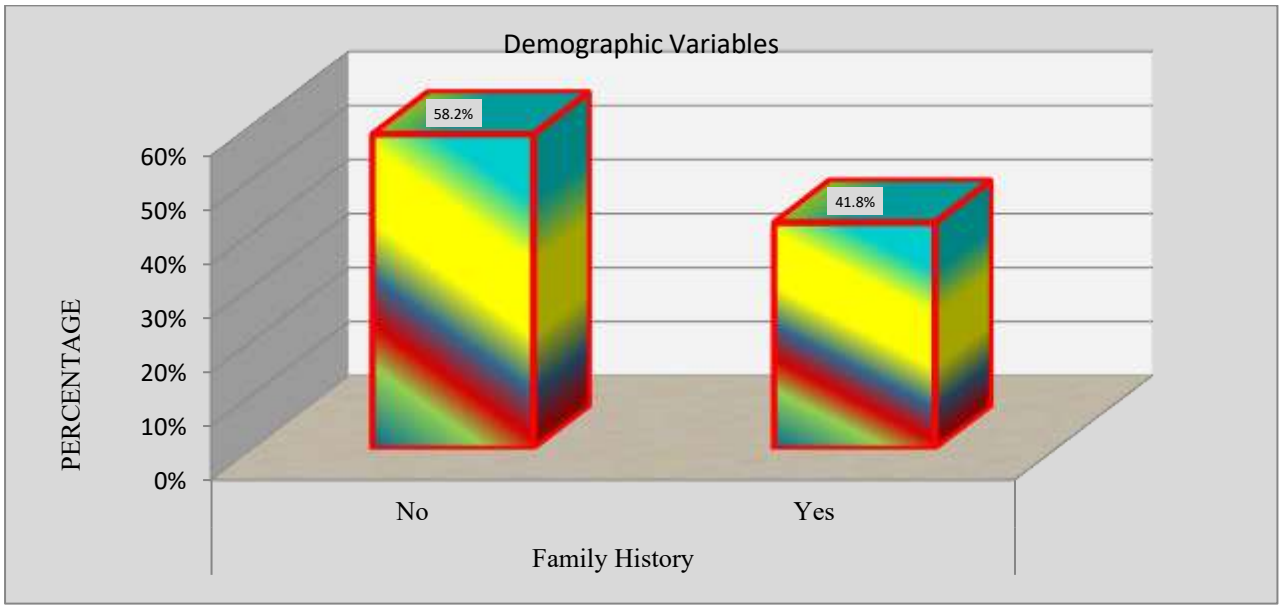
The above figure shows. About 129(46.9%) of the total respondents were urban, while 146 (53.1%) were rural.

shows the percentage of demographic variable of education of the patients.



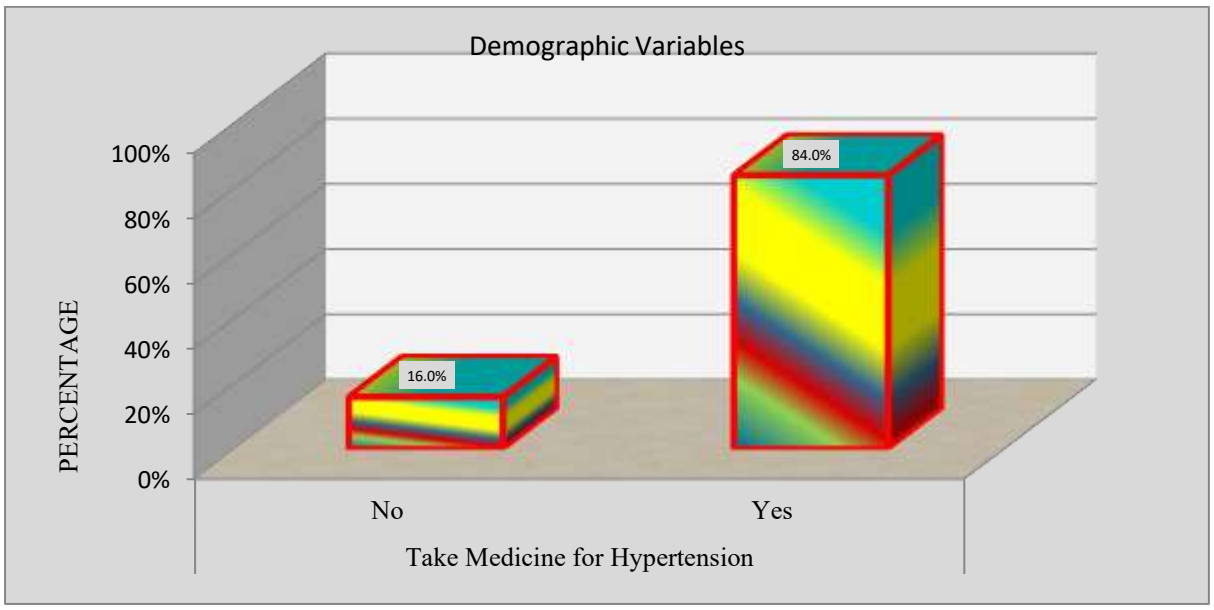
The above figure shows about 58.5% were literate, while 41.5% were illiterate by education.

diagram shows the percentage of demographic variable of family history of the patients.



The above figure shows about 160 (58.2) had no family history of hypertension, and about 115 (41.8%) had history of family hypertension.

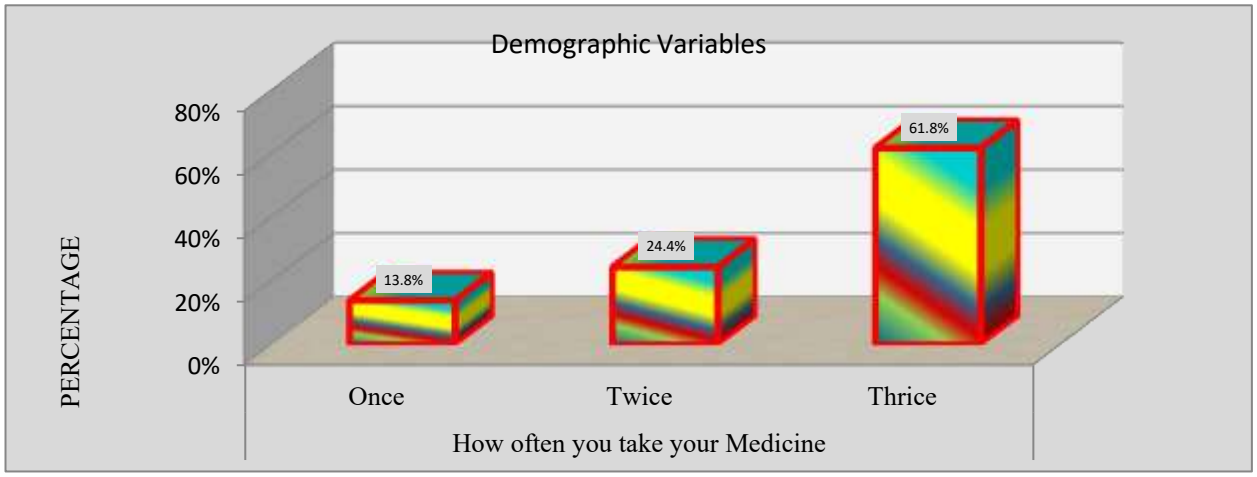
Figure 3**: diagram shows the percentage of demographic variable for taking medicine for hypertension in the patients.**



The above figure shows that about 231 (84.0%) of respondents were taking medicine for hypertension, while the remaining 44 (16.0%) were not taking any medicine for hypertension.

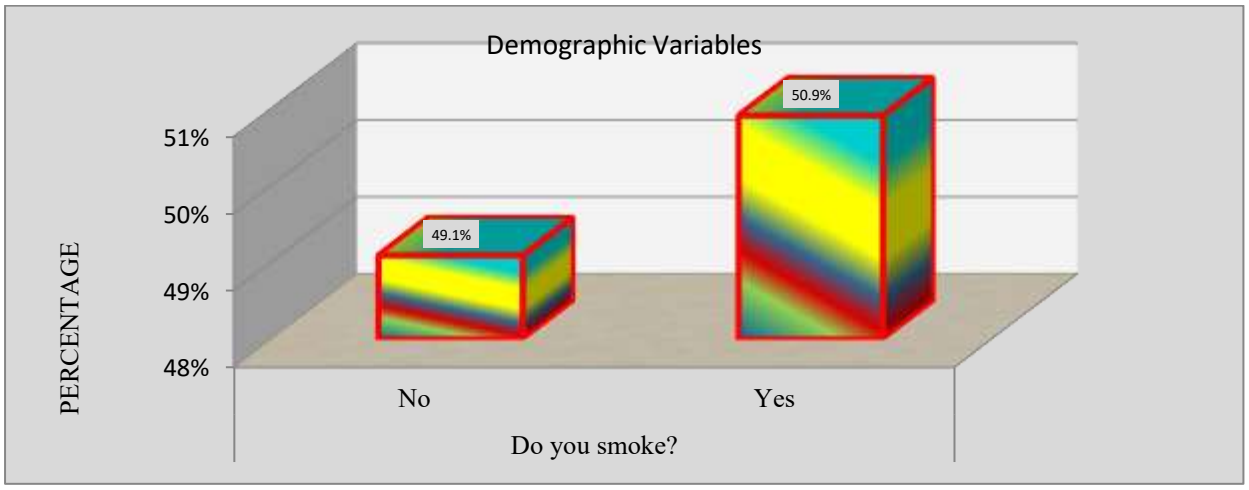
Figure 4**: diagram shows the percentage of demographic variable for how**

Often the patients are taking their medicine.



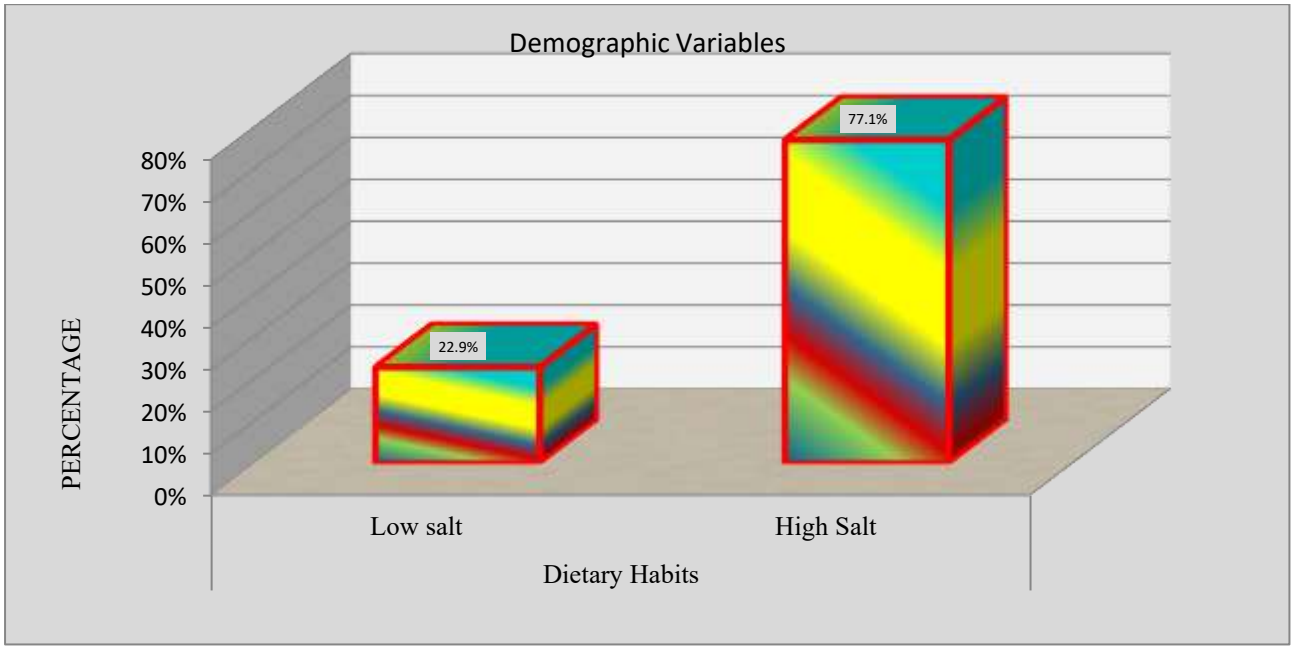
The above figure shows that about 170 (61.8%) were taking their medication once, while 67 (24.4%) were taking the medication twice a day and the remaining 38 (13.8%) were taking their medication thrice a day.

Figure 5**: diagram shows the percentage of demographic variable of smoking habit of the patients.**



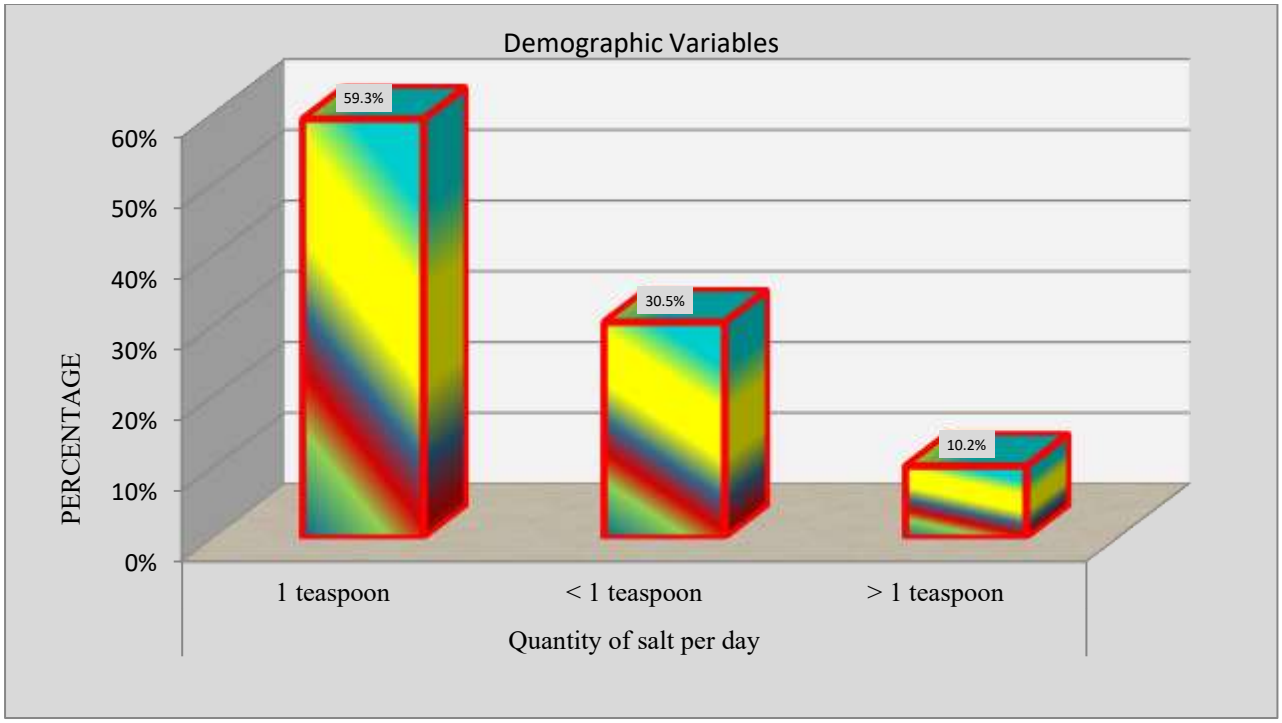
The above figure shows about that majority 135 (49.1) did not smoke and 140 (50.9%) use to smoke.

: diagram shows the percentage of demographic variable of dietary habits of the patients.



The above figure shows that about 212 (77.1%) patients had history of taking high salt in their diet and the remaining 63 (22.9%) patients were taking low salt in their daily diet.

: diagram shows the percentage of demographic variable of quantity of salt by the patients.



The above figure shows that about 163 (59.3%) respondents were taking about one teaspoon full salt per day, while 84 (30.5%) were taking < 1 teaspoon of salt per daily and remaining 28 (10.2%) were taking > 1 teaspoon of salt per day.

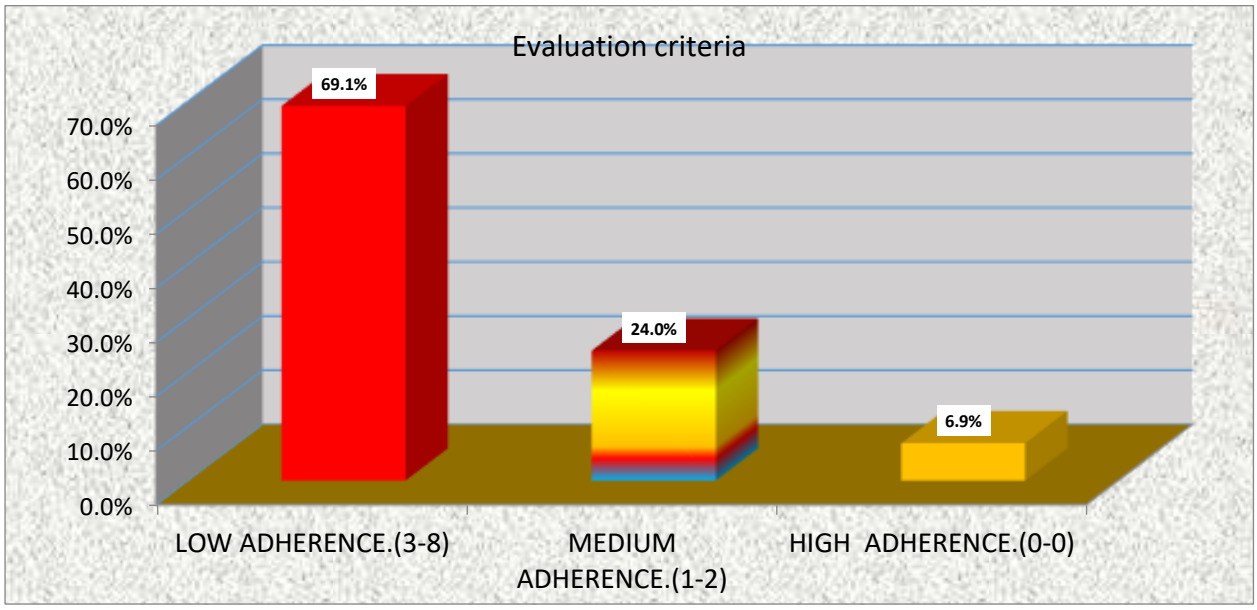
Table Showing Level of Scores of Adherence to the medication among the hypertensive patients.

CRITERIA MEASURE OF ADHERENCE SCORE		
Level of Scores N= 275	**Percentage**	**Frequency**
LOW ADHERENCE.(3-8)	69.1%	190
MEDIUM ADHERENCE.(1-2)	24.0%	66
HIGH ADHERENCE.(0-0)	6.9%	19

Maximum =40 Minimum=4

The above table shows the percentage of medication adherence among the hypertensive patients. Of 275 respondents, total 190 (69.1%) were found to have low adherence (score 3-8) to their medication, while 66 (24.0%) were having medium adherence (score 1-2) and just 19 (6.9%) were having high level of adherence (score =0) to their medication.

Figure 6: Diagram showing Level of Scores of medication Adherence.



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to their medication, while 66 (24.0%) were having medium adherence (score 1-2) and just 19 (6.9%) were having high level of adherence (score =0) to their medication.

Descriptive Statistics table showing Mean, Median and Standard deviation of Medication Adherence.

N= 275

Descriptive Statistics	Mean	Median	S.D.	Maximum	Minimum	Range	Mean %
ADHERENCE Score	2.94	3	1.22	5	0	5	7.35

Maximum=40 Minimum=4

The above table shows that mean, median and standard deviation values of adherence score among the 275 patients. Mean was found 2.94, median 3 and the standard deviation (SD) was 1.22. While, mean % was 7.35.

Table Showing Association of Adherence Scores and Demographic Variables

This section deals with the findings related to the association between score and selected demographic variables. The chi-square test was used to determine the association between the score levels and selected demographic variables

Demographic Data		**Levels (N=275)**			**Association with ADHERENCE Score**				
Variables	**Opts**	**HIGH ADHERENCE**	**AVERAGE ADHERENCE**	**LOW ADHERENCE**	**Chi Test**	**P Value**	**df**	**Table Value**	**Result**
Sex	Male	110	41	9	1.341	0.512	2	5.991	Not Significant
	Female	80	25	10					
Age (yrs)	10-30 Years	6	2	1	7.788	0.254	6	12.592	Not Significant
	31-50 Years	28	17	2					
	51-70 Years	102	37	11					
	71 Years or Abobve	54	10	5					
Occupation	Employed	90	31	17	12.607	0.002	2	5.991	Significant

	Non employed	100	35	2					
Residency	Urban	79	36	14	9.182	0.010	2	5.991	Significant
	Rural	111	30	5					
Education	Literate	104	41	16	6.640	0.036	2	5.991	Significant
	Illiterate	86	25	3					
Family History	No	118	36	6	7.087	0.029	2	5.991	Significant
	Yes	72	30	13					
Take Medicine for Hypertension	No	32	10	2	0.559	0.756	2	5.991	Not Significant
	Yes	158	56	17					
How often you take your Medicine	Once	28	8	2	5.956	0.202	4	9.488	Not Significant
	Twice	46	20	1					
	Thrice	116	38	16					
Do you smoke?	No	90	36	9	1.034	0.596	2	5.991	Not Significant
	Yes	100	30	10					
Dietary Habits	Low salt	48	15	0	6.244	0.044	2	5.991	Significant
	High Salt	142	51	19					
Quantity of salt per day	1 teaspoon	119	34	10	6.023	0.197	4	9.488	Not Significant
	< 1 teaspoon	57	21	6					
	> 1 teaspoon	14	11	3					

Table no.9 above shows that the association between the level of score and socio demographic variable. Based on the objectives used to Chi-square test used to associate the level of knowledge and selected demographic variables.

Results from above table shows significant association between occupation, residency, education, family history and dietary habits like salt intake and therapeutic compliance to the medication among hypertensive patients. For unemployed patients were found to have high adherence to their medication than employed respondents with chi-test score of 12.607 and the p value <0.05 (0.002). Rural residents were significantly adhere to their medication than urban residents with chi-test score of 9.182 and the P value of 0.010 (<0.05).

Similarly, literate respondents with chi-square test value of 6.640 and P value 0.036 were significantly adhere to their medication than illiterate respondents. Likewise, the significant association was found between the medication adherence and family history with chi-test value of 7.087 and P value of 0.029 (<0.05).

And similarly, the salt intake habits by respondents is having significant association with the adherence of the medication with chi-square value of 6.244 and P value of 0.044 (<0.05).

There is no significance association between the level of adherence and other demographic variables like sex, age, and medication intake, frequency of medicine intake, smoking, and quantity of salt/day .The calculated chi-square values were less than the table value at the 0.05 level of significance.

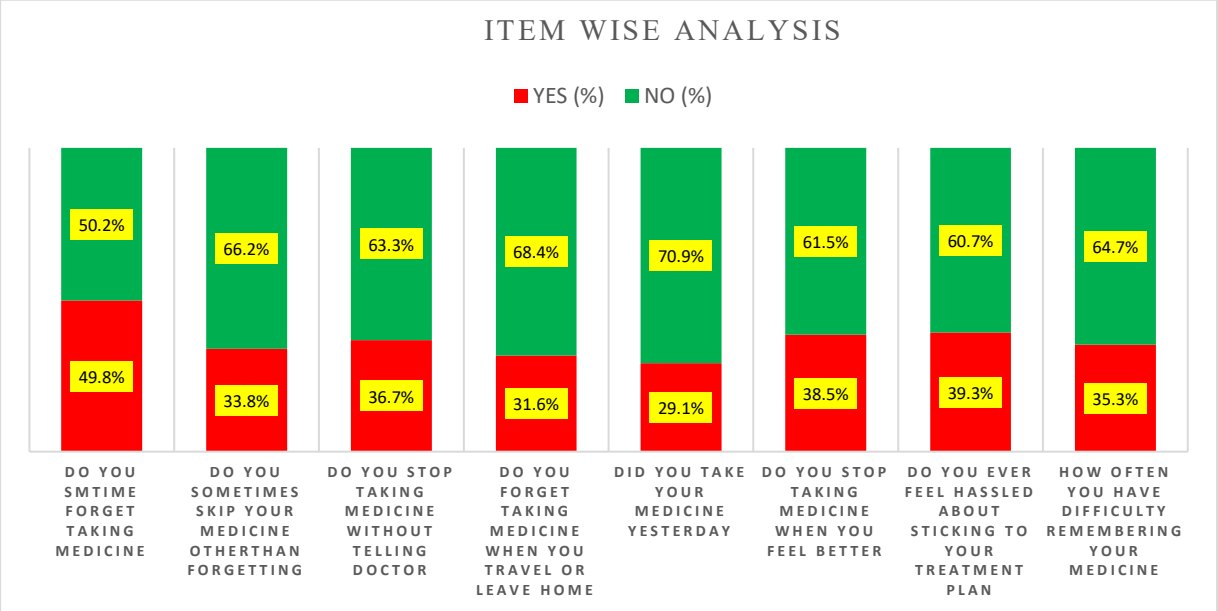
Table 2: Item wise analysis (Table Showing Response in frequency percentage of Subjects according to each question)

Area	Questions	YES (%)	NO (%)	YES (f)	NO (f)
PART C- ADHERENCE	DO YOU SMTIME FORGET TAKING MEDICINE	49.5%	50.5 %	13 7	138
	DO YOU SOMETIMES SKIP YOUR MEDICINE OTHERTHAN FORGETTING	34%	66%	93	182
	DO YOU STOP TAKING MEDICINE WITHOUT TELLING DOCTOR	37%	63%	10 1	174
	DO YOU FORGET TAKING MEDICINE WHEN YOU TRAVEL OR LEAVE HOME	32%	68%	87	188
	DID YOU TAKE YOUR MEDICINE YESTERDAY	29%	71%	80	195
	DO YOU STOP TAKING MEDICINE WHEN YOU FEEL BETTER	39%	61%	10 6	169
	DO YOU EVER FEEL HASSLED ABOUT STICKING TO YOUR TREATMENT PLAN	39%	61%	10 8	167
	HOW OFTEN YOU HAVE DIFFICULTY REMEMBERING YOUR MEDICINE	35%	65%	97	178

From above table the result shows the percentage and frequency of the patients about their medication adherence on basis of the asked to them from questionnaire. The

results are as below; almost 50% (f=138) were forgetting to take their medicine and 50% were not. Similarly, about 34% (f=93) patients sometimes skip their medicine other than forgetting while 66% (f=182) didn't. 37% (f=101) patients stop their medication without telling the doctor, while 63% (f=174) didn't stop their medication. 32% (f=87) patients forget taking medicine along with them when they travel or leave home, while 68% (f=188) didn't forget. Similarly, 29% (f=80) patient took their medicine yesterday, while remaining 71% (f=195) response in negative. About 39% (f=106) stop their medicine when they feel better, while 61% (f=169) didn't stop. 39% (f=108) patients felt hassled about sticking to their treatment plan while, 61% (f=167) didn't. And similarly, 35% (f=97) patients had difficulty in remembering their medicine while, remaining 65% (f=178) respondents hadn't.

Figure 7: Showing Item wise analysis of questions of medication adherence



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Discussion:

Among total respondents N=275, 39% (f=108) of respondents not complying with therapy medication adherence and mostly either forgot to take their medications, or travelling and leaving their medications at home or even miss their medications for other reasons than forgetting.69.1% of respondents had low medication adherence, while 24% respondents had medium adherence and 6.9% respondents had high adherence. The mean of adherence score was 2.94, median was 3 and standard deviation was 1.22 between the range of 0-5.This study also shows significant association between occupation, residency, education, family history and dietary habits like salt intake and therapeutic compliance to the medication among hypertensive patients.There is no significance association between the level of adherence and other demographic variables like sex, age, and medication intake, frequency of medicine intake, smoking, and quantity of salt/day .The calculated chi-square values were less than the table value at the 0.05 level of significance.

Conclusion

- In conclusions, this study concludes that among 275 respondents, total 190 (69.1%) were found to have low adherence (score 3-8) to their medication, while 66 (24.0%) were having medium adherence (score 1-2) and just 19 (6.9%) were having high level of adherence (score =0) to their medication. This study found that among total respondents N=275, 39% (f=108) of respondents not complying with therapy medication adherence and mostly either forgot to take their medications, or travelling and leaving their medications at home or even miss their medications for other reasons than forgetting.

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