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Medication Adherence and Clinical Outcome Towards Anti Hypertensive Drugs with Jnc-8 Guidelines in Government General Hospital

R. Mounisa[1], Ch.Sharmila[2], T.Rishika Reddy[3], S.Sahera[4], Dr.P.Rajasekhar[5],Dr.G.Nagarajan[6]

[1]*PharmD Intern, Dr.K.V.Subbareddy Institute of Pharmacy, Dupadu, Kurnool.*
[2]*PharmD Intern, Dr.K.V.Subbareddy Institute of Pharmacy, Dupadu, Kurnool.*
[3]*PharmD Intern, Dr.K.V.Subbareddy Institute of Pharmacy, Dupadu, Kurnool.*
[4]*PharmD Intern, Dr.K.V.Subbareddy Institute of Pharmacy, Dupadu, Kurnool.*
[5]*Professor, Department of General Medicine, Government General Hospital, Kurnool*
[6]*Professor, Department of Pharmaceutical Chemistry, Dr.K.V.Subbareddy Institute of Pharmacy, Dupadu, Kurnool.*
Corresponding Author: Ch.Sharmila

Abstract
Aim: *The aim of the study is to evaluate the current practice of antihypertensive drugs comparing with JNC-8 guidelines, medication adherence and clinical outcome towards antihypertensive drugs.*
Objectives*: To evaluate the current practise of antihypertensive drugs comparing with JNC-8 guidelines. To evaluate the clinical effectiveness of antihypertensive drugs. To determine measures of medication adherence are associated with clinical outcomes in patient with hypertension.*
Materials and Methods: *A total of 140 patients were selected. Prospective cross-sectional study was performed. Statistical methods such as student t-test ANOVA was performed using Prism8 software. 140 patients were included in the study. Patients were divided into three different groups based on duration. Age distribution, gender distribution, patient comorbidities.*
Results*: All the questionaries' were evaluated by using prism8 software and hence we concluded that there is significant difference between number of patients and options.*
Conclusion: *Medication adherence evaluation was performed using medication adherence rating scale. By evaluating all the answers, we conclude that there is significant difference between number of patients and options. Medication adherence is not same among all the patients. Health care providers should pay attention to the importance of adherence and the influencing factors of adherence.*
Key Words: *JNC-8, medication adherence, questionarie, prism8 software*

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I. Introduction

Hypertension is a common disease that is simply defined by persistent elevation of arterial blood pressure. However, it is now defined as one of the most significant cardiovascular morbidity and mortality. The Eight Joint National Committee on detection, evaluation and treatment of High Blood Pressure was developed to aid clinicians in the management of Hypertension. Arterial blood pressure is generated by the interplay between blood flow and the resistance to blood flow. Peak blood pressure values are achieved during cardiac concentration (systolic pressure) and at the end of concentration (Diastolic pressure). Arterial blood pressure conventionally measured in milliliters of mercury and recorded as systolic pressure over diastolic pressure (e.g., 120/75 mmHg). The difference between systolic blood pressure and diastolic blood pressure is called the pulse pressure and is an indicator of arterial wall tension.

TREATMENT: The JNC-8 is known to be a "Golden standard'' for the management of hypertension.

Goals of Therapy The goal of antihypertensive therapy is to reduce cardiovascular and renal morbidity and mortality. In patients of age above 60 years, if systolic blood pressure goal is once achieved then the diastolic blood pressure goal is reached to its normal. Blood pressure goal in patient with cardiovascular disease should be <140/90 mmHg and blood pressure goal in patient with hypertension, diabetes and renal disease should be <140/90 mmHg. The goal blood pressure in patient with chronic kidney disease and albuminuria should be <130/80 mm Hg.

Pharmacologic treatment
Antihypertensive drugs
Classification:

1. Diuretics
   Thiazides : Hydrochlorothiazide
Chlorthalidone,
Indapamide
   High ceiling : Furosemide, etc.
   K^+ sparing : Spironolactone,
   Amiloride
2.ACE inhibitors : Captopril,
   Enalapril,
   Lisinopril,
Perindopril,
Ramipril,
Fosinopril, etc.
3.Angiotensin blockers : Losartan,
Candesartan,
Irbesartan,
Valsartan,
Telmisartan
4.Direct renin inhibitor : Aliskiren
5.Calcium channel blocker: Verapamil,
Diltiazem,
Nifedipine,
Felodipine,
Amlodipine,
Nitrendipine,etc.
6.β Adrenergic blockers : Propranolol,
Metoprolol,
Atenolol
7.β+α Adrenergic blockers: Labetalol,
Carvidiolol
8.α Adrenergic blockers : Prazosin,
Terazosin,
Doxazocin,
Phentolamine,
Phenoxybenzamine
9. Central sympatholytic : Clonidine,
Methyldopa
10.Vasodilators :
Arteriolar : Hydralazine,
Minoxidil,
Diazoxide
Arteriolar + venous : Sodium Nitroprusside

MEDICATION ADHERENCE

Medication adherence is defined as the extent to which a patient's medication taking behaviour coincides with the intention of the health advice he or she has been given. Medication adherence is one of the most important factors that determine therapeutic outcome, especially in patients suffering from chronic illness. Whatever the efficacy of a drug, it cannot act unless the patient takes it. Low medication adherence has assumed importance as it seriously undermines the benefits of current medical care and imposes a significant financial burden on individual patients and the health care systems as a whole.

II. Material And Methods:

PLACE OF STUDY

General medicine department, Nephrology, General Surgery, Inpatients units of Government General Hospital, Kurnool, a 1000 bed teaching hospital.

PERIOD OF STUDY
The study period was six months i.e., June 2019 to November2019.
STUDY POPULATION
125 patients fit into inclusion criteria from both male and female population from General Medicine, Nephrology, General Surgery departments.
STUDY
A prospective cross-sectional study
SAMPLING
The patients were selected based on inclusion criteria and exclusion criteria. In the present study, patients are admitted in General medicine, Nephrology, General Surgery departments with Hypertension and comorbid conditions were included in the study.
INCLUSION CRITERIA
All the patients above 18 years age who diagnosed as Hypertensive were included in the study.
EXCLUSION
Patients below 17 years of age were excluded from the study.
Patients who are newly diagnosed as Hypertension were excluded.
IRB Approval
The research protocol was duely approved by IRB of Dr. K.V. Subbareddy Institute of pharmacy wide approval number **KVSP/IRB/2019-2019/Pharm.D/009.**
METHOD OF STUDY
The study begins with selection of patients based on the inclusion criteria followed by the collection of all baseline parameters of the patients demographic details, medical history, BP chart, confirmatory diagnosis, laboratory data, prognosis chart, Medication adherence rating scale and all the date of the subjects are collected by using patients data collection proforma.
STATISTICAL METHODS
We used student t-test and ANOVA by using Graph pad prism8.

III. Results

AGE DISTRIBUTION
A total of 140 patients were analyzed for a period of 6 months.
Table 1: furnishes the details of patient's age distribution in three different groups which were divided on the basis of duration.

S. No	Age	Group-A	Group-B	Group-C
1	<30	1	1	4
2	31-40	2	5	7
3	41-50	8	13	11
4	51-60	14	12	20
5	61-70	7	10	17
6	71-80	1	1	5
7	>80	0	0	1

Table 1. Age Distribution (n = 140)

- Calculated value, F 22.71, P <0.0001
- Therefore, 22.71 is not less than or equal to 0.0001
- Hence, we conclude that there is a significant difference between the age groups.

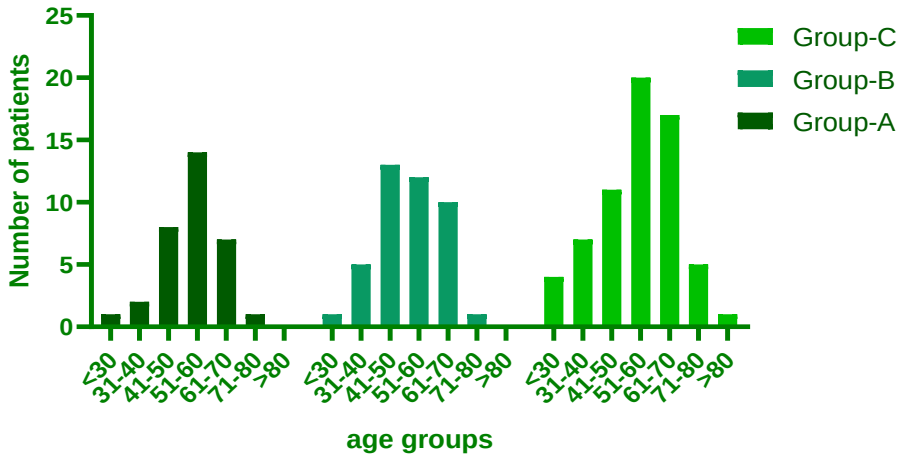

Figure 1: Age Distribution (n = 140)

GENDER DISTRIBUTION

Among 140 patients the distribution of gender is divided into three groups on the basis of duration.

S. No	Gender	Group-A	Group-B	Group-C
1	Male	24	19	39
2	Female	7	25	26

Table 2: Gender Distribution

- Calculated value F = 1.272, P = 0.3766
- Therefore 1.272 is not less than or equal to 0.3766
- There is significant difference between gender distribution of three groups.

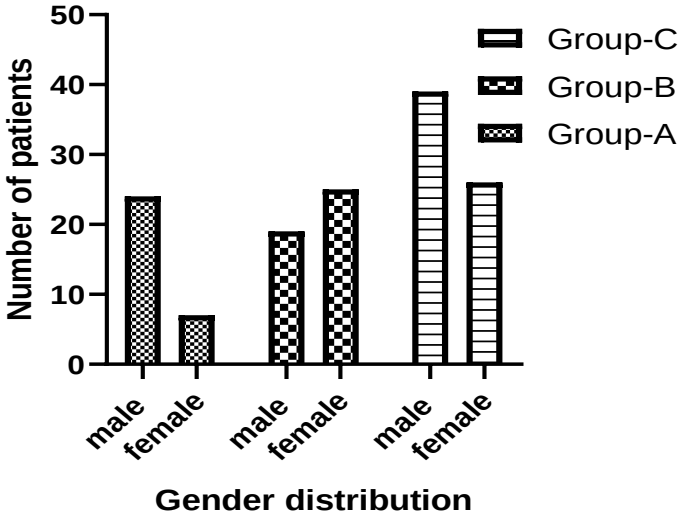

Figure 2: Gender Distribution (n = 140)

DISTRIBUTION OF COMORBIDITIES

Among previous comorbidities 4 (2.8%) of patient had Urosepsis, 38(27.14%) had CKD, 4(2.8%) had Seizures, 15(10.71%) had Diabetes, 49(35%) had CVA, 7(5%) had Fever, 3(2.14%) had Cardiovascular Disorders, 20(14.28%) had other conditions.

S.NO	COMORBIDITIES	NO.OF PATIENTS	PERCENTAGE
1	Urosepsis	4	2.8%
2	CKD	38	27.14%
3	Seizures	4	2.8%
4	Diabetes	15	10.71%
5	CVA	49	35%
6	Fever	7	5%
7	Cardiovascular disorders	3	2.14%
8	Others	20	14.28%

Table 3: Comorbidities in hypertensive patients (n=140)

- Calculated value t = 2.851, p value = 0.0247
- Therefore, 2.851 is not less than or equal to 0.0247
- Hence, we conclude that there is significance difference between number of patients and comorbidities.

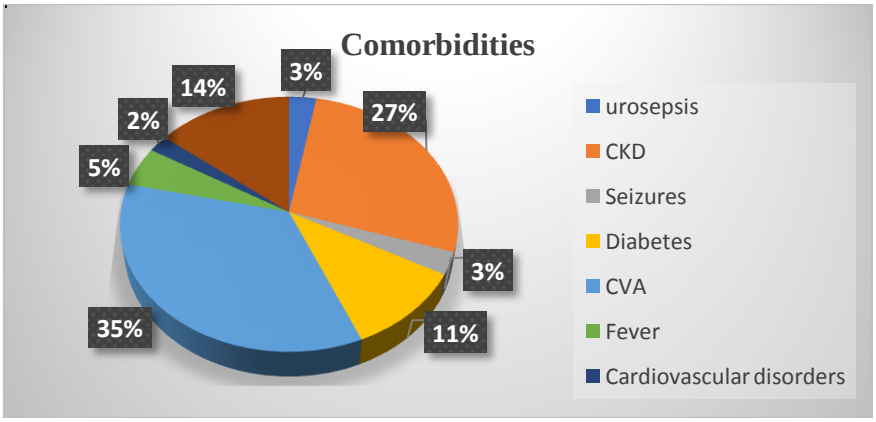

Figure 3: Disease comorbidities in Hypertensive patients (n = 140)

Medication adherence rating scale:

1. Do you ever forget to take your medication?

S.No	Options	Number of patients	percentage
1	Frequently	48	34.28%
2	Rare	74	52.85%
3	Never	18	12.85%
4	No response	0	0%

Table 4 : Medication Adherence regarding forget fullness.

- Calculated t value t = 2.142, P = 0.1216
- Therefore 2.142 is not less than or equal to 0.1216
- Hence, we conclude that there is a significant difference between options and number of patients.

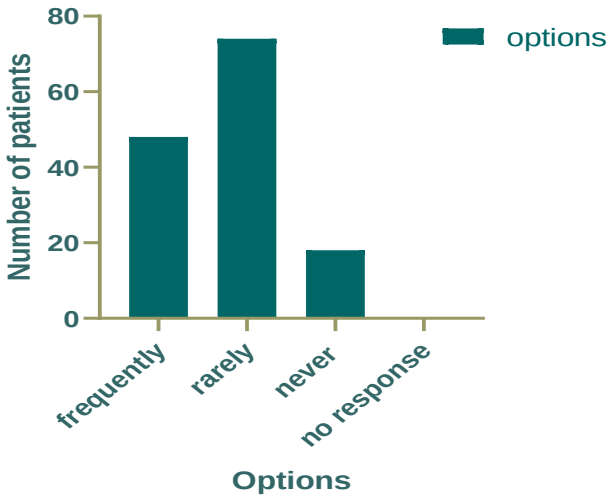

Figure 4: Medication Adherence regarding forget fullness.

2. Are you careless at times about taking your medication.

S.NO	OPTIONS	NO. OF PATIENTS	PERCENTAGE
1	Mostly	28	20%
2	Sometimes	92	65.71%
3	Never	20	14.28%
4	No response	0	0%

Table 5: Medication Adherence regarding carelessness.

- Calculated value t = 1.760, p = 0.1767
- Therefore 1.760 is not less than or equal to 0.1767
- Hence, we conclude that there is significance difference between options and number of patients.

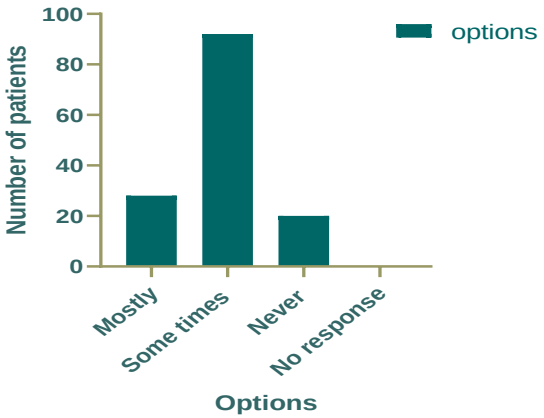

Figure 5 : Medication Adherence regarding carelessness.

3. when you feel better, do you sometimes stop taking your medication.

S.NO	OPTIONS	NO. OF PATIENTS	PERCENTAGE
1	Yes mostly	20	14.28%
2	Yes sometimes	99	70.71%
3	Never	21	15%
4	No response	0	0%

Table 6: Stoppage of medication after feeling better.

- Calculated t value t = 1.600, P = 0.2079
- Therefore 1.600 is not less than or equal to 0.2079
- Hence, we conclude that there is a significant difference between options and number of patients.

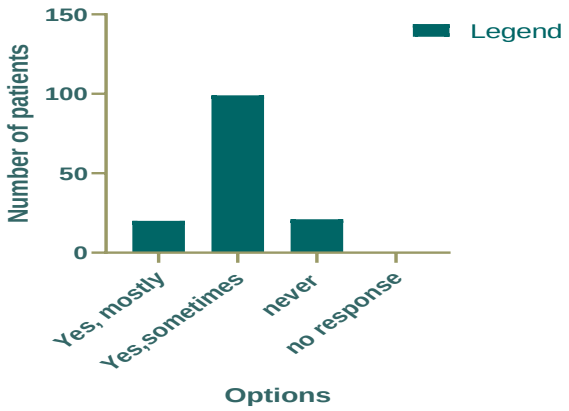

Figure 6: Stoppage of medication after feeling better.

4. Sometimes if you feel worse when you take the medication do you stop taking it.

S.NO	OPTIONS	NO.OF PATIENTS	PERCENTAGE
1	Most of the time	51	36.42%
2	Rarely	70	50%
3	Never	7	12.4%
4	No response	2	1.42%

Table 7: Stoppage of medication due to feeling of worsening condition.

- Calculated value t = 2.254, p = 0.1096
- Therefore 2.254 is not less than or equal to 0.1096
- Hence, we conclude that there is significance difference between options and number of patients.

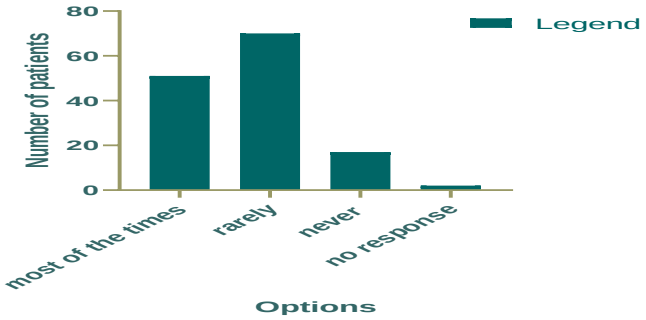

Figure 7: Stoppage of medication due to feeling of worsening condition

5. Have you ever treated your-self with anti-hypertensive.

S.NO	OPTIONS	NO. OF PATIENTS	PERCENTAGE
1	Yes	25	17.85%
2	no	75	53.57%
3	Never	38	27.14%
4	No response	2	1.42%

Table 8: Self medication of antihypertensive drugs.

- Calculated value t = 2.292, p = 0.1058
- Therefore 2.292 is not less than or equal to 0.1058
- Hence, we conclude that there is significance difference between options and number of patients.

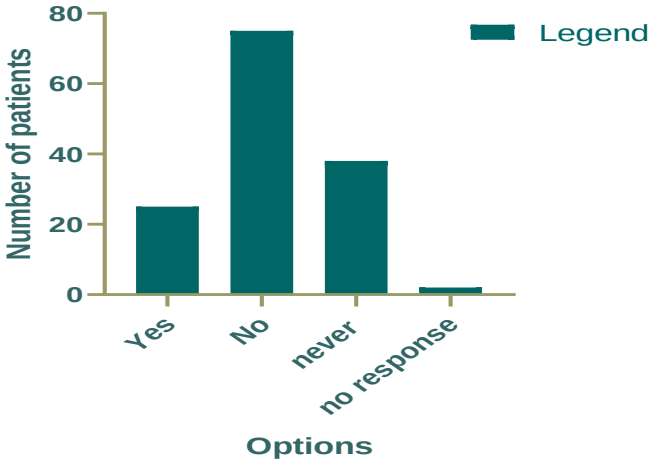

Figure 8: Self medication of antihypertensive drugs.

6. Did you ever change the dosage of anti-hypertensive drug during the course of self-treatment.

S.NO	OPTIONS	NO. OF PATIENTS	PERCENTAGE
1	Yes, always	6	4.28%
2	Yes, sometimes	32	22.85%
3	Never	98	70%
4	No response	4	2.85%

Table 9: Changing the dosage of drug during self treatment.

- Calculated value t = 1.595, p = 0.2090
- Therefore 1.595 is not less than or equal to 0.2090
- Hence, we conclude that there is significance difference between options and number of patients.

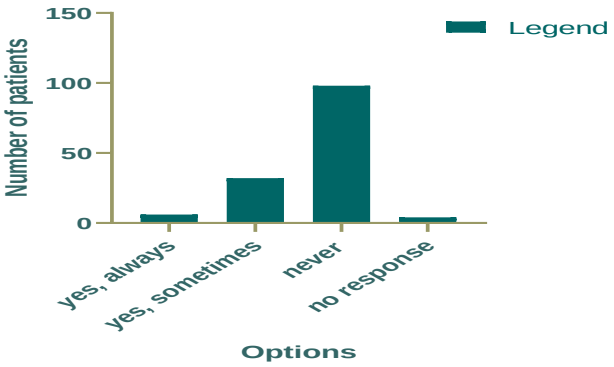

Figure 9: Changing the dosage of drug during self treatment.

7. When did you normally stop taking anti-hypertensive.

S.NO	OPTIONS	NO. OF PATIENTS	PERCENTAGE
1	After few days regardless of outcome	18	12.85%
2	After completion of course	25	17.85%
3	After counseling a doctor	91	65%
4	No response	6	4.28%

Table 10: Causes for the stoppage of Antihypertensive drugs

- Calculated value t = 1.835, p = 0.1639
- Therefore 1.835 is not less than or equal to 0.1639
- Hence, we conclude that there is significance difference between options and number of patients.

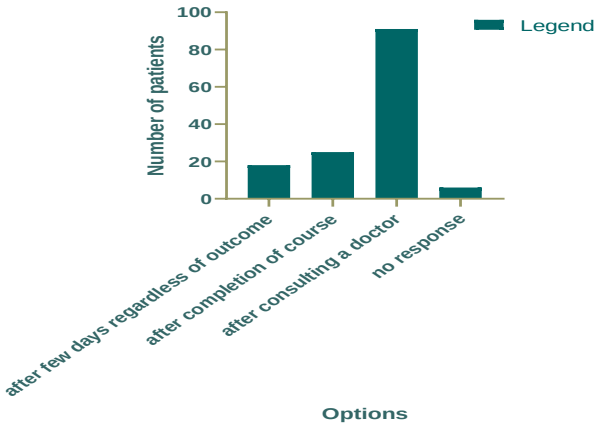

Figure 10: Causes for the stoppage of Antihypertensive drugs

8. How many times did you treat yourself with anti-hypertensive from past one year.

S.NO	OPTIONS	NO. OF PATIENTS	PERCENTAGE
1	Many times	7	5%
2	sometimes	49	35%
3	Never	81	57.85%
4	No response	3	2.14%

Table 11: Self Medication from the past one year

- Calculated value t = 1.889, p = 0.1553
- Therefore 1.889 is not less than or equal to 0.1553
- Hence, we conclude that there is significance difference between options and number of patients.

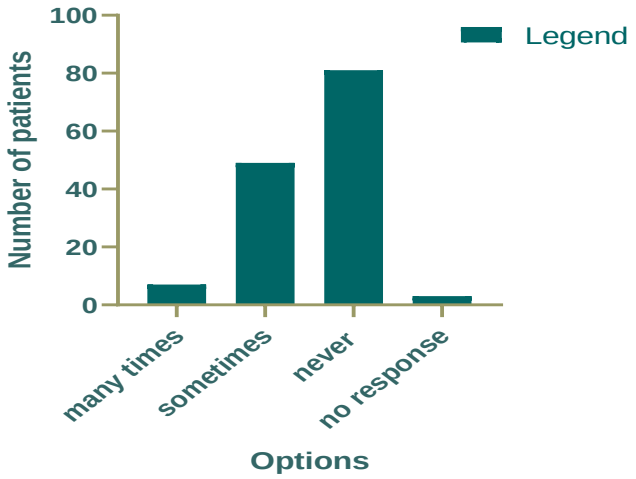

Figure 11: Self Medication from the past one year

9. I take my medication only when I am sick.

S.NO	OPTIONS	NO. OF PATIENTS	PERCENTAGE
1	Yes	61	43.57%
2	no	58	41.42%
3	mostly	19	13.57%
4	No response	2	1.42%

Table 12: Taking medication only when they are sick

- Calculated value t = 2.401, p = 0.0958
- Therefore 2.401 is not less than or equal to 0.0958
- Hence, we conclude that there is significance difference between options and number of patients.

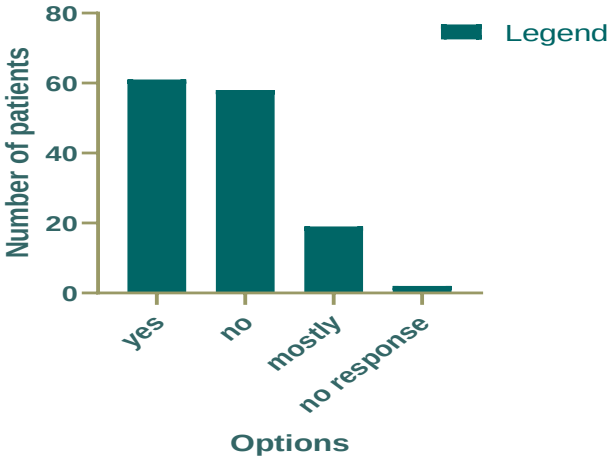

Figure 12: Taking medication only when they are sick

10. Even when I am not in hospital, I need medication regularly.

S.NO	OPTIONS	NO. OF PATIENTS	PERCENTAGE
1	I need it regularly	70	50%
2	I need it sometimes	66	47.14%
3	I don't need	3	2.14%
4	No response	1	0.71%

Table 13: Need of Medication

- Calculated value t = 1.835, p = 0.1639
- Therefore 1.835 is not less than or equal to 0.1639
- Hence, we conclude that there is significance difference between options and number of patients.

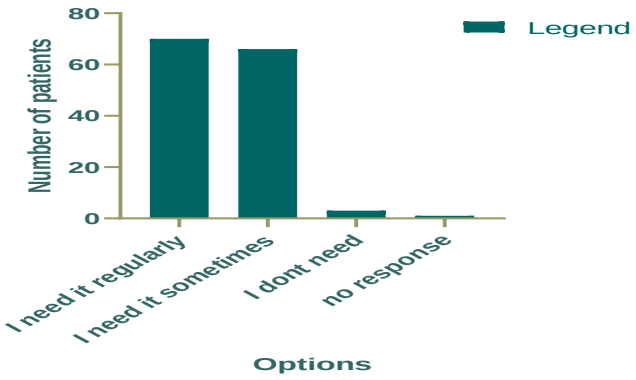

Figure 13: Need of Medication

IV. DISCUSSION

The study was conducted in General Medicine department, nephrology department, surgery department of Government General Hospital, Kurnool over a period of 6 months i.e., from June 2019-November 2019.

140 patients were included in the study. Patients were divided into three different groups based on duration. Age distribution, Gender distribution, patient comorbidities. It was concluded that there is significant difference between Age distribution, Gender distribution, and patient comorbidities of three groups.

Medication adherence was evaluated for 140 patients was performed by using medication adherence rating scale and Prism8 software.

For Question No1- Do you ever forget to take your medicine? 48(34.28%) of patients had chosen frequently, 74(52.85%) had chosen Rare, 18(12.85%) had chosen Never, 0(0%) had chosen No response.

For Question No 2- Are you careless at times about taking about taking your medication? 28 (20%) of patients had chosen Mostly, 92(65.71%) had chosen Sometimes,20(14.28%) had chosen Never, 0(0%) had chosen No response.

For Question No 3-When you feel better, you sometimes stop taking your medication? 20(14.28%) of patients had chosen yes mostly, 99(70.71%) had chosen yes sometimes, 21(15%) had chosen never, 0(0%) had chosen no response.

For Question No-4 sometimes if you feel worse when you take the medication do you stop taking it? 51(36.42%) of patients had chosen Most of the times, 70(50%) had chosen Rarely, 7(12.4%) had chosen Never, 2(1.4%) had chosen No response.

For Question No-5 Have you ever treated yourself with Antihypertensive? 25(17.85%) of patients had chosen yes, 75(53.57%) had chosen No, 38(27.14%) had chosen Never, 2(1.4%) had chosen No response.

For Question No- 6 Did you ever change the dosage of antihypertensive drug during the course of self-treatment? 6(4.28%) of patients had chosen yes, always, 32(22.85%) had chosen yes, sometimes, 98(70%) had chosen Never, 4(2.85%) had chosen No response.

For Question No- 7 When did you normally stop taking antihypertensive? 18(12.85%) of patients had chosen after few days regardless of outcome, 25(17.85%) had chosen After completion of course, 91(65%) had chosen After consulting a doctor, 6(4.28%) had chosen No response.

For Question No- 8 How many times did you treat yourself with antihypertensive from past one year? 7(5%) of patients had chosen Many times, 49(35%) had chosen sometimes, 81(57.85%) had chosen never, 3(2.14%) had chosen no response.

For Question No- 9 I take my medication only when I am sick? 61(43.57%) of patients had chosen yes, 58(41.42%) had chosen no, 19(13.57%) had chosen mostly, 2 (1.42%) had chosen no response.

For Question No -10Even when I am not in hospital, I need medication regularly? 70 (50%) had chosen I need it regularly, 66(47.14%) had chosen I need it sometimes, 3(2.14%) had chosen I don't need, 1(0.71%) had chosen no response.

All the questionaries' were evaluated by using prism8 software and hence we concluded that there is significant difference between number of patients and options.

V. CONCLUSION

From the above study, by using ANOVA it was concluded that there is significant difference between the age group and number of patients in three different groups divided based on duration. By using ANOVA it was concluded that there is significant difference between the gender distributions of three different groups.

Among 140 patients' comorbidities 4(2.8%) of patients had urosepsis, 38(27.14%) had CKD, 4(2.8%) had Seizures, 15(10.71%) had Diabetes, 49(35%), had CVA, 7(5%) had Fever,

3(2.14%) had Cardiovascular Disorders, 20(14.28%) had other conditions. There is significant difference between number of patients and Comorbidities.

Medication adherence evaluation was performed using medication adherence rating scale. By evaluating all the answers, we conclude that there is significant difference between number of patients and options. Medication adherence is not same among all the patients. Health care providers should pay attention to the importance of adherence and the influencing factors of adherence.

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