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A Study on the Impact of Anaemia on Quality of Life of Patients with Chronic Kidney Disease in a Tertiary Care Hospital

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KEYWORDS

Anaemia, Chronic Kidney Disease, Health-related Quality of Life, CKD-AQ, FACT-An, ESA, Iron therapy

ABSTRACT:

Introduction: Chronic kidney disease is defined as a kidney damage for ≥3 months as defined by structural or functional abnormalities of the kidney, with or without decreased GFR manifested by either pathological abnormalities or markers of kidney damage including abnormalities in the composition of the blood or urine or abnormalities in the imaging tests. The kidney damage can result from various factors: Diabetes mellitus, Hypertension, Glomerulonephritis, Proteinuria, Obesity, Hyperlipidemia, Lead exposure, Illicit Drug Use, Smoking. The major complication of CKD are anaemia, hypertension, mineral and bone disorder, weakened immune system etc. Anaemia is the major complication with a significant impact on QOL, increasing morbidity and mortality. The main reason of anemia in CKD patients is a decrease in production of erythropoietin hormone by the nephron progenitor cell, where 90% of production generally happen. Treatment aims for reduction of symptoms, prevention of complications, slowing down the disease progression. The hypothesis being tested is that quality of life of CKD patients with anaemic disease is poorer than quality of life of CKD patients without anaemic disease.

Objectives: The study aims to measure the quality of life (QOL) of chronic kidney disease with anaemic disorder in comparison to chronic kidney disease with non-anaemic disorder

Methods: A prospective observational study was conducted in a 450 bedded tertiary care hospital for a period of 6 months. Both male and female chronic kidney disease patients with or without anaemic disease of age 18 years old and patients diagnosed with CKD stages of I to V. The study population is 123 patients. Data collected using these study tools such as Data entry forms, Questionnaire (CKD-AQ, FACT-An), Patient consent form. Quality of life was evaluated using CKD-AQ questionnaire & FACT-An questionnaire and score. The documented data were analyzed by statistical and graphical method.

Results: A total of 123 patients were included in this study.the study participants comprised 71 and 52 chronic kidney disease patients with or without anaemia respectively. Majority of anaemic and non-anaemic CKD patients were under 61-80 years and most of them are males in both categories. By assessing the social history most of them had a history of smoking and alcoholism. Frequent hospital visits were due to dialysis and general weakness, with Hypertension, Diabetes mellitus and cardiovascular disease contributing to be a main risk factor and complication. The quality of life was analyzed using CKD-AQ and FACT-An questionnaire which shows that anaemic CKD patients had a poor QOL. Major decline in physical and emotional functioning as evidenced from FWB score(11.4± 5.13 Vs 21.28±4.76) and EWB score(13.07±4.38 Vs 20.63±2.47)from FACT-AN questionnaire and physical and functional domains from CKD-AQ questionnaire.The drug utilization evaluation among anaemic CKD patients revealed that the most often used agents were Erythropoietin stimulating agents [Erythropoietin (39.5%) and Darbepoetin (60.6%)]. Most of the patients received combination therapy (dual: 47.9%, triple: 32.4%) with subcutaneous and oral administration as the preferred route of administrations.

Conclusions: The study revealed that the major risk factor and complication of chronic kidney disease was hypertension and diabetes mellitus.The most commonly used treatment regimen for anaemic CKD was combination therapy, in which ESA was the frequently used drug. The study highlights that there is considerable worsening of quality of life in chronic kidney disease patients especially when anaemia is present, emphasizing the urgent need to manage the anaemia, so lifestyle modifications and emotional supports are recommended and patients who are at a risk of low heamoglobin level are to be identified to avoid progression to anaemia.

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1. Introduction

Chronic kidney disease (CKD) is a global health crisis characterized by structural or functional kidney damage lasting over three months[1]. A primary complication is anaemia, largely driven by the kidneys' inability to produce erythropoietin (EPO), the hormone responsible for red blood cell synthesis. This deficiency significantly increases patient morbidity and mortality while severely diminishing health-related quality of life (HRQOL)[6,8].

The relevancy of this study is underscored by the fact that CKD affects approximately 1 in 10 people worldwide, with death rates steadily rising over the last two decades. In India, the SEEK study identified a high prevalence of 17.2%, yet patient awareness remains alarmingly low at only 7.9%. As CKD progresses from stage 1 to stage 5, anaemia rates climb from 8.4% to over 53%, making its management a critical clinical priority[3].

Insights from the literature review confirm that lower haemoglobin levels are directly linked to increased risks of cardiovascular events, hospitalizations, and all-cause mortality[9]. Real-world data indicates that severe anaemia causes substantial losses in work productivity and places a heavy burden on care partners. Regional studies, particularly in South India, highlight that socioeconomic factors like unemployment, combined with physical symptoms such as extreme fatigue and shortness of breath, further erode patient well-being.

Despite these profound impacts, research suggests that anaemia remains frequently underdiagnosed or sub-optimally treated in primary care settings. By utilizing specialized assessment tools like the CKD-AQ and FACT-An questionnaires, this study aims to quantify the physical and emotional burden on patients. The findings emphasize the urgent need for early interventions—such as Erythropoiesis-Stimulating Agents (ESA) and iron therapy—to preserve renal function and improve the daily lives of those affected.

This study evaluates the health-related quality of life in chronic kidney disease patients by comparing those with and without anaemia. It aims to determine how this complication affects physical and emotional well-being, highlighting the critical need for effective anaemia management to improve overall patient clinical outcomes.

2. Objectives

1. Assessing the health-related quality of life of CKD patients with anaemia using CKD-AQ questionnaire

2. Comparing the health-related quality of life of CKD patients with or without anaemia using FACT-An questionnaire

3. To assess the prescribing pattern for anaemia in CKD patients

4. Assessing the risk factors and complications of CKD patients

3. Methods

3.1 Study design

A prospective observational study was conducted in a 450 bedded tertiary care hospital.

3.2 Study location

The study was conducted in the Nephrology, General medicine, Cardiology and Surgery department of a 450 bedded tertiary care hospital.

3.3 Study duration

Study was carried out for a period of 6 months.

study population

A total of 123 patients were included in the study.

3.4 Study criteria

3.4.1. Inclusion criteria

- Patients of both gender above 18 years old
- Patients diagnosed with chronic kidney disease stages I to V
- Chronic kidney disease patients with and without anaemia

3.4.2 Exclusion criteria

- Pregnant and breastfeeding patients
- Patients who are not willing to participate in the study

3.5 Study approval

The study was started only after getting the approval from the hospital authority and institutional human ethical committee

3.6 Workplan

PHASE 1: Data collection

PHASE 2: Statistical analysis of data and interpretations

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PHASE 3: Evaluation of results

3.7 Literature survey

An extensive literature survey was carried out regarding the quality of life of chronic kidney disease patients.

3.8 Data collection

Data was collected from the patient medical record, lab reports, medication charts and interviewing the patients to study about the quality of life in patients with chronic kidney disease using CKD-AQ questionnaires and FACT-An questionnaire and scoring.

3.9 Data entry format

The data entry format was used to enter all of the patients' information, including their name, age, gender, date of admission, date of discharge, reason for admission, past medical and medication history, social history, known allergies, and lab values such as blood counts, electrolytes, renal function test, and liver function test. The format includes fields for entering eGFR using the CKD-EPI creatinine equation, diagnosis, number of prescriptions prescribed, and discharge medications.

3.10 Data analysis

The data was analysed using IBM statistical package for social sciences (SPSS) 22.0. Statistical analysis includes Mann-Whitney U test, independent t test and results are represented graphically.

4. Results & Discussions

According to the age distribution, patients between the ages of 61 - 80 made up the largest percentage of the anaemic group (47.9%). Comparably, 59.6% of the non-anaemic group was between the ages of 61 - 80. Patients in the 20–40 age range were extremely rare. This suggests that people over 60 are more likely to have CKD and related anaemia.

AGE GROUPS	ANAEMIC GROUP (n=71)		NON-ANAEMIC GROUP (n=52)	
	NUMBER	PERCENTAGE (%)	NUMBER	PERCENTAGE (%)
20-40	6	8.5	2	3.8
41-60	25	35.2	13	25.0
61-80	34	47.9	31	59.6
81-100	6	8.5	6	11.5

Table 1. Age distribution

Among the 123 patients the collected patient details reveals that majority of CKD patients are males in both anaemic and non-anaemic groups. Out of total CKD patients with anaemia (n=71) about 78.9% (n=56) were male and 21.1% (n=15) were females. In case of non-anaemic (n=52) CKD patients 69.2% (n=36) were males and 30.8% (n=16) were females.

GENDER	ANAEMIC (n=71)		NON-ANAEMIC (n=52)		
	NUMBER	PERCENTAGE (%)	PARTICULARS	NUMBER	PERCENTAGE (%)
FEMALE	15	21.1	FEMALE	16	30.8
MALE	56	78.9	MALE	36	69.2

Table 2. Gender Distribution

In anaemic group (n=71) only 9.9% (n=7) of participants reported having a family history of kidney disease, while 90.1% (n=64) reported no family history. In contrast, in non-anaemic group a slightly higher percentage 19.2% (n=10) reported a family history of kidney disease while 80.8% (n=42) reported no family history.

FAMILY HISTORY	ANAEMIC (n=71)		NON-ANAEMIC (n=52)		
	NUMBER	PERCENTAGE (%)	PARTICULARS	NUMBER	PERCENTAGE (%)
YES	7	9.9	Y	10	19.2
No	64	90.1	N	42	80.8

Table 3. Family History

Only 7% of anaemic patients were neither smokers nor alcoholics, according to the social history, while the majority were former smokers (42.3%) and alcoholics (38%). Conversely, a greater proportion (32.7%) of non-anaemic patients were non-alcoholics and non-smokers. Only a small proportion 5.6% & 7.7% of anaemic and 3.8% & 26.9% of non -anaemic patients were active smokers & alcoholics respectively. This implies that anaemia patients were more likely to have smoked and drank alcohol in the past, which may have exacerbated their illness

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www.jchr.org
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SOCIAL HISTORY	ANAEMIC (n=71)		NON-ANAEMIC (n=52)	
	NUMBER	PERCENTAGE (%)	NUMBER	PERCENTAGE (%)
Smoker	4	5.6	2	3.8
Alcoholic	5	7.7	14	26.9
Ex-smoker	30	42.3	14	26.9
Ex-alcoholic	27	38	5	9.6
Non-smoker/alcoholic	5	7	17	32.7

Table 4. Social History

In this study, the main reason for admission, who sought medical attention was dialysis accounting for 35.8% (n=44) of the most frequent causes, followed by weakness or fatigue 22.8% (n=28) and difficulty in breathing 15.4% (n=19). Pulmonary edema, which came with a fever and cough, were another contributing factor followed by other minor complaints.

REASONS	NUMBER OF PATIENTS (N=123)	PERCENTAGE (%)
Difficulty in breathing	19	15.4
Leg edema	6	4.9
Fatigue	5	4.1
Chest pain	7	5.7
Headache	8	6.5
Cough	14	11.4
Vomiting	3	2.4
Melena	7	5.7
Blood transfusion	4	3.3
Giddiness	3	2.4
Deceased urine output	7	5.7
Fever	13	10.6
Weight loss	1	0.8
Loss of appetite	5	4.1
Slurred speech	9	7.3
Abdominal pain	6	4.9
Dialysis	44	35.8
Pulmonary edema	16	13
Weakness/tiredness	28	22.8
Urinary infection	1	0.8

Table 5. Reason for admission

Of the total population (N=123), 93.5% had hypertension constituting major comorbidity followed by diabetes mellitus in 64.2%, coronary artery disease in 47.2%, dyslipidaemia in 36.6% of patients. Other noteworthy comorbidities included benign prostatic hyperplasia (BPH) in 6.5%, thyroid diseases in 11.4%, musculoskeletal disorders in 5.7%, cerebrovascular accidents (CVA) in 8.9%, asthma or chronic obstructive pulmonary disease (COPD) in 8.9% and less often occurring conditions included depression (4.9%), cancer (4.1%), chronic liver disease (4.1%), gout (4.1%), glomerulonephritis (1.6%), pulmonary oedema (1.6%), urosepsis (0.8%), and kidney stones (0.8%).

COMORBIDITIES	NUMBER (N=123)	PERCENTAGE (%)
HTN	115	93.5
DM	79	64.2
DLP	45	36.6
CHF	4	3.3
CAD	58	47.2
CVA	11	8.9
Glomerulonephritis	2	1.6
Pulmonary edema	2	1.6
Musculoskeletal disorder	7	5.7
Urosepsis	1	0.8
Depression	6	4.9
Cancer	5	4.1
CLD	5	4.1
Kidney stone	1	0.8
Asthma/COPD	11	8.9
BPH	8	6.5
Thyroid disorders	14	11.4
Gout	5	4.1

Table 6. Comorbidites among CKD patients

Hypertension was the common risk factor identified by an analysis of risk factors among anaemic (n=71) and non-anaemic (n=52) chronic kidney disease patients, affecting 92.9% and 94.2% patients respectively. In 60.6% of anaemic patients and 69.2% of non-anaemic patients diabetes mellitus was found. Non-anaemic patients had more risk factors like cardiovascular diseases (57.7%), age (71.2%), family history of CKD (19.2%) and previous history of AKI (21.2%) compared to anaemic patients. Anaemic patients (47.9%) more often smoked and used tobacco than non-anaemic patients (30.8%).

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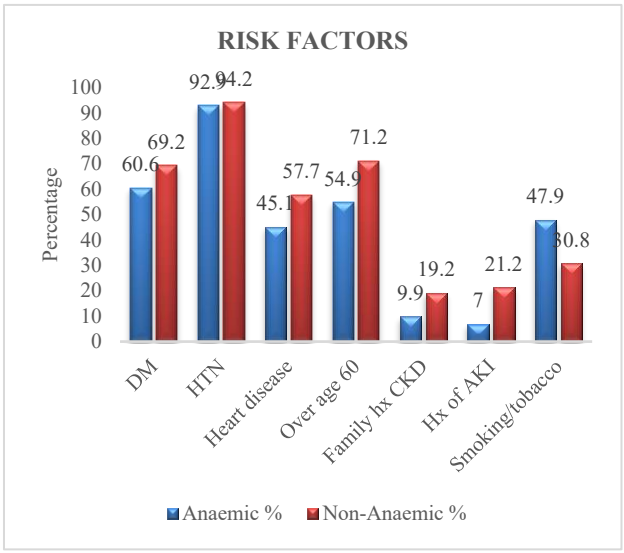

Figure 1. Percentage distribution of risk factors in anaemic and non-anaemic CKD patients

Anaemic CKD patients (n=71) in the study had high rates of complications, with diabetes (60.6%) and hypertension (92.9%) being the most prevalent. 52.1% had other problems, such as infections and pruritus, and 45.1% had cardiovascular disorders. Hyperkalaemia (8.5%) and volume overload (18.3%) were also observed. Hypertension (94.2%) and diabetes (69.2%) were equally prevalent in non-anaemic patients (n=52), but other complications such as volume overload (5.8%) and hyperkalaemia (3.8%) were less common. In general, the burden of systemic complications was higher in anaemic patients than in non-anaemic patients.

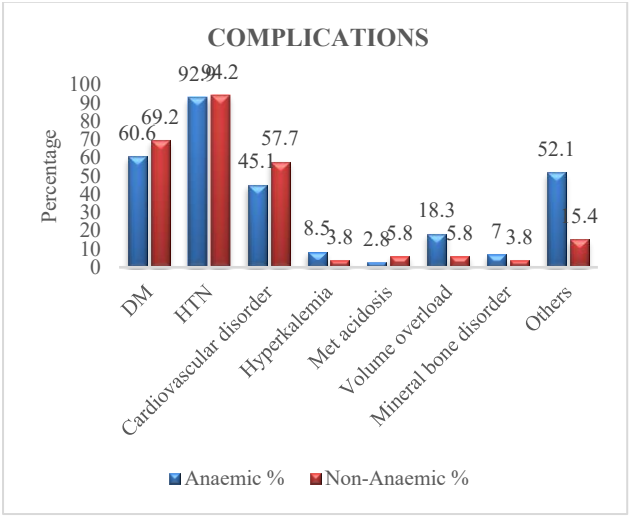

Figure 2. Percentage distribution of patients based on complications

Based on Kidney Disease Quality of Life (KDQOL) guideline, the scale displayed among the study population (n=123) of chronic kidney disease revealed predominance in advanced stages of chronic kidney disease (CKD). Highest proportion were in stage 5, comprising 56.1% (n=69). While among patients in stage 4 this proportion was 17.9% (n=22) and in stage 3, 21.1% of patients (n=26). None of the patients were in stage 1 and 4.9% (n=6) patients were classified as Stage 2.

STAGE OF CKD	eGFR (ml/min/1.73m^2)	NUMBER	PERCENTAGE (%)
1	≥90	0	0
2	60-89	6	4.9
3	30-59	26	21.1
4	15-29	22	17.9
5	<15	69	56.1

Table 7. Stages of CKD based on KDQOL guideline

Of the 71 people evaluated, most of the patients 69.03% were found to have moderate anaemia with haemoglobin levels between 7-9.9 g/dL based on WHO classification of anaemia. While 19.7% were categorised as mild anaemia (10–10.9 g/dL), a lesser percentage 11.3% had severe anaemia (4–6.9 g/dL). None reported very severe anaemia (Hb < 4 g/dL) were seen. This distribution shows that the most often occurring degree of severity in the study population is moderate anaemia.

CLASSIFICATIONS	RANGE	NUMBER	PERCENTAGE (%)
Mild	10-10.9	14	19.7
Moderate	7-9.9	49	69.03
Severe	4-6.9	8	11.3
Very severe	<4	0	0

Table 8. Classification of anaemia based on WHO classification

Among 123 patients population (anaemic:71 and non-anaemic:52), the mean haemoglobin level was much lower in anaemic patients (8.70 ± 1.38 g/dL) than in non-anaemic patients (12.53 ± 0.99 g/dL) indicated worse renal function; serum creatinine levels were also significantly higher in the anaemic group (6.49 ± 3.74 mg/dL) compared to the non-anaemic group (4.18 ± 3.69 mg/dL); potassium, serum urea levels were notably higher in anaemic patients than in non-anaemic ones; anaemic patients having a low mean GFR (16.01 ± 17.43 ml/min/1.73m²) compared to non-anaemic patients (26.62 ± 18.59 ml/min/1.73m²) was also noted.

Journal of Chemical Health Risks
www.jchr.org
JCHR (2026) 16(2), 2326-2336 | ISSN:2251-6727

SI NO	BIOCHEMICAL PARAMETERS	ANAEMIC (n=71)		NON-ANAEMIC (n=52)		t test		p value
		mean	SD	mean	SD	Mean difference	t value	
1	Age	61.72	15.72	66.13	13.44	4.42	1.635	0.105 (NS)
2	Hb	8.70	1.38	12.53	0.99	3.83	17.085	<0.001***
3	Sr. creatinine	6.49	3.74	4.18	3.69	2.30	3.391	<0.001***
4	Sodium	137.45	5.79	136.63	5.34	0.82	0.799	0.426 (NS)
5	Potassium	4.68	0.87	4.06	0.75	0.62	3.451	0.012*
6	Total protein	6.65	0.82	6.39	0.71	0.26	1.682	0.096 (NS)
7	albumin	3.28	0.70	3.25	0.48	0.03	0.255	0.799 (NS)
8	Sr. urea	70.49	44.53	58.33	40.82	12.17	3.550	0.009*
9	GFR	16.01	17.43	26.62	18.59	10.60	3.240	0.002 **

NS- Not Significant, *Significant at 0.05 level, **- Significant at 0.01 level, ***- Significant at 0.001 level

Table 9. Distribution of baseline biochemical parameters based on presence and absence of anaemia

PARTICULARS	Anaemic (n=71)		Non-anaemic (n=52)		Z value	p value
	Mean	SD	Mean	SD		
Frequency/ severity						
Very tired	2.28	1.16	0.96	0.91	5.990	<0.001*
Low energy	2.29	1.14	0.94	0.89	6.240	<0.001*
Shortness of breath	2.35	1.04	0.75	0.90	7.050	<0.001*
Chest pain	1.08	1.02	0.52	1.02	3.534	<0.001*
Forgetting things	0.75	0.92	0.25	0.52	3.288	<0.001*
Difficulty in conc	0.83	1.07	0.31	0.58	2.836	0.005*
functional						
Standing for long period	2.11	1.01	0.88	0.94	6.082	<0.001*
Sleeping	2.58	1.05	1.38	0.95	5.563	<0.001*
Don't want to do anything	1.66	1.28	0.71	0.97	4.266	<0.001*
Emotional						
Distressed	1.66	0.98	0.75	0.95	5.000	<0.001*
Feeling as burden	1.28	1.17	0.48	0.90	4.295	<0.001*

*Significant at 0.05 level

Table 10. Evaluation of health-related quality of life of CKD patients

Journal of Chemical Health Risks

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ASSESSMENT OF HEALTH-RELATED QUALITY OF LIFE (HRQOL) OF CKD PATIENTS

High mean CKD-AQ scores for symptoms including fatigue (2.28), low energy (2.29), and shortness of breath (2.35) point to the physical domain most definitely impacting HRQOL for anaemia sufferers. Compared to non-anaemic people, the emotional dimension had the least impact as evidenced by lower mean scores for feeling like a burden (1.28) and feeling distress (1.66) in anaemic patients. The functional domain shows rather limited impairment in physical activity [e.g., difficulties standing (2.11) and issue in sleep (2.58)]. Those without anaemia had far lower scores, indicating a better HRQOL. This suggests that anaemia somewhat affects mental health but drastically reduces functional capacity and physical health.

Among anaemic patients, HRQOL decreased statistically significant across all assessed domains. Anaemic patients notably reported significantly lower scores in all core areas:physical well-being (14.55±4.80 vs. 24.29±2.35, mean difference 9.74), emotional well-being (13.07 ± 4.38 vs. 20.63 ± 2.47; mean difference 7.56), social/family well-being (13.69 ± 4.29 vs. 21.28 ± 4.76; mean difference 8.54), and functional well-being (11.40 ± 5.13 vs. 21.28 ± 4.76; mean difference 9.88) indicating a major decline was found in functional well-being among anaemic patients.

Particulars	Anaemic patients		Non-anaemic patients		Mean difference	t value	p value
	Mean	SD	Mean	SD			
Physical well being	14.55	4.80	24.29	2.35	9.74	13.486	<0.001***
Social/family well being	13.69	4.29	22.23	3.87	8.54	11.358	<0.001***
Emotional well being	13.07	4.38	20.63	2.47	7.56	11.185	<0.001***
Functional well being	11.40	5.13	21.28	4.76	9.88	10.881	<0.001***
Anaemia subscale	44.88	11.75	67.61	6.62	22.74	12.563	<0.001***
FACT-G	56.38	18.42	89.98	16.49	33.60	10.440	<0.001***
FACT-AN	70.84	19.73	113.17	11.37	42.33	13.866	<0.001***
Fact AN total	100.59	27.21	154.94	15.67	54.35	12.912	<0.001***

***- Significant at 0.001 level

Table 11. Evaluation of health-related quality of life using FACT-An questionnaire

Additionally, anaemia had a direct impact on quality of life, as evidenced by the significantly lower anemia-specific subscale score in anaemic patients (44.88 ± 11.75) compared to non-anemic patients (67.61 ± 6.62), with a mean difference of 22.74. Anaemic patients also had significantly lower overall composite scores, including FACT-G (mean difference 33.60), FACT-An (mean difference 42.33), and total FACT-AN score (mean difference 54.35) (all $p < 0.001$).

In all respects—physical well-being (19.08 ± 3.23), social well-being (17.75 ± 3.50), emotional well-being (17.06 ± 3.18)—the patients with mild anaemia had the best health-related quality of life scores.

A significant drop in quality of life in the functional well-being category, which had the lowest score (FWB: 10.47 ± 5.05), shows that moderate anaemia seriously reduces patients' capacity to carry out physical activities and retain normal functioning. Declining trend also seen in PWB (14.31 ± 4.09), SWB (13.21 ± 3.91), and EWB (12.70 ± 3.92).

Patients with severe anaemia had lowest HRQOL scores. Less general functioning and emotional resilience were revealed by a much reduced PWB (8.13 ± 3.09), SWB (9.48 ± 3.69), and EWB (8.23 ± 2.94). Health-related quality of life (HRQOL) assessments in anaemic patients

Journal of Chemical Health Risks
www.jchr.org
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with chronic kidney disease (CKD) using the FACT-An questionnaire reveal a clear inverse relationship between anaemia degree and general quality of life.

PARTICULARS	Physical Well-Being		Social Well-Being		Emotional Well-Being		Functional Well-Being		Anaemia Subscale		FACT-G		FACT-An total score	
	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD
SEVERE (4-6.9g/dl)	8.13	3.09	9.48	3.69	8.23	2.94	9.40	3.43	29.51	11.26	40.19	8.44	47.04	16.21
MODERATE (7-9.9g/dl)	14.31	4.09	13.21	3.91	12.70	3.92	10.47	5.05	44.28	9.22	53.45	14.74	69.10	16.22
MILD (10-10.9 g/dl)	19.08	3.23	17.75	3.50	17.06	3.18	15.78	3.80	55.56	9.72	71.92	11.86	123.43	20.67

Table 12. Evaluation of health-related quality of life of anaemic CKD patients based on WHO classification

DRUG UTILISATION EVALUATION

Among 71 anaemic CKD patients identified, the most often prescribed class of medicine was found to be Darbepoetin (60.6%) and Erythropoietin (39.4%). Multivitamins accounted for 35.2%, folic acid for 21.1%, vitamin B12 for 11.3%, and other nutrients account for 15.5%. Iron therapy was also rather significant; the most usually used forms are ferrous fumarate and iron sucrose. Lesser population of patients, was prescribed with the hypoxia-inducible factor prolyl hydroxylase inhibitor (HIF-PHI) medication, especially Desidustat (8.5%).

Treatment approach

According to study of treatment strategies among anaemic CKD patients, most of them got combination treatments. Dual therapy was used among 34 cases (47.9%), polytherapy among 23 cases (32.4%) while only 14 cases (19.7%) accounts for monotherapy.

Route of administration

Among anaemic CKD patients, oral and subcutaneous (s/c) drug delivery methods were noted to be more commonly used. Subcutaneous injection was advised in 73.2% of cases presumably because it is suitable for erythropoiesis-stimulating drugs. Taking oral iron and vitamin supplements also explains a similar percentage—71.8%. In 47.9% of cases patients either using injectable iron preparations most likely needed intravenous (IV) treatment.

DRUG CLASS	DRUG NAME	NO. OF DRUGS	PERCENTAGE
ESA THERAPY	Erythropoietin Darbepoietin	28 43	39.4 60.6
VITAMINS AND MINERALS	Vit B12 Folic acid Multivitamins others	8 15 25 11	11.3 21.1 35.2 15.5
IRON THERAPY	Iron sucrose Ferric carboxymaltose Ferric pyrophosphate Ferrous fumarate Ferrous gluconate	21 11 1 15 2	29.6 15.5 1.4 21.1 2.8
HIF-PHI THERAPY	Desidustat Others	6	8.5

Table 13. List of drugs for anaemia management among patients with CKD

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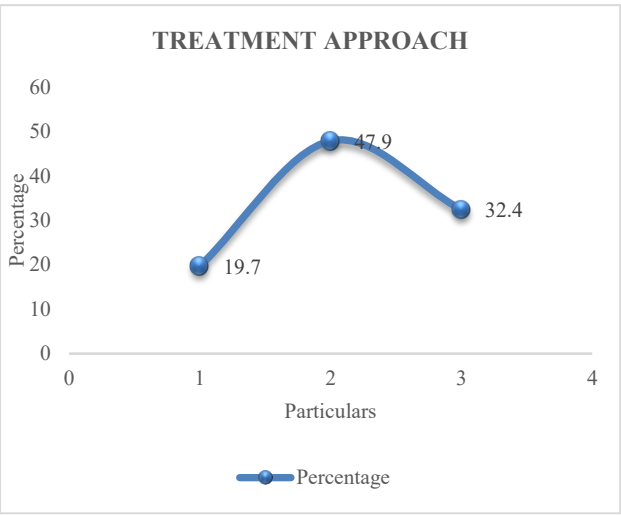

Figure 3. Percentage distribution of treatment approach among anaemic CKD patients

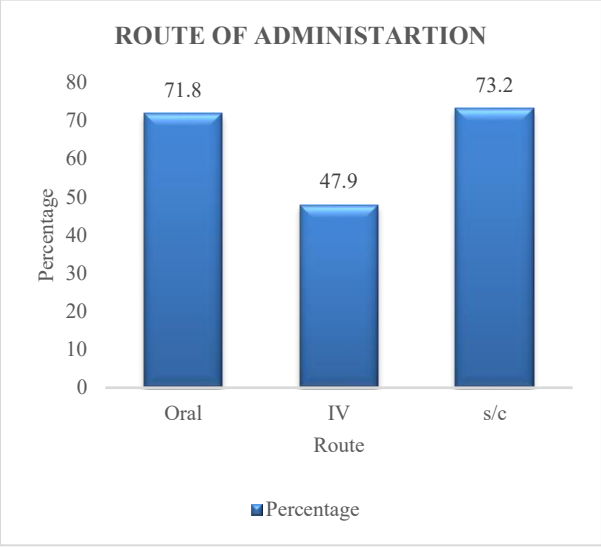

Figure 4. Percentage distribution for Route of Administration for anaemia management

5. Conclusion

The study disclosed that the common risk factors and complications of CKD were hypertension and diabetes mellitus, that emphasizes the interrelations of these with CKD and the clinical importance to manage these conditions to decrease the worsening of QOL.

This study revealed that CKD individuals have low QOL, especially if they have anaemia. The study finding highlighted the significance of health-related factors in anaemic and non-anaemia chronic kidney disease patients, assessed using CKD-AQ questionnaire and on comparing the domain scores using FACT-An questionnaire, we conclude the CKD patients with anaemia have poor QOL.

The drug utilization evaluation among anaemic CKD patients revealed that the most frequently used agents were Erythropoietin stimulating agents and majority received combination therapy (i.e. Dual therapy) with subcutaneous and oral administration as the preferred route of administrations.

The study highlights that there is considerable worsening of QOL in CKD patients especially when anaemia is present, emphasizing the urgent need to manage the anaemia, so lifestyle modifications and emotional supports are recommended and patients who are at a risk of low heamoglobin level are to be identified to avoid progression to anaemia.

6. Conflict of interest

The authors declare that the research was conducted inthe absence of any commercial or financial relationshipsthat could be construed as a potential conflict of interest.

7. Ethical clearance

The study protocol was reviewed and approved by the Institutional Ethics Committee (IEC). Written informed consent was obtained from all participants before data collection, and patient confidentiality was strictly maintained throughout the study.

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