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To Study Drug Prescription Pattern and Assess Medication Adherence in Chronic Kidney Disease Patients in a Tertiary Care Hospital: A Cross-Sectional Observational Study

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Abstract: The prescription pattern explains tendencies with standard treatment guidelines and rational use of drugs. This is the main aim of the prescription pattern. The development of CKD is associated with a variety of comorbidities. Multiple drugs are needed to control these comorbidities. It may worsen drug interactions, raise drug prices, and enhance drug side effects. So, the present study plans to know the prescription pattern and assess medication adherence in CKD patients. This cross-sectional observational study was conducted at the Department of Medicine at the Government Medical College and Hospital. Patients who are known cases of CKD as per the hospital's case report are included in the study after approval from the IEC. The final collected data will be analysed using appropriate statistical tests and MS Excel. The study suggests that out of a total of 80 patients, 63.75% were male, 47.5% were from rural areas, and 25% were between the ages of 41 and 50. Combinations of prescribed drugs were mostly diuretics, anti-animatics, and antihypertensives (16.25%). For antihypertensive therapy, the majority of patients (51.25%) were prescribed a single antihypertensive drug. For antibiotic therapy, a single antibiotic per prescription was prescribed to 45%; For antidiabetic therapy, a single antidiabetic drug per prescription was prescribed to 20%; By applying the Chi-Square test, it was found that there is a significant relationship between the number of prescribed medications and adherence. The study highlights the need to understand CKD patients' prescription patterns and to know past medication adherence and its causes.

Keywords: Chronic Kidney Disease, Prescription Pattern, Medication Adherence, Observational Study

1. Introduction:-

Chronic Kidney Disease is one of the major global health problems, with an increasing prevalence worldwide.[1] The National Kidney Foundation-Kidney Disease Outcomes Quality Initiative (NKF-KDOQI) working group has defined CKD, which has been accepted and adopted internationally: The presence of a GFR less than 60 mL/min/1.73 ml for more than 3 months with or without other signs of kidney damage.[2]

Patients with CKD are associated with different numbers of comorbidities and complications. The most common comorbidities include Hypertension, Diabetes Mellitus, Cardiovascular disease (CVD), CKD-related bone and mineral disorders, and anaemia. [3,4] Factors causing an increase in the incidence of chronic

kidney disease include HTN, DM, obesity, overuse of NSAIDs, metabolic syndrome, hypercholesterolemia, recurrent urinary tract infections, inappropriate prescription of drugs, Polypharmacy, and OTC medication. [5]

Multiple medications are required to control the comorbidities, which increases the cost of treatment and also poses a challenge for the treatment of CKD patients. [6] Multiple medications cause ADR and drug interactions, which alter the pharmacodynamic and pharmacokinetic parameters of patients. This finally leads to renal insufficiency. [7]

Rational drug prescription is difficult in chronic kidney patients as patients require complex therapeutic regimens requiring frequent monitoring and dosage adjustments because of the higher risk of medication adverse effects or interactions, and the presence of comorbidities makes the situation more complicated. [8] Inappropriate medication use can increase drug-related problems, which leads to prolonged hospital stays and increased health care utilization and costs. [9]

In CKD, it has been reported that many patients modify their frequency and dosage of drugs and don't adhere to their prescribed medication. Hence, adherence is a major tool for CKD patients to achieve the goal of therapy as well as prevent complications. [10] But due to non-compliance with drug regimens, a lack of belief in the benefits of treatment causes severe complications and represents a potential problem for patients on maintenance haemodialysis.[11]

In the past, to assess adherence, various subjective and objective modalities have been used. MMAS-4 scores, i.e., the Morisky Medication Adherence Questionnaire (MMAQ), are based on the number of questions asked to the patient. [10] Adherence is graded as high, medium, or low. Low adherence is indicated by a lower score. According to the WHO, only 50% of people with CKD take their medication as advised. Thus, non-adherence is associated with accelerated disease progression. [10]

Hence, the objective of our study is to understand prescription patterns in CKD patients and to know medication adherence and its causes. Therefore, we undertook this study.

2. Aim & Objectives

Aim: The aim of this cross-sectional observational study is to study drug prescription patterns and assess medication adherence in chronic kidney disease patients in a tertiary care hospital.

The work was focused on studying the prescription pattern and, hence, finding the main observations regarding the prescriptions and assessing medication adherence in chronic kidney patients. The present observational study was conducted at the Department of Medicine, Government Medical College and Hospital, Aurangabad, in the Marathwada region of Maharashtra State.

Objectives:

- Primary objective-
  To study drug prescription patterns in chronic kidney disease patients.
- Secondary objective-
  To assess medication adherence.

3.Study Material and Method

The Cross-Sectional Observational Study conducted in the medicine department of Government Medical College and Hospital (GMCH), Aurangabad from 24 June, 2021 to 23 August, 2021. This study enrolled 80 patients diagnosed with CKD. The patient information was collected from patient file and questionary (MMAS-4). The data was analyzed by MS-Excel and Chi-square test.

Aimed to study drug prescription patterns and assess past medication adherence for chronic kidney disease (CKD) among patients admitted to the hospital. The study was conducted over a two-month period and included patients aged 12 years and older who had known cases of CKD and were on medications and

those individuals giving consent for the study. Patients diagnosed with Acute Kidney injuries were excluded from the study.

To identify and enroll patients, we screened them for inclusion and exclusion criteria. Each enrolled patient was assigned a unique identifier using the In-Patient Number provided by the hospital. Additionally, patient information such as name, age, gender, and address were recorded at the time of enrolment. Baseline screening and recordings were based on the hospital's case report for patients known to have CKD.

During the study, the patient's current treatment in the hospital was recorded in a proforma after obtaining their consent. The study also collected information on the patients' past medication adherence. The Morisky scale was used to assess medication adherence, and adherence levels were determined based on the scale's scoring criteria. Patients with low adherence were asked about the reasons for their non-adherence.

Before commencing the study, it received approval from the Institutional Ethics Committee and Institutional Review Board. The selected patients were provided with detailed explanations of the study's title, objectives, inclusion and exclusion criteria, study procedure, study duration, informed consent form, etc., in their preferred language.

The data collected from the study participants, including current and past medications, adherence levels, and reasons for non-adherence, would be analysed using appropriate statistical tests and MS Excel. The analysis would involve determining the average number of drugs per prescription, examining the demographic characteristics of the patients, categorizing the prescribed drugs (e.g., antihypertensive, antidiabetic, antibiotics, etc.), assessing the level of medication adherence, and identifying the reasons for non-adherence.

It is important to note that patients were free to withdraw from the study at any time if they desired, and in such cases, their data would not be included in the final analysis.

4.Result;-

4.1 Gender Wise Distribution

Gender	No. of Patients(n=80)	Percentage (%)
Male	51	63.75
Female	29	36.25

Table 1 : Gender wise distribution

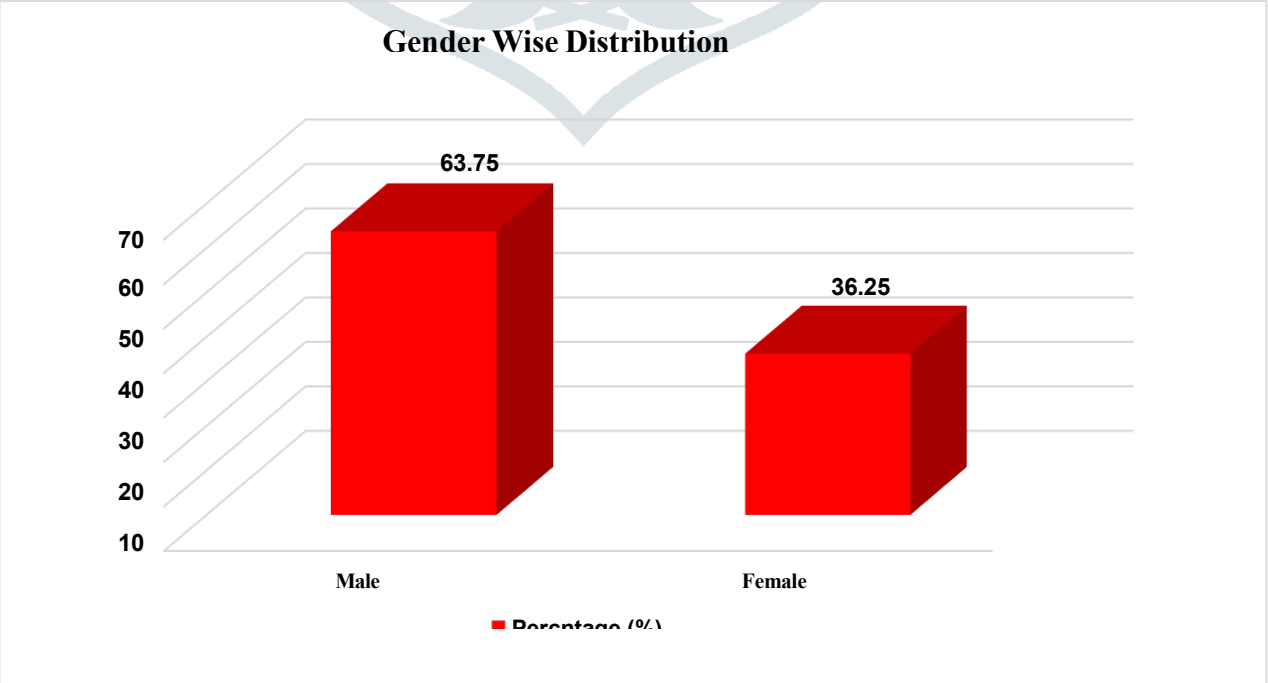

Chart 1 : Gender wise distribution

4.2 Residency Wise Distribution

Residency	No. of Patients(n=80)	Percentage (%)
Rural	38	47.5
Urbn	42	52.5

Table 2 : Residency wise distribution

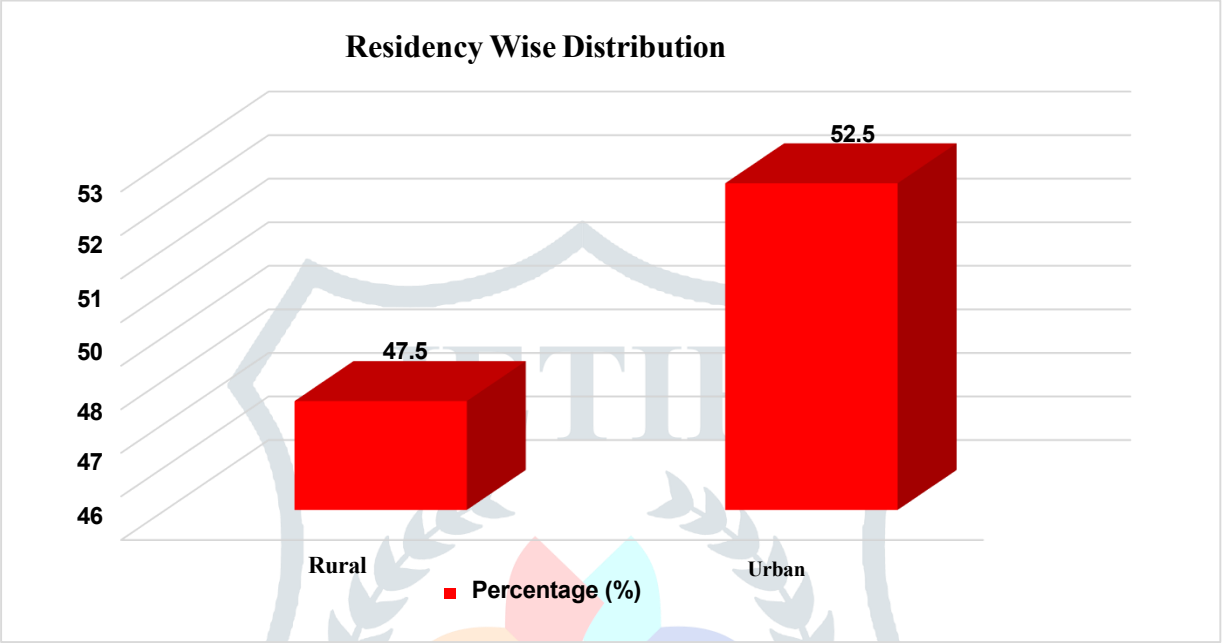

Chart 2 : Residency wise distribution

4.3 Age Wise Distribution

Age-group	Female(n=29)	Male(n=51)	Total(n=80)	Percentage (%)
<18	1	2	3	3.75
18-20	0	2	2	2.50
21-30	6	6	12	15.00
31-40	4	7	11	13.75
41-50	5	16	21	26.25
51-60	5	9	14	17.50
61-70	5	8	13	16.25
71-80	2	0	2	2.50
81-90	1	1	2	2.50

Table 3 : Age wise distribution

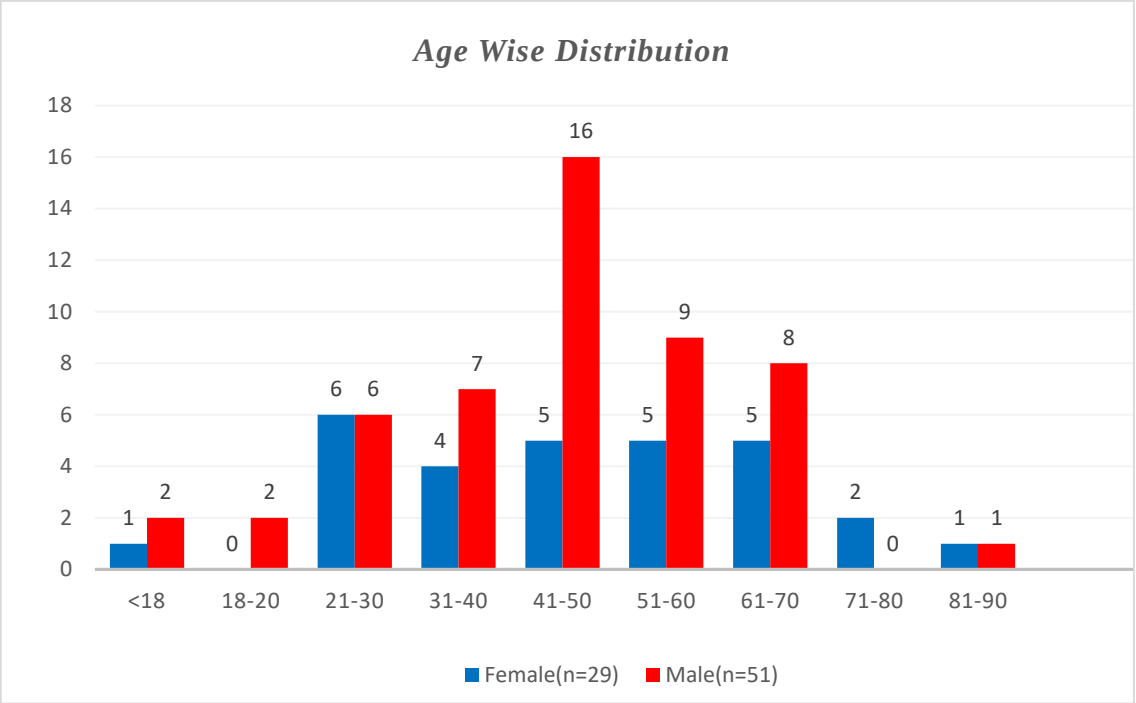

Chart 3 : Age Wise Distribution

4.3 Distribution of Prescribed Drugs based on Category

Drugs Categories	No. of Patients(n=80)	Percentage (%)
Diuretics	80	100
Antihypertensives	47	58.75
Antibiotics	46	57.50
Antidiabetics	17	21.25
Antacids	73	91.25
Proton pump inhibitors	56	70.00
Anti-Anemic drugs	46	57.50
Antiemetics	40	50.00
Nutritional supplements	47	58.75
Antiplatelets	8	10.00
Lipid lowering agents	11	13.75
Analgesics	7	8.75
Anticoagulants	3	3.75
Corticosteroids	2	2.50
Thyroid drugs	5	6.25
Antiepileptics	2	2.50
Laxatives	5	6.25
Others	4	5.00

Table 4 : Distribution of prescribed drugs based on category

Pattern of Antibiotics in CKD	No. of Patients(n=80)	Percentage (%)
No. of Patient Taking Single Antibiotic	36	45
No. of Patient Taking Two Antibiotics	7	8.75
No. of Patient Taking Three Antibiotics	1	1.25
No. of Patient Taking Four Antibiotics	1	1.25

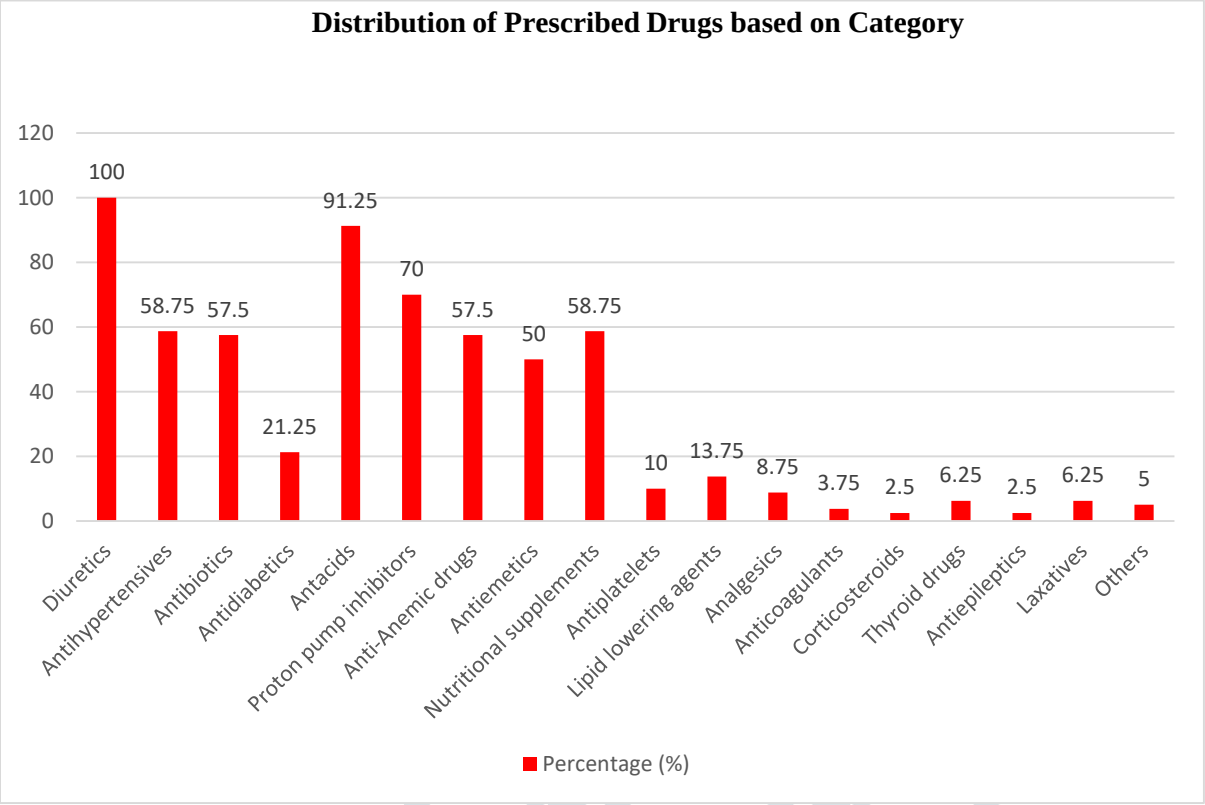

Chart 4 :Distribution of Prescribed Drugs based on Category

4.5 Distribution of CKD Patients According to Number of Antihypertensive Drugs Taken

Pattern of Antihypertensive Therapy	No. of Patients(n=80)	Percentage (%)
No. of Patient Taking One Antihypertensives	41	51.25
No. of Patient Taking Two Single Antihypertensives	7	8.75
No. of Patient Taking Three Antihypertensives	3	3.75

Table 5 : Distribution of CKD patients according to number of antihypertensive drugs taken

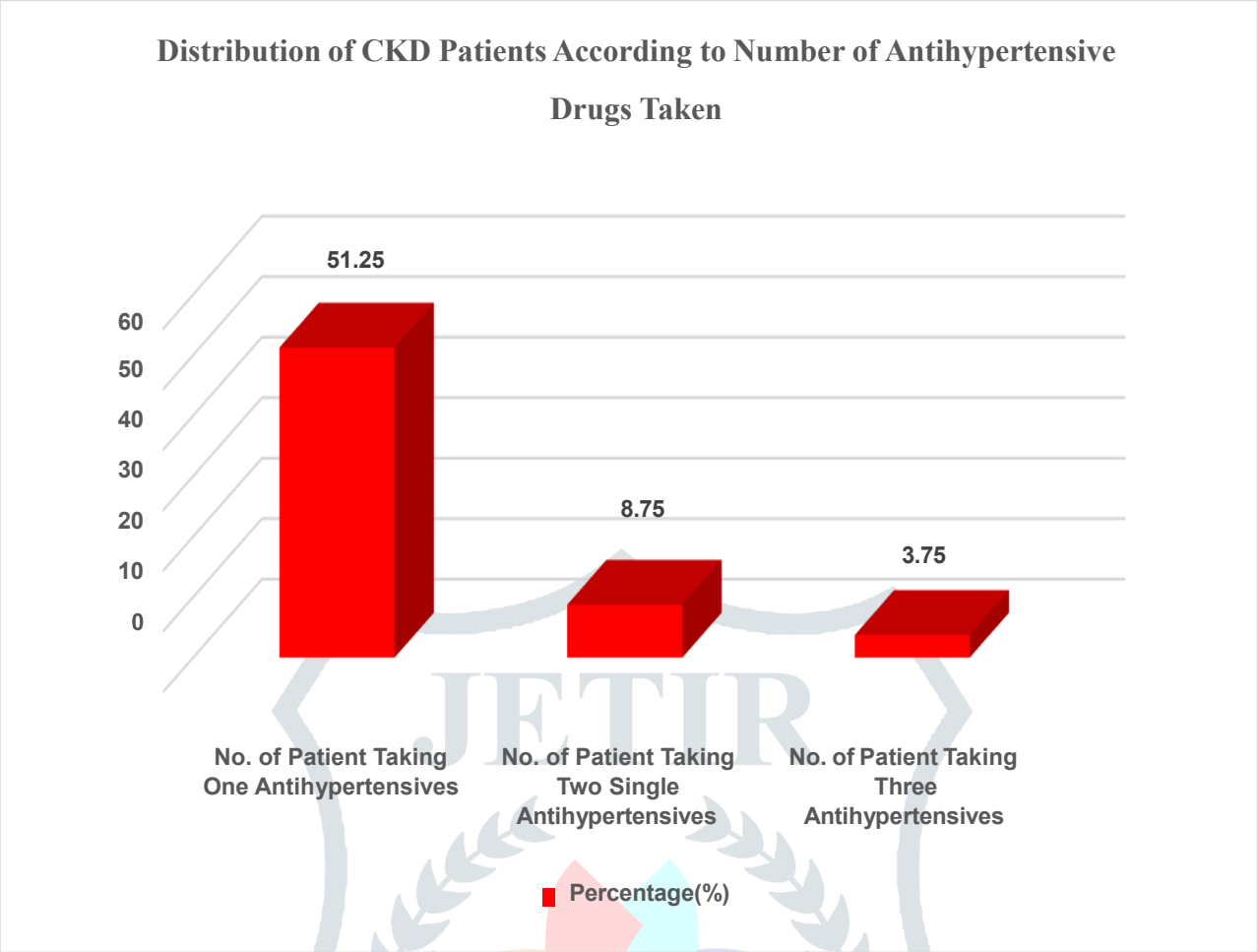

Chart 5 : Distribution of CKD patients according to number of antihypertensive drugs taken

4.6 Distribution of CKD Patients According to Number of Antibiotic Drugs Taken

table 6: distribution of ckd patients according to number of antibiotic drugs taken

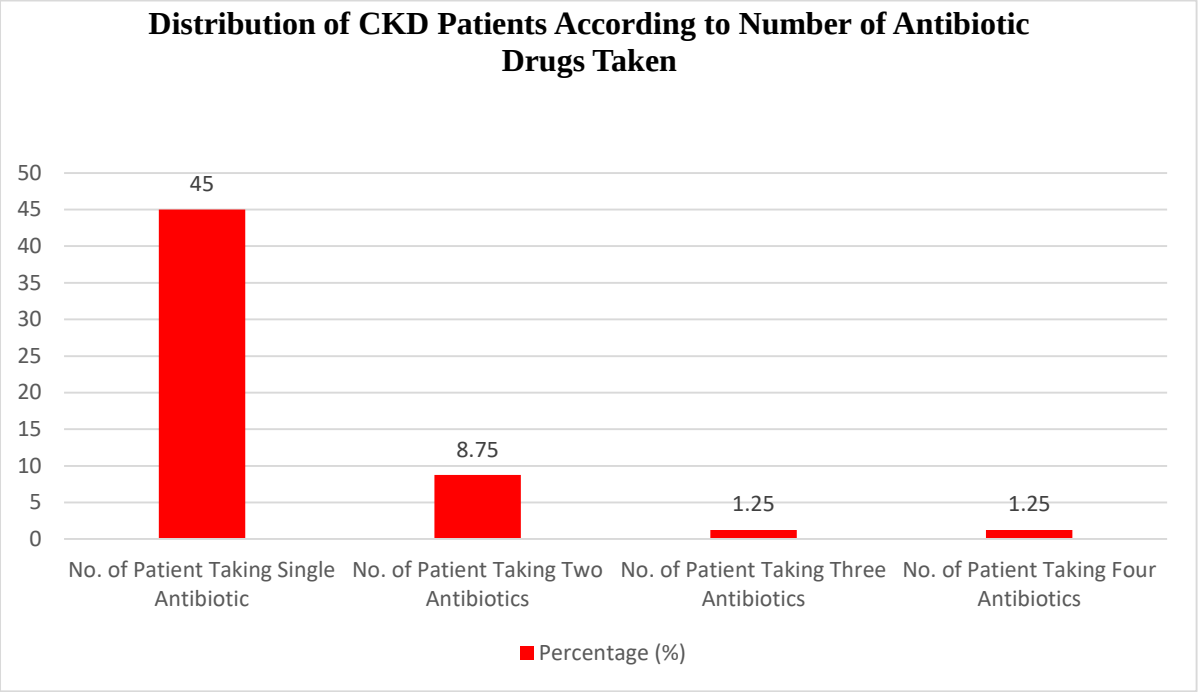

Chart 6 : Distribution of CKD patients according to number of antibiotic drugs taken

4.7 Distribution of CKD Patients According to Number of Antidiabetic Drugs Taken

Pattern Of Antidiabetic Drug Therapy in CKD Patients	No. of Patients(n=80)	Percentage (%)
No. of Patient Taking Single Antidiabetic	16	20
No. of Patient Taking Two Antidiabetic	2	2.5

table 7 : distribution of ckd patients according to number of antidiabetic drugs taken

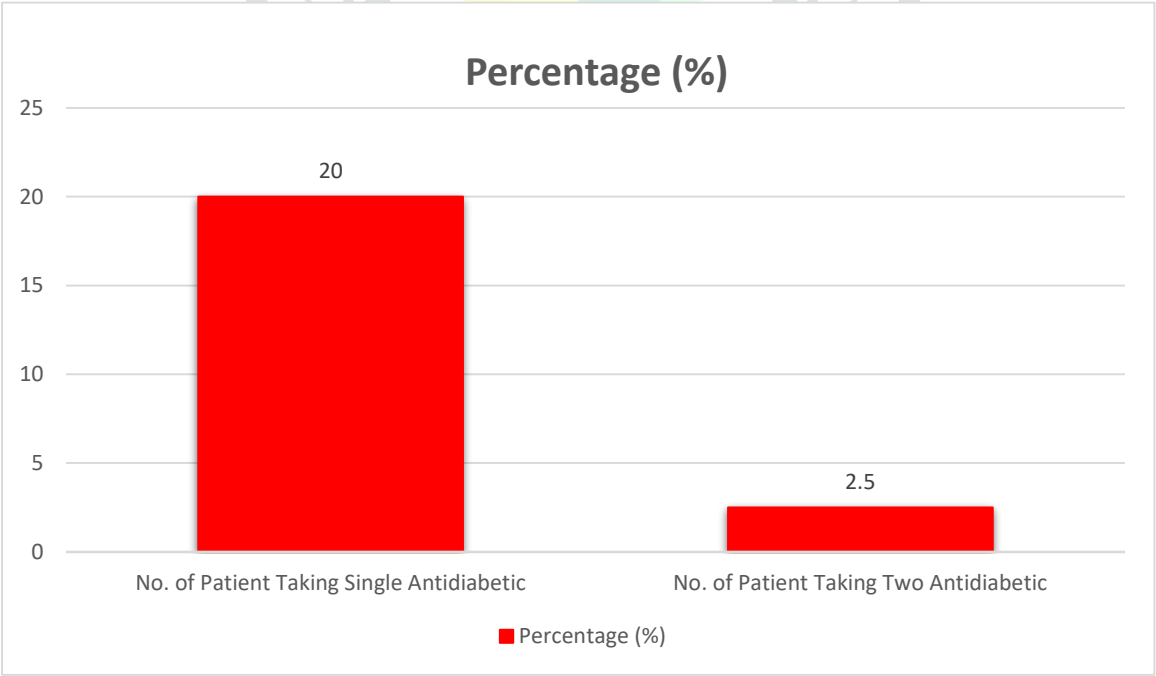

Chart 7 : Distribution of ckd patients according to number of antidiabetic drugs taken

4.8 Distribution of CKD Patients According to Number of Antiplatelet Drugs Taken

Pattern Of Antiplatelet Drug Therapy in CKD Patients	No. of Patients(n=80)	Percentage (%)
No. of Patient Taking Single Antiplatelet	5	6.25
No. of Patient Taking Two Antiplatelet	2	2.5
No. of Patient Taking Three Antiplatelet	1	1.25

Table 8 : Distribution of CKD patients according to number of antiplatelet drugs taken

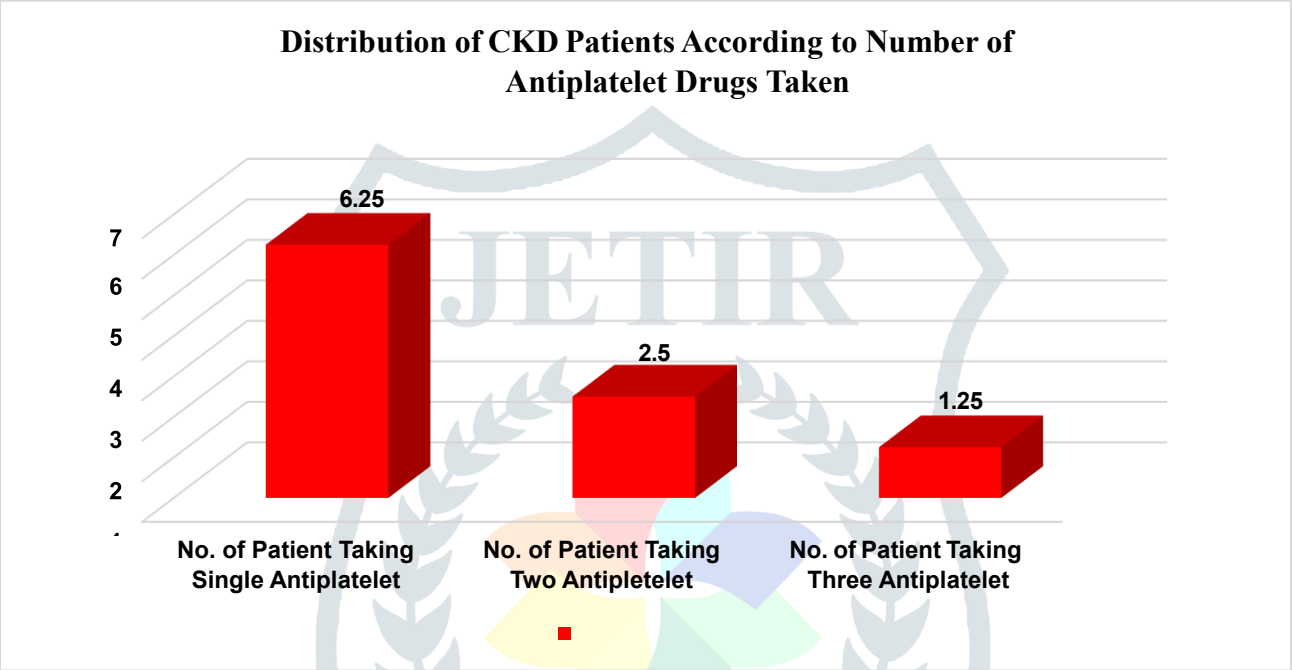

Chart 8 : Distribution of CKD patients according to number of antiplatelet drugs taken

4.9 Drug Therapy in CKD Patients

Drug Therapy in CKD Patients	No. of Patients(n=80)	Percentage (%)
Diuretics	3	3.75
Diuretics+Antihypertensives	5	6.25
Diuretics+Antibiotics	3	3.75
Diuretics+Antidiabetics	1	1.25
Diuretics+Anti-Anemics	5	6.25
Diuretics+Antihypertensives+Antibiotics	10	12.5
Diuretics+Antihypertensives+Antidiabetics	0	0
Diuretics+Antihypertensives+Antiplatelet	0	0
Diuretics+Antihypertensives+Anticoagulant	0	0
Diuretics+Antibiotics+Antiplatelet	1	1.25
Diuretics+Antibiotics+Antiepileptics	0	0
Diuretics+Anti-Anemics+Antihypertensives	13	16.25
Diuretics+Anti-Anemics+Antibiotics	8	10
Diuretics+Anti-Anemics+Antidiabetics	1	1.25
Diuretics+Anti-Anemics+Antihypertensives+ Antibiotics	5	6.25
Diuretics+ Anti-Anemics+ Antihypertensives+ Antibiotics+ Antidiabetics	4	5
Diuretics+ Anti-Anemics+ Antihypertensives+ Antidiabetics	3	3.75
Diuretics+ Anti-Anemics+ Antibiotics+ Antidiabetics	0	0
Diuretics+ Antihypertensives+ Antibiotics+ Antiepileptics	1	1.25
Diuretics+Antihypertensives+ Antibiotics+ Antidiabetics	2	2.5
Diuretics+Antihypertensives+ Antibiotics+ Antiplatelet	0	0
Diuretics+Antihypertensives+ Antibiotics+ Anticoagulant	0	0
Diuretics+Antihypertensives+ Antiplatelet+ Anticoagulant	0	0
Diuretics+ Antibiotics+ Antidiabetics+ Thyroid drugs	1	1.25
Diuretics+Antihypertensives+ Antibiotics+ Antidiabetics+ Antiplatelet	1	1.25
Diuretics+Antihypertensives+ Antibiotics+ Antidiabetics+ Anticoagulant	0	0
Diuretics+Antihypertensives+ Antibiotics+ Antidiabetics+ Thyroid drugs	0	0

Table 9 : Drug therapy in CKD patients

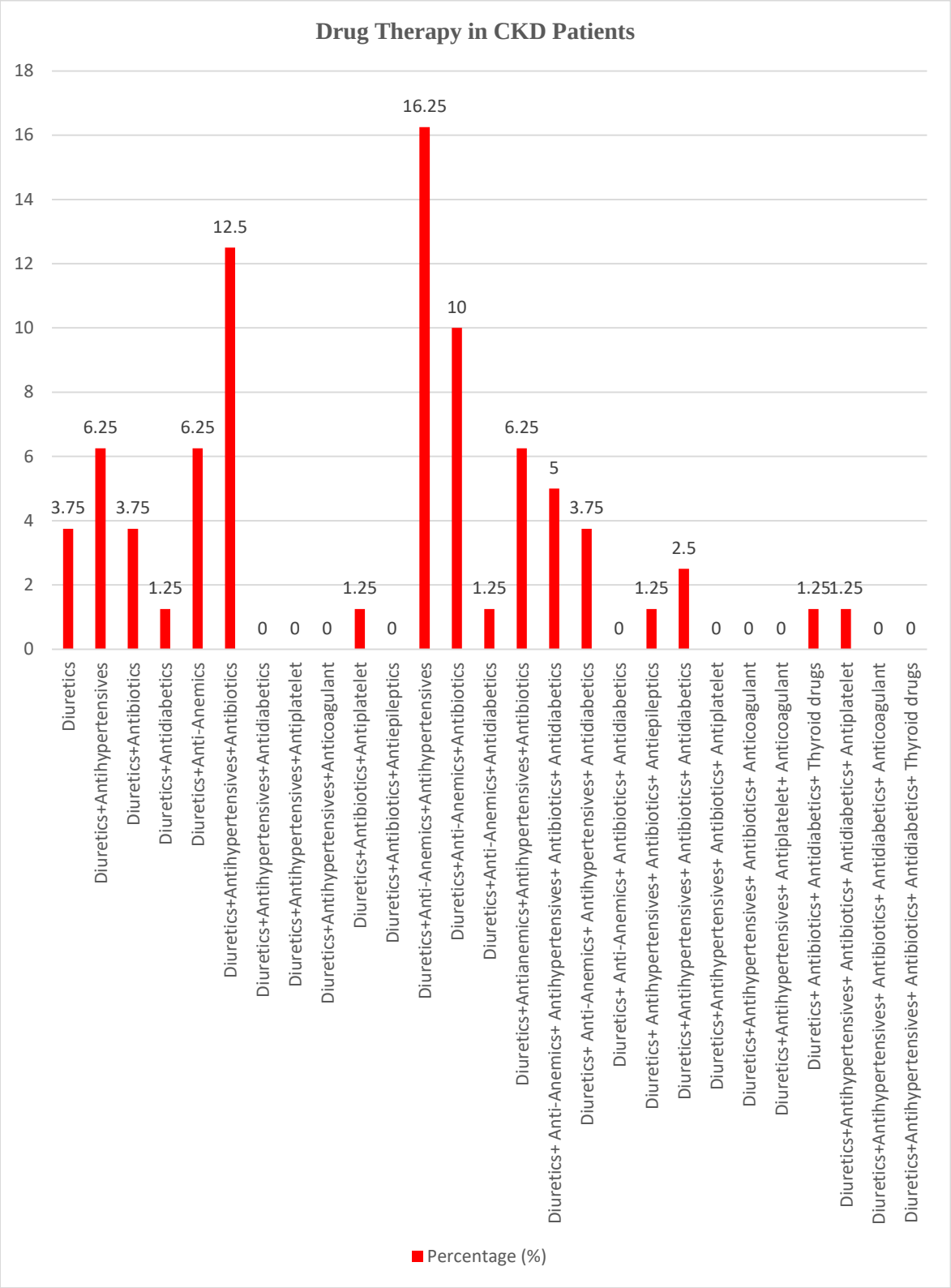

Chart 9 : Drug Therapy in CKD Patients

4.10 Comorbidities in Chronic Kidney Disease Patients

Comorbidities	No. of Patients	Percentage (%)
Hypertension	54	67.50
Diabetes mellitus	25	31.25
Anemia	19	23.75
Ischemic heart disease	7	8.75

Congestive cardiac failure	1	1.25
Cerebrovascular accident	2	2.50
Uremic encephalopathy	10	12.50
Obstructive uropathy	4	5.00
Uremic gastritis	2	2.50
Urinary tract infection	2	2.50
DM Nephropathy	2	2.50
Pneumonitis	2	2.50
Tuberculosis	2	2.50
Ascites	3	3.75
Hypothyroidism	7	8.75
Others	17	21.25

Table 10 : Comorbidities in chronic kidney disease patients

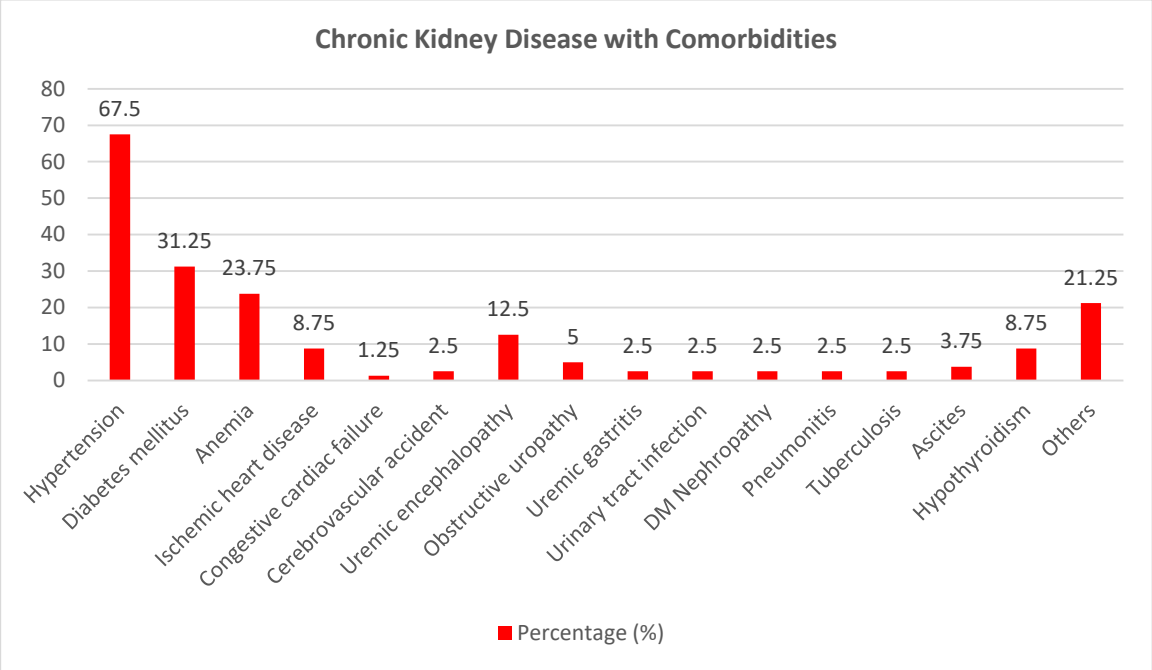

Chart 10 : Comorbidities in chronic kidney disease patients

4.11 Frequency of number of drugs prescribed per patient

No. of drugs per patient	Frequency of patients(n=80)	Percentage (%)
5	3	3.75
6	4	5.00
7	9	11.25
8	13	16.25
9	10	12.50
10	17	21.25
11	10	12.50
12	9	11.25

13	2	2.50
14	1	1.25
15	2	2.50

Table 11 : Frequency of number of drugs prescribed per patient

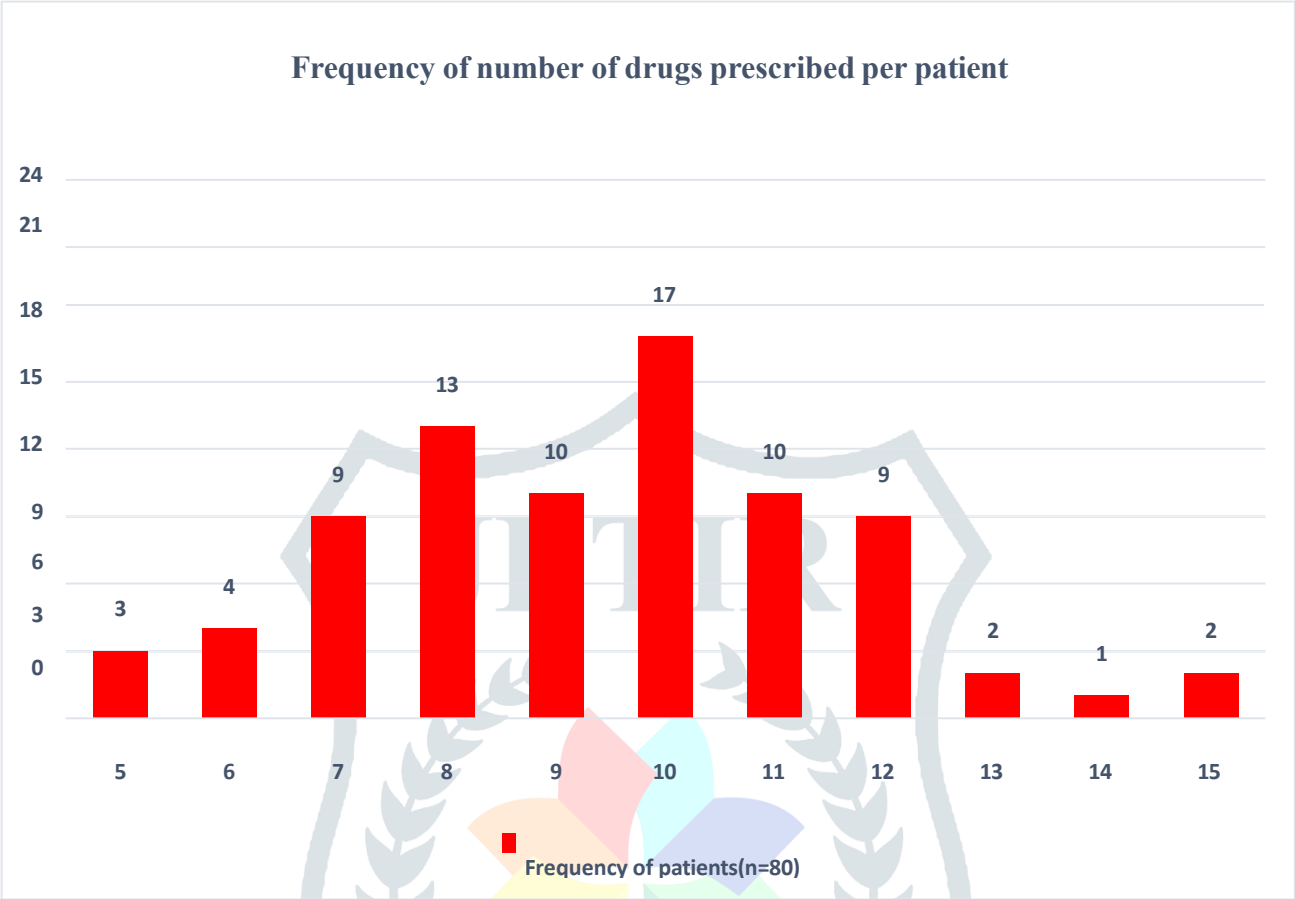

Chart 11 : Frequency of number of drugs prescribed per patient

4.12 Distribution of Patients According to Morisky Adherence Scale

Adherence	No. of Patients (n=80)	Percentage (%)
High	12	15
Medium	52	65
Low	16	20

Table 12 : Distribution of patients according to morisky adherence scale

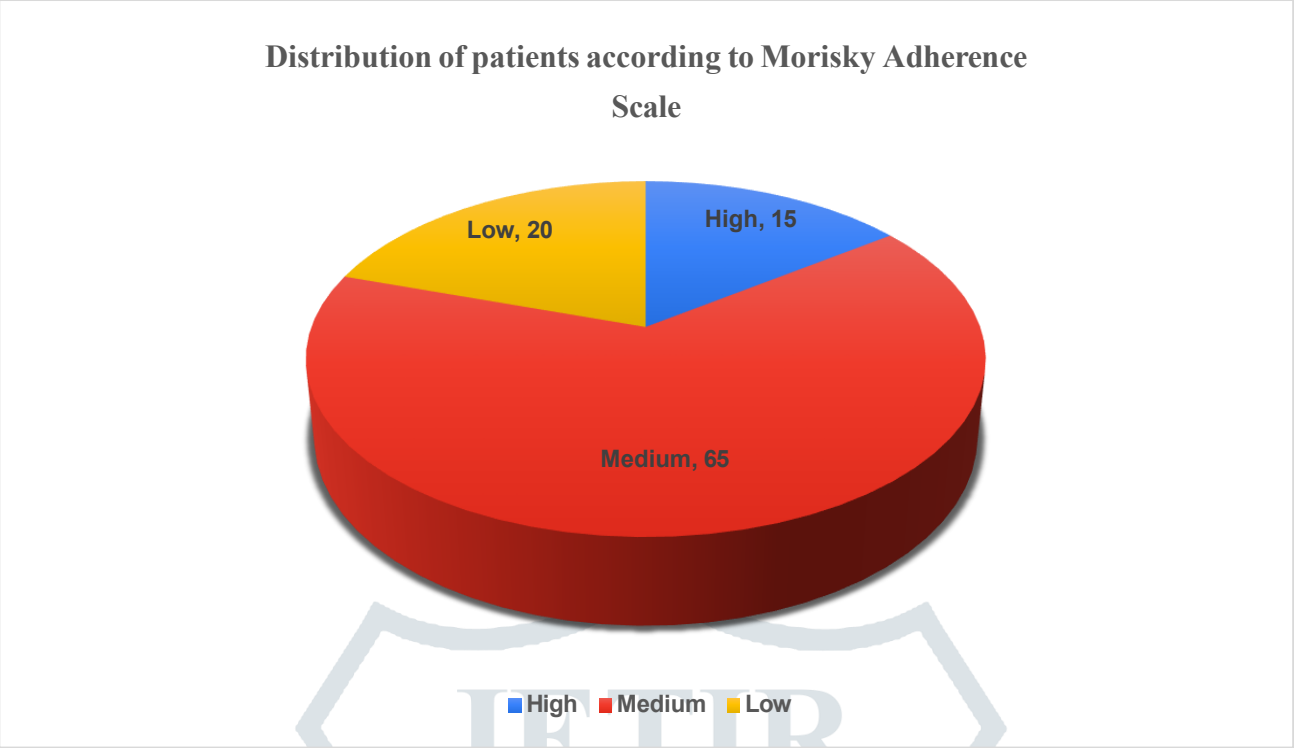

Chart 12 : **Pie diagram showing distribution of patients according to morisky adherence scale**

4.13 Reasons for Non-Adherence

Reasons for Non-adherence	No. of patients(n=16)	Percentage
Decrease in symptoms or severity/disappearance of symptoms	10	62.50
Forget to take medicines	9	56.25
High cost of medicines	6	37.50
Too many medications	6	37.50
Medication was not properly explained	0	0
Accessibility to medications	0	0
Others	0	0

Table 13 : Reasons for non-adherence

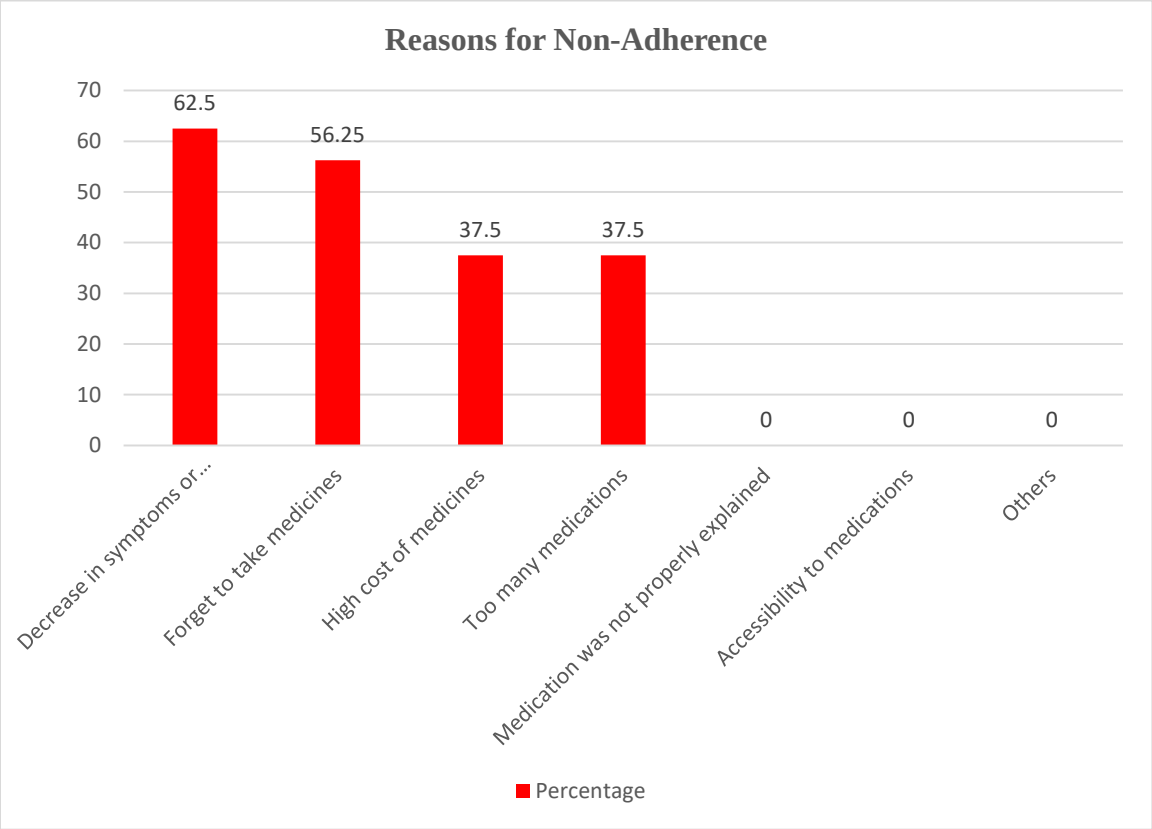

Chart 13 : Reasons for non-adherence

4.14 Distribution of Patients According to Past Medication Adherence

	Adherence			
No. of Prescribed Medications	Low	Medium	High	Total
Up to 3 Medications	6	42	10	58
More than 3 Medications	9	11	2	22
Total	15	53	12	80

Table 14 : Distribution of patients according to past medication adherence

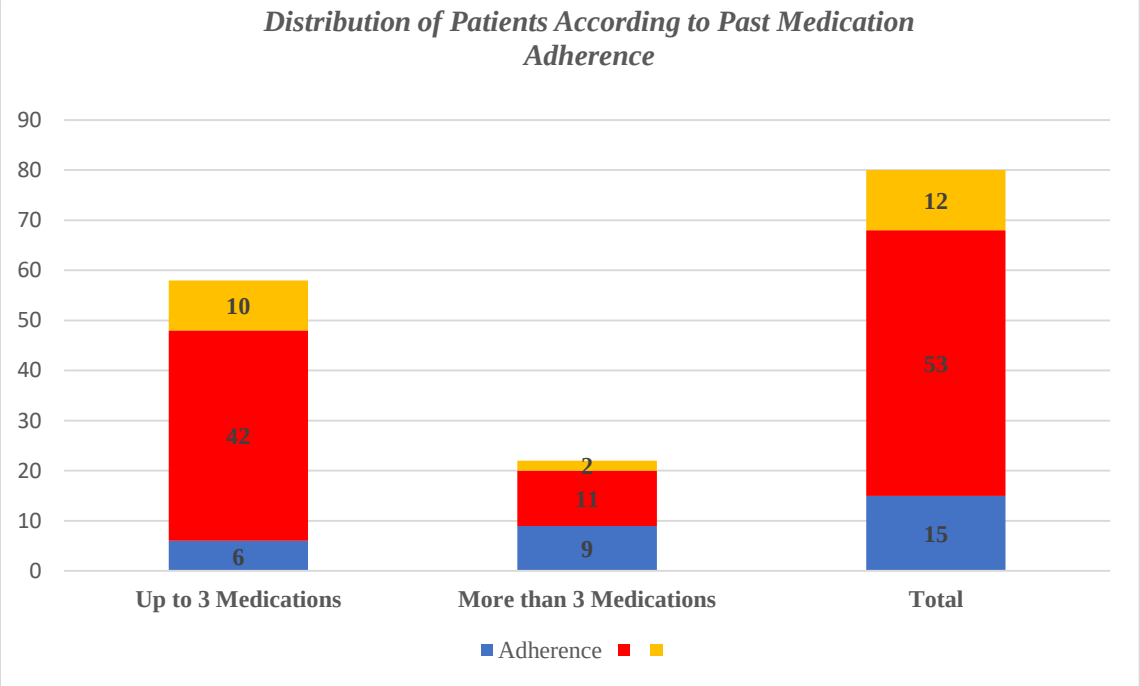

Chart 14 : Distribution of patients according to past medication a

4.15 Chi Square X^2 Test (To Analyze the correlation between number of Prescribed Medications and Adherence)

Null Hypothesis: There is no relation between number of Prescribed Medications and Adherence

Alternate Hypothesis: There is significant relation between number of Prescribed Medications and Adherence

Observed Value Table				
	Adherence			
No. of Prescribed Medications	Low	Medium	High	Total
Upto 3 Medications	6	42	10	58
More than 3 Medications	9	11	2	22
Total	15	53	12	80

Table 15 : Observed value table of chi square test

Expected Value Table			
	Adherence		
No. of Prescribed Medications	Low	Medium	High
Upto 3 Medications	10.875	38.425	8.7
More than 3 Medications	4.125	14.575	3.3

Table 16 : Expected value table of chi square test

Expected value is calculated by multiplying each row total by each column total and then dividing by the overall total.

Calculation of X^2		
Observed Value (O)	Expected Value(E)	$(O-E)^2/E$
6	10.875	2.185345
9	4.125	5.761364
42	38.425	0.332612
11	14.575	0.876887
10	8.7	0.194253
2	3.3	0.512121
Calculated X^2		**9.862582**

Table 17 : Calculation of chi square χ^2

Formula for Calculation of X^2

$$X^2 = \sum \frac{(O-E)^2}{E}$$

Where;

X^2 = Chi Square

O = Observed Value

E = Expected Value

Degree of Freedom = (Number of columns -1) * (Number of rows-1)
Degree of Freedom = (3-1) * (2-1)

Degree of Freedom = 2

Level of significance is 5%.

The P-value is the probability that a chi-square statistic having 2 degrees of freedom is more extreme than 9.862582.
We use the Chi-Square Distribution Calculator to find P ($X^2 > 9.862582$) = 0.007217.
The P-Value is 0.007217. The result is significant at $p < 0.05$.

So, we accept Alternate hypothesis and reject Null Hypothesis.
There is significant relation between number of Prescribed Medications and Adherence.
So, we can conclude that the Adherence decreases as number of Prescribed Medication increases as can be seen clearly from the observational Table/Chart Past Medication Adherence as well

5.Discussion

The prevalence of Chronic Kidney Disease (CKD) is increasing worldwide due to the rise in comorbidities such as hypertension, anaemia, mineral bone disorders, hyperlipidaemia, diabetes, and cardiovascular disease, as well as the misuse of over-the-counter drugs, polypharmacy, and inappropriate drug use, which can lead to drug-induced renal disease. Non-adherence or poor medication adherence among CKD patients can cause severe complications and hinder the achievement of therapy goals. Conducting prescription pattern studies is crucial to ensuring maximum benefits for patients while reducing side effects.

In the present study, 80 CKD patients were enrolled. Among them, 51 (63.75%) were male and 29 (36.25%) were female, indicating a higher prevalence of CKD in male patients compared to female patients. This finding is consistent with a previous study by Roja Rani K. et al.[12], which reported that out of 125 patients, 85 (68%) were male and 40 (32% were female).

Observational data from the study showed that the majority of patients resided in urban areas (42, 52.5%), while the remaining population lived in rural areas (38, 47.5%). This is similar to the findings of Rashmi Karabasappa Mamadi, Renuka Sathish, and Denis Xavier [13], who concluded that 67.6% of patients resided in urban areas and 32.4% in rural areas.

The age distribution of the enrolled patients ranged from 18 to 80 years, with the highest number of patients (21) in the age group of 41–50 years, followed by 51–60 years (14 patients), 61–70 years (13 patients), 21–30 years (12 patients), and 31–40 years (11 patients). The age groups of 71 years and above and below 20 years had the least number of patients (2 each). Similarly, Roja Rani K. et al. [12] found the highest prevalence of CKD in the age groups of 51–60 years, 61–70 years, 41–50 years, and 71–80 years, respectively, with the least number of patients in the age groups of 81 years and above and below 40 years.

CKD patients often require multiple drug therapies to manage CKD and comorbid conditions. In this study, various categories of drugs were prescribed to the 80 patients, including diuretics, antihypertensives, antibiotics, antidiabetic agents, anti-anemics, antiemetics, antiplatelets, nutritional supplements, lipid-lowering agents, analgesics, anticoagulants, corticosteroids, antiepileptics, laxatives, thyroid drugs, and others. Diuretics (Furosemide) were the most consistently prescribed drug category, given to every patient (100%) in the study. The next most frequently prescribed drugs were antacids (91.25%) and proton pump inhibitors (70%). Antihypertensives and nutritional supplements were prescribed to 58.75% of the patients, while antibiotics and antiemetics were prescribed to 57.50% of the patients. The least prescribed categories of drugs were thyroid drugs (6.25%), anticoagulants (3.75%), corticosteroids (2.50%), and antiepileptics (2.50%). Similarly, Roja Rani K. et al. [12] found that antihypertensives (20.20%), nutritional supplements (16.10%), antibiotics (11.69%), and proton pump inhibitors (9.8%) were the most commonly prescribed drugs.

Antihypertensive drugs are commonly used to reduce the progression of CKD, control elevated blood pressure, and minimise cardiovascular disease. In this study, out of the 80 patients, 41 (51.25%) were prescribed monotherapy of antihypertensive drugs, 7 patients (8.75%) received two-drug therapy, and 3

patients (3.75%) were on three-drug therapy. Similarly, Roja Rani K. et al. (33) reported that 35 patients (29.91%) were on monotherapy, 35 patients (29.91%) received two-drug therapy, and 36 patients (30.71%) were prescribed three-drug therapy.

Due to the increased risk of infection in CKD patients, antibiotics are frequently used. In this study, monotherapy of antibiotic drugs was prescribed to 36 patients (45%), two-drug therapy to 7 patients (8.75%), three-drug therapy to 1 patient (1.25%), and four-drug therapy to 1 patient (1.25%) out of the 80 patients.

Among the CKD patients, 20% were prescribed monotherapy of antidiabetic drugs, 2.5% received dual therapy of antidiabetic drugs, and insulin was the most commonly prescribed antidiabetic drug, followed by oral hypoglycaemic agents.

Regarding the use of antiplatelet drugs, monotherapy was prescribed to 6.25% of the patients, two-drug therapy to 2.5%, and three-drug therapy to 1.25% of the patients.

The most common drug combination prescribed to CKD patients in this study was diuretics plus anti-anaemics plus antihypertensives (13 patients, 16.25%). The second most prescribed combination was diuretics plus antihypertensives plus antibiotics (10 patients, 12.5%). It is important to note that since diuretics were prescribed to every patient in the study, each combination of drugs included at least one type of diuretic.

Hypertension was the most common comorbidity among CKD patients, present in approximately 67.50% of the cases. Diabetes mellitus was the second most common comorbidity, affecting 31.25% of the patients. Anaemia was present in 23.75% of the patients. Other comorbidities included ischemic heart disease (8.75%), congestive cardiac failure (1.25%), cerebrovascular accident (2.5%), uremic encephalopathy (12.5%), obstructive uropathy (5%), uremic gastritis (2.5%), urinary tract infection (2.5%), diabetic nephropathy (2.5%), pneumonitis (2.5%), tuberculosis (2.5%), ascites (3.75%), and hypothyroidism (8.75%). Additionally, 21.25% of the patients had other comorbidities not mentioned above. Similar findings were reported by Roja Rani K. et al. [12], with hypertension (25.80%), diabetes mellitus (15.80%), and anaemia (8.49%) being the most common comorbid conditions.

On average, patients in the study were prescribed 10 drugs each. Approximately 21.25% of the patients received 10 drugs per prescription, 48.75% were prescribed 5 to 9 drugs, and 30% received 11 to 15 drugs. Similarly, Kiran A. Kantanavar et al. [14] reported that 2.2% of patients received the highest number of 13 drugs, while 70.3% were prescribed 5 drugs.

Among 80 patients, 12 patients have high adherence, 52 patients have medium adherence, 16 patients have low adherence. In MMAQ, low, medium, high adherence was reported in 20%, 65% and 15% of patients respectively. Similarly, Yogesh B. Magar et al.[15] (2017) study shows that, among 100 patients low, medium, high adherence was reported in 36%, 54% and 10% of patients respectively. It was found that the most common reason for the non-adherence include decrease in symptoms severity or disappearance of symptoms was in 62.50% people., it showed that poor adherence had positive correlation with number of decreases in symptoms severity or disappearance of symptoms

About 56.25% of people reported that forgetting to take medicines is the reason for non-compliance. High cost of the medicines and too many medications are other causes of non-adherence which was reported in about 37.50% of patients each**.**

Similarly, Deepak Jain et al.[10] (2018) study shows that, 58% of people has High cost of medicines as a reason for non-adherence, too may medications be the second most common reason for non-adherence (49%).

It was concluded that more number of patients (having past medication prescribed 3 and less than 3) have medium and high adherence compared to patients having less adherence in the same category.

More number of patients (having past medication prescribed more than 3) have low and medium adherence compared to patients having high adherence.

To assess the correlation between number of prescribed past medications and Past medication adherence using Chi-Square test as shown in table 18. It was found that there is a significant relation between the number of Prescribed Medications and Adherence.

Chi Square X^2 Test (To Analyse the correlation between number of Prescribed past Medications and past medication Adherence)

To assess the correlation between number of prescribed past medications and Past medication adherence using Chi-Square test as shown in table 18

Degree of Freedom = (Number of columns -1) * (Number Of rows-1)
Degree of Freedom = (3-1) * (2-1)
Degree of Freedom = 2
Level of significance is 5%.
The P-value is the probability that a chi-square statistic having 2 degrees of freedom is more extreme than 9.862582. We use the Chi-Square Distribution Calculator to find P ($X^2 > 9.862582$) = 0.007217. The P-Value is 0.007217. The result is significant at $p < 0.05$. So, we accept Alternate hypothesis and reject Null Hypothesis. There is significant relation between number of Prescribed Medications and Adherence. So, we can conclude that the Adherence decreases as the number of Prescribed Medication increases as can be seen clearly from the observational Table. Thus, the study was found to be statistically significant ($p < 0.05$).

6. Conclusion

It is concluded, that chronic kidney disease (CKD) is more common in males than females. The most commonly prescribed drug for CKD patients is furosemide (a diuretic), followed by antacids, antihypertensives, nutritional supplements, antibiotics, anti-anaemics, and antidiabetics. Many CKD patients are on a single drug therapy, usually for hypertension or diabetes. Hypertension is the most common comorbidity among CKD patients, followed by diabetes mellitus and anaemia. The presence of comorbidities often leads to polypharmacy and an increased risk of drug interactions. Medication non-compliance is a significant issue, with only 15% of patients having high adherence and 20% having low adherence. Most patients demonstrate medium adherence to their medication regimen. Reasons for discontinuing medication include a reduction in symptom severity, disappearance of symptoms, and forgetfulness. Non-compliance is also associated with the high cost of medications and polypharmacy. There is a correlation between the number of prescribed medications and adherence, as patients tend to have lower adherence as the number of medications increases, and vice versa.
The main aim of our research is to gain insight into the prescription behaviours among patients with chronic kidney disease (CKD) and to explore their medication adherence and the underlying reasons behind it. By doing so, we aim to provide valuable assistance to physicians and clinical pharmacists in analysing prescription patterns and identifying causes of non-adherence in CKD patients. This knowledge will enable them to take more effective measures to prevent drug interactions, polypharmacy, and adverse effects.

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