

Original research article

## Study of Clinical Profile in Chronic Kidney Disease Patients Undergoing Dialysis in Tertiary Care Hospital in South Gujarat

<sup>1</sup>Dr Priyank R Parmar, <sup>2</sup>Dr Vandana Dhangar, <sup>3</sup>Dr Mit Panchani,  
<sup>4</sup>Dr Bijoy Desai

<sup>1</sup>Third Year Resident, <sup>2</sup> Professor, <sup>3</sup> Ex Resident, <sup>4</sup> First Year Resident

<sup>1,2,3,4</sup>Department of General Medicine, Surat Municipal Institute Of Medical College and Research (SMIMER), Surat, Gujarat

**Corresponding Author: Dr Vandana Dhangar**

### Abstract

Chronic Kidney disease (CKD) is characterized by change in kidney structure and function with different clinical manifestations, like its cause, severity and the rate of progression. Initial stages of CKD are often not symptomatic and may be reversible, which are detected during the evaluation of other comorbidities. This study was taken up to highlight the clinical presentation, etiology & complications in patients with CKD undergoing dialysis at tertiary care hospital in south Gujarat. The study was conducted among indoor patients diagnosed as chronic kidney disease to our tertiary care hospital & OPD Patients. Global quality of life scale was used for assessing quality of life. For renal size, renal length was considered from radiological studies. Blood investigations include complete blood count (CBC), Liver function test (LFT), Renal function test (RFT), calcium, phosphate, uric acid, thyroid profile, urine routine, coagulation profile, vitamin B12 & D3, Amylase, Ferritin, PTH, Mg, HbA1c, arterial blood gas (ABG), HIV, HBsAg, HCV. Radiological investigations include Chest Xray, Ultrasonography. Data will be entered in MS EXCEL spread sheet. Descriptive statistic applied as frequency and percentage. Most common cause observed for CKD in this study was diabetes followed by hypertension. Upon identifying the risk factors in the general population, regular clinical and biochemical screening amongst them can help to halt or delay the reversible causes or process leading to the development of end-stage renal disease (ESRD). This will eventually decrease the mortality and morbidity in the general population having the risk factors for ESRD.

**Key words:** Chronic Kidney Disease , Clinical Profile , Dialysis

### Introduction

#### Introduction

Kidney disease is defined as an altered kidney structure or function with implications on the health of an individual, which can be acute, and either resolve or become chronic. Chronic Kidney disease (CKD) is characterized by change in kidney structure and function with different clinical manifestations, like its cause, severity and the rate of progression. Initial stages of CKD are often not symptomatic and may be reversible, which are detected during the

evaluation of other comorbidities. Symptoms present are mostly due to complications secondary to decreased renal function and can be treated only by haemodialysis or renal transplantation if it is very severe.<sup>1</sup> Abnormalities in kidney structure usually occurs before abnormalities in function. The path to development of CKD is shown horizontally while complications are shown by use of radial arrows.<sup>2</sup> The prevalence of CKD in different regions of India was reported between <1% to 13%, and recently, a prevalence of 17% was reported in the data collected from the International Society of Nephrology's Kidney Disease Data Centre Study.<sup>3,4</sup> The aetiologies vary in frequency or absolute numbers in different countries, but the proportion of people with important antecedents to CKD, like diabetes, is growing dreadfully in both developed and developing countries. The complications of CKD affect all organ systems. Kidney failure leads to the commonly recognized uraemic symptoms. If detected early, the associated complications and the progression to kidney failure can be delayed or possibly prevented through appropriate interventional strategies. Regular testing of high-risk groups can give an early indication of kidney damage. These include elderly people, diseases like diabetes, hypertension, CVD, structural renal tract disease, multi- system diseases with potential kidney involvement such as SLE (systemic lupus erythematosus), a positive family history of kidney failure, hereditary kidney disease, those receiving potential nephrotoxic drugs or those found to have haematuria or proteinuria on opportunistic basis. Failure to recognize CKD causes neglect of its consequences and complications, and late referral of people with advanced CKD resulting in worse renal replacement therapy (RRT) outcomes. Hence, identification of patients at earlier time points in the trajectory of CKD, with appropriate management should lead to clinical benefits. Chronic kidney disease (CKD) is characterized by a reduction in glomerular filtration rate (GFR) and histological manifestation as reduction in number of functional nephrons. The clinical course is typically one of a progressive and constant loss of nephron function finally leading to end stage renal disease. CKD is defined as alteration in renal structure or renal function, which if present for more than or at least 3 months. Criteria for CKD (anyone of the following if present for more than or at least 3 months)

**1. Biomarkers or radiological findings or relevant history for kidney damage (one or more):**

- Albumin in urine: Albumin to creatinine ratio (ACR)  $\geq 30\text{mg/g}$  ( $\geq 3\text{mg/mmol}$ ); Albumin excretion rate (AER)  $\geq 30\text{mg} / 24$  hours
- Urine sediment abnormalities: RBC, WBC, fatty or granular casts, microscopic-haematuria
- Electrolyte and other abnormalities due to tubular disorders: renal tubular acidosis, nephrogenic diabetes insipidus, renal potassium, magnesium wasting, non-albumin proteinuria
- Abnormalities detected by histology: glomerular, vascular, tubulo-interstitial disease, congenital disease
- Structural abnormalities detected by imaging: polycystic or dysplastic kidney, hydronephrosis, small sized kidneys, renal mass, renal artery stenosis
- History of kidney transplantation

OR

**2. Decreased GFR**

- GFR  $< 60 \text{ ml/min/1.73 m}^2$  (Normal GFR  $90\text{-}120 \text{ ml/min/1.73 m}^2$ )

This study was taken up to highlight the clinical presentation, etiology & complications in patients with CKD undergoing dialysis at tertiary care hospital in south Gujarat.

## Materials & Methods

The study was conducted among indoor patients admitted to our tertiary care hospital & OPD Patients.

**STUDY TYPE:** Cross-Sectional Study

**STUDY DURATION:** After ethical approval, 12 months for enrolling the patients and 3 months for compiling, tabulating, analysing and finalizing the results.

## Enrollment Criteria

### Inclusion criteria:

- All patients diagnosed as chronic kidney disease (as per KDIGO definition) and undergoing maintenance dialysis at our tertiary care hospital.
- Age >18 years
- Patients who gives consent for participation in study

### Exclusion criteria:

- Age <18 years
- Patients who have undergone Renal Transplant.
- Patients who don't give consent for participation in the study.

## SAMPLE SIZE AND SAMPLING TECHNIQUE:

This study includes all patients according to inclusion criteria who are willing to give consent after getting ethical permission for one year from March 2020 to March 2021.

n = 50

## METHOD OF COLLECTION OF DATA:

Baseline data including age and sex, detailed medical history including risks factors, past history, family history, clinical and physical examination was included as part of the methodology. For all the subjects standing height, weight, mid upper arm circumference (MUAC), waist to hip ratio were measured, Global quality of life scale was used for assessing quality of life 5. For renal size, renal length was considered from radiological studies. Blood investigations include complete blood count (CBC), Liver function test (LFT), Renal function test (RFT), calcium, phosphate, uric acid, thyroid profile, urine routine, coagulation profile, vitamin B12 & D3, Amylase, Ferritin, PTH, Mg, HbA1c, arterial blood gas (ABG), HIV, HBsAg, HCV. Radiological investigations include Chest Xray, Ultrasonography. ECG was recorded

## SPECIMEN COLLECTION:

**Blood:** Venous blood samples were collected in Ethylenediaminetetraacetic acid (EDTA), citrate, fluoride, plain blood vacutainer, followed by that were sent for analysis.

**Urine:** Urine sample was collected in a sterile, clean and dry container, centrifuged and was tested.

## STASTICAL METHODS

Data will be entered in MS EXCEL spread sheet. Descriptive statistic applied as frequency and percentage.

## Results

### Age and Gender

Among the 50 cases included in this study, 34 (68%) were males and 16 (32%) were females. Majority; 26 (52%) of the patients in the study population were between 31 – 50 years of age. The overall mean age of current study population is  $44 \pm 12.29$  years.

**Table 1: Duration of CKD in study population**

| Duration         | Cases | Percentage (%) |
|------------------|-------|----------------|
| <6 months        | 3     | 6              |
| 6 months – 1year | 0     | 0              |
| 1 -3 year        | 10    | 20             |
| 3-5 year         | 21    | 42             |
| > 5 years        | 16    |                |

Majority of cases – 21 (42%) were having duration between 3- 5 years, 16 (32%) cases were having duration of >5 years, 10 (20%) cases were having duration between 1-3 years and 3 (6%) cases have duration of <6 months.

**Table 2: Distribution of cases based on Etiological diagnosis**

| Aetiology                    | Cases | Percentage (%) |
|------------------------------|-------|----------------|
| Diabetic Nephropathy         | 20    | 40             |
| Hypertensive Nephropathy     | 16    | 32             |
| Unknown Aetiology            | 5     | 10             |
| Chronic glomerulonephritis   | 4     | 8              |
| Tubulointerstitial nephritis | 2     | 4              |
| NSAIDS Induced               | 2     | 4              |
| ADPKD                        | 1     |                |
| Total                        | 50    | 100            |

Most common etiology in the present study was diabetic nephropathy 20 (40%) cases, followed by hypertensive nephropathy 16 (32%) cases, chronic glomerulonephritis 4 (8%) cases, Tubulointerstitial nephritis 2 (4%) cases, NSAIDS induced 2 (4%) cases and ADPKD 1 (2%) case. Etiology was not formed in 5 (10%) cases in the current study population.

#### Diabetes

Among the 50 cases included in this study, 24 (48%) cases were having diabetes mellitus. Out of these 14 patients (60%) were on Oral hypoglycaemic drugs (OHA), 5 patients (20%) were on Insulin and rest 5 patients (20%) are on combination treatment.

#### Hypertension

Among the 50 cases included in this study, 33 (66%) patients were having hypertension, with majority of patients 10 (30.3%) were in the age group of 51-60 years.

#### Cardiovascular disease

Among the 50 cases included in the study, as shown in table-13, 29 (58%) cases were found to have some form of cardiovascular disease, of which, 21 (42%) cases were having left ventricular hypertrophy (LVH) and 8 (16%) cases were having ischemic heart disease (IHD), majority of cases – 10 (34.1%) were seen in age group 51-60 years. 2 (6.9%) cases were seen in 21-30 years age group, 6 (20.69%) cases seen in 31-40 years age group, 7 (24.1%) cases seen in 41-50 years of age group, 4 (13.7%) cases were seen in 61-70 years of age group. Out of these 29 cases, 10 cases (34%) had Diabetes Mellitus.

**Habits in the study population:**

Out of 50 cases in present study, majority of cases 32 (64%) were addicted to smoking, followed by tobacco chewing is 14 (28%) and alcohol consumption was observed in 4 (8%).

**Clinical Presentation of study population:**

Out of 50 cases, majority cases 40 (80%) had gastro-intestinal symptoms like nausea, vomiting and anorexia. 26 (52%) cases with volume overload symptoms like pedal oedema and dyspnoea. Neurological symptoms like paraesthesia seen in 29 (58%) cases, headache in 10(20%). Pruritis was seen in 22 (44%) cases. Lower urinary tract complaints seen in 33 (66%) cases. Bleeding manifestation was observed in 2 (4%) cases.

**Stage of CKD in study population at presentation****Table 3: CKD Stages of study population**

| CKD Stage | eGFR (ml/min/1.73m <sup>2</sup> ) | Cases | Percentage (%) | Male | Female |
|-----------|-----------------------------------|-------|----------------|------|--------|
| 3         | 30-59                             | 1     | 2              | 1    | 0      |
| 4         | 15-29                             | 11    | 22             | 9    | 2      |
| 5         | <15                               | 38    | 76             | 24   | 14     |
| Total     | -                                 | 50    | 100            | 34   | 16     |

As seen in the above table 3 ; majority of the cases in this study 38 (76%) were presented with stage 5 of CKD where eGFR is <15 ml/min/1.73m<sup>2</sup> calculated by CG formula. 11 (22%) cases were in stage 4 of CKD where eGFR is between 15-29 ml/min/1.73m<sup>2</sup>. While 1 (2%) case was in stage 3 of CKD with eGFR between 30-59 ml/min/1.73m<sup>2</sup>. Out of these 38 cases in stage 5 of CKD as shown in table-18 below, 22 cases were in age group of 41-60 years while 12 cases were in age group of 21-20 years. In stage 4 of CKD, out of 11 cases, 3 cases were in age group 41-60 years, 7 cases in age group 21-40 years, 1 case in age group of < 21 years. While in stage 3 of CKD, there was only 1 case and it is under age group of 21-40 years.

**Haemoglobin in the study population**

The mean and standard deviation of haemoglobin in the study population was  $7.5 \pm 1.56$  g/dl respectively varying within a range of 4 g/dl to 11.9 g/dl. Haemoglobin less than 11g/dl was present in 48 (96%) cases while 19 (38%) cases had haemoglobin less than 7g/dl.

**Serum Phosphate in the study population**

S. Phosphate levels were less than 4.5 mg/dl in 18 (36%) cases out of study population, while 32 (64%) cases were having S. Phosphate levels of >4.5 mg/dl. Mean and standard deviation of S. Phosphate of the study population was  $5.22 \pm 1.45$  mg/dl respectively, varying within a range of 1 to 8.5

**Urea Levels in study population****Table 4: Blood urea levels in study population**

| Urea (mg/dl) | Cases | Percentage (%) |
|--------------|-------|----------------|
| <50          | 0     | 0              |
| 50-100       | 12    | 24             |
| 100-200      | 30    | 60             |
| 200-300      | 7     | 14             |
| >300         | 1     | 2              |

30 (60%) had S. Urea levels between 100- 200 mg/dl followed by 12 (24%) cases had S. Urea levels between <100 mg/dl., 7 (14%) cases have S. Urea levels between 200-00 mg/dl, while 1 (2%) case had S. Urea levels of > 300 mg/dl.

### **S. Creatinine levels in study population**

**Table 5: S. Creatinine levels in study population**

| <b>S. creatinine (mg/dl)</b> | <b>Cases</b> | <b>Percentage (%)</b> |
|------------------------------|--------------|-----------------------|
| <5                           | 13           | 26                    |
| 5-12                         | 30           | 60                    |
| >12                          | 7            | 14                    |

Majority of cases 30 (60%) had s. creatinine levels between 5- 12 mg/dl followed by 13 (26%) cases had s. creatinine levels between <5 mg/dl & 7 (14%) cases had s. creatinine levels of >12 mg/dl.

### **Lipid Profile in study population**

27 (54%) cases had S. Triglyceride levels of >150 mg/dl, 23 cases (46%) had levels between 50-150 mg/dl. Further as shown in table-34, 33 (66%) cases had s. HDL levels of <40 mg/dl, while 17 (34%) cases had HDL levels between 40-80 mg/dl.

### **S. Sodium levels in study population**

S. Na <135 mmol/l was seen in 23 (46%) cases while S. Na >145 mmol/l was seen in 9 (18%) cases & 18 (36%) cases had S. Na levels between 135-145 mmol/l. In present study there were 31 (62%) cases with symptoms of fluid overload and out of them, 18 cases (58.06%) were having S. Na <135 mmol/l.

### **S. Potassium levels in study population**

S. potassium > 5.5 mmol/l was seen in 11 cases (22%), while S. potassium <3.5 mmol/l was seen in 4 cases (8%). While 35 (70%) cases had S. potassium levels between 3.5-5.5 mmol/l.

### **Serum uric acid levels amongst males in study population**

21 (61.76%) cases amongst males had SUA levels > 7 mg/dl, 13 (38.23%) cases had SUA levels between 3.4-7 mg/dl.

13 (81.25%) cases had SUA levels > 6 mg/dl, 3 (18.75%) cases had SUA between 2.4-6 mg/dl.

### **Serum Magnesium in study population**

Majority of cases – 30 (60%) out of the study population were having S. Magnesium levels of >2.1 mg/dl, 15 (30%) cases had S. Magnesium levels between 1.3-2.1 mg/dl, while 5 cases (10%) had S. Magnesium levels of <1.3 mg/dl. In current study population the mean and standard deviation of S. Magnesium level was  $2.25 \pm 0.58$  mg/dl respectively.

### **Serum B12 levels in study population**

Almost 25 cases (50%) of study population had S. B12 levels <200 pg/ml, 12 (24%) cases had S. B12 levels of >900 pg/ml, while 19 cases (38%) had S. B12 levels between 200-900 pg/ml. The mean and standard deviation of S. B12 levels in study population was  $345.73 \pm 310.57$  pg/ml respectively.

### **Vitamin D3 levels in study population**

**Table: 6 Vitamin D3 levels in study population**

|              | D3 (ng/ml)   | Cases | centage (%) |
|--------------|--------------|-------|-------------|
| Deficient    | 0-30         | 47    | 94          |
| insufficient | 31-39        | 3     | 6           |
| Sufficient   | 40-80        | 0     | 0           |
| Mean         | 16.11 ± 7.15 |       |             |

47 cases (94%) of study population had S D3 levels <31 ng/ml, while 3 cases (6%) had S. D3 levels between 31-39 ng/ml. The mean and standard deviation of S.D3 levels in study population was 16.11 ± 7.15 ng/ml respectively.

#### Urine Protein and Urine Sugar amongst cases

**Table 7 Urinary Protein and Sugar amongst cases**

| Proteinuria |    | Urine Sugar |   |
|-------------|----|-------------|---|
| 1+          | 10 | 1+          | 9 |
| 2+          | 15 | 2+          | 4 |
| 3+          | 8  | 3+          | 0 |
| 4+          | 2  | -           | - |

As shown in the above table-54, in present study out of 50 cases, 35 (70%) cases had presence of proteinuria & out of those 10 (28.57%) cases had +1 proteinuria, 15 (42.85%) had +2 proteinuria, 8 (22.85%) cases had +3 proteinuria and 2 (5.71%) cases had +4 proteinuria. Similarly, 13 (26%) cases had presence of sugar in urine, out of that, 9 (69.23%) cases had +1 of urine sugar while 4 cases (30.76%) had 2+ urine sugar.

**Table 8: Renal size in study population**

| Renal Size | Cases | Percentage (%) |
|------------|-------|----------------|
| Reduced    | 42    | 84             |
| Normal     | 8     | 16             |

42 (84%) cases in study population had reduced renal size, while 8 (16%) had normal renal size. Out of 8 cases, 4 (8%) cases with normal renal size were diagnosed as diabetic nephropathy.

**Table 9: Quality of life in study population**

| GQOL Score | Cases | Percentage (%) |
|------------|-------|----------------|
| <30        | 1     | 2              |
| 30-45      | 20    | 40             |
| 46-60      | 20    | 40             |
| 61-75      | 9     | 18             |
| >75        | 0     | 0              |

As shown in above table, there were 20 (40%) cases with global quality of life<sup>226</sup> (GQOL) score between 30-45, another 20 (40%) cases with GQOL score between 46-60, 9 (18%) cases between 61-75, 1 (2%) case with GQOL score <30. The mean GQOL score of the study population was 50.56 ± 11.66. This stats quality of life between somewhat bad quality of life to moderately good quality of life as per GQOL<sup>226</sup> scale.

## Discussion

The present study includes of 50 cases of CKD, who were either seen on outpatient basis or got admitted with some complication of CKD and were on regular maintenance dialysis, at tertiary care hospital in south Gujarat. These cases were included after they met the inclusion criteria, after that they were examined clinically, laboratory and radiological investigations were carried out. In present study the mean age of the study population was  $44 \pm 12.29$  years. Other studies also show similar results.

The mean age in CKD Registry of India Report 6 was  $48.3 \pm 16.6$  years, in CMC, Vellore study<sup>7</sup> it was  $38.2 \pm 14.5$  years. In study by Rajapurkar et al.<sup>8</sup> in western zone of India, it was  $50.2 \pm 14.9$  years.

In present study, population amongst gender, males constitute of 68%, whereas females constitute 32%. Similar results were found in other studies. In study of CKD Registry of India Report<sup>6</sup> males constituted 68.9% and 31.3% females. In study by Rohan G Patil et al.<sup>9</sup> 62% were male while remaining 38% are female.

### Etiology

In the present study, most common etiology was diabetic nephropathy (40%) followed by hypertensive nephropathy (32%), chronic glomerulonephritis (8%), Tubulointerstitial nephritis (4%), NSAIDS induced (4%) and ADPKD (2%). Etiology was not known in 10% of patients in the current study population. Similar results were obtained in other studies. Jha et al.<sup>10</sup> in their study found diabetic nephropathy in 31.2% patients, hypertensive nephropathy in 12.8% patients and unknown etiology in 16.4% of patients. In study by, Sharma M et al.,<sup>11</sup> most common cause was found to be diabetes mellitus in 42.2%, followed by chronic glomerulonephritis in 21.4%, hypertension in 19.5%.

### Manifestations

In present study, out of 50 cases, majority cases 40 (80%) had gastro-intestinal symptoms like nausea, vomiting and anorexia. 26 (52%) cases with volume overload symptoms like pedal oedema and dyspnoea. Neurological symptoms like paraesthesia seen in 29 (58%) cases, headache in 10 (20%). Pruritis was seen in 22 (44%) cases. Lower urinary tract complaints seen in 33 (66%) cases. Bleeding manifestation was observed in 2 (4%) cases. Almost similar results were seen in other studies. Li et al<sup>12</sup> in their study found hypertension in 84% of patients, gastrointestinal system involvement in 81.5% patients, excretory system manifestations in 85% of patients. In the study conducted by Rohan G Patil et al.<sup>9</sup> it was observed that 52% cases had Swelling of Legs (Pedal edema), 12% cases had cyanosis and 10% cases had clubbing.

### Diabetes and CKD

In present study, there were 48% cases with DM. This result is similar to study conducted by Rohan G Patil et al.<sup>9</sup> where 52% cases had positive past history of diabetes mellitus. While study conducted by Sathyan S et al.<sup>13</sup> observed only 24% cases with positive past history of diabetes mellitus, which is not consistent with present study.

### Hypertension and CKD

In present study, 66% cases were having hypertension. Similar results were seen in other studies. In CKD registry of India Report,<sup>6</sup> 71% had hypertension. In the study conducted by Christopher Babua<sup>14</sup> 90% cases had hypertension.

### Habits

In present study, 32 (64%) cases were addicted to smoking, followed by tobacco chewing is 14 (28%) and alcohol consumption is 4(8%). Similar results were seen in other studies. In study by Nirav et al. 17, 56% of cases were chronic tobacco abuser including both smoke and smokeless tobacco. In CKD Registry of India Report<sup>6</sup>, where cigarette smoking was prevalent in 32%, alcohol consumption in 6.4%, NSAIDS use in 2%.

#### CKD stage at presentation

In present study, majority of the cases 38 (76%) were presenting with stage 5 of CKD where eGFR is  $<15 \text{ ml/min/1.73m}^2$  calculated by CG formula. Out of these 38 (74%) cases, 22 (44%) cases were in age group of 41-60 years while 12 (24%) cases with stage 5 of CKD were in age group of 21-20 years. 11 (22%) cases are in stage 4 CKD, while 1 (2%) case is in stage 3 CKD. Similar results were seen in other studies. In the CKD Registry of India Report<sup>6</sup> 50.3% presented in Stage 5, 24% in Stage 4, 19.1% in Stage 3.

#### Haemoglobin

In present study, the mean haemoglobin was  $7.5 \pm 1.56 \text{ g/dl}$ , varying from 4 g/dl to 11.9 g/dl. The mean Hb level in study population in stage 3 was 7.6 g/dl, in stage 4 is  $7.66 \pm 1.78 \text{ g/dl}$  and in stage 5 was  $7.44 \pm 1.54 \text{ g/dl}$ . Haemoglobin less than 11g/dl i.e., anemia was present in 48 (96%) cases while 19 (38%) cases had haemoglobin less than 7g/dl. Majority of cases with Hb levels of less than 10 g/dl is present in stage-5 – 74% cases, followed by 16% cases in stage-4. Similar results were seen in other studies.

#### Cardiovascular disease

In present study, 29 (58%) cases were found to have some form of cardiovascular disease, of which, 21 (42%) cases were having left ventricular hypertrophy (LVH) and 8 (16%) cases were having ischemic heart disease (IHD), majority of cases - 10 (34.1%) were seen in age group 51-60 years. Similarly, in the CKD Registry of India Report<sup>6</sup>, ischemic heart disease (44.2%) was the commonest with left ventricular hypertrophy in 31.6% cases.

#### Lipid

In present study, the mean T. Cholesterol was  $207.8 \pm 56.04 \text{ mg/dl}$ , TG is  $155.94 \pm 34.34 \text{ mg/dl}$ , LDL was  $77.46 \pm 17.18 \text{ mg/dl}$ , HDL was  $39.12 \pm 8.78 \text{ mg/dl}$ . Similarly, study by Rao et al.,<sup>15</sup> shows high TC, LDL-C, TG & HDL-C levels in earlier CKD stages while showing decreasing levels in CKD stage 5. Similar results were observed in study by Choudhary N et al.<sup>16</sup>

#### S. Vitamin B12

In present study, 25 cases (50%) of study population had S. B12 levels of  $<200 \text{ pg/ml}$ , while 19 cases (38%) had S. B12 levels between 200-900 pg/ml. The mean S. B12 levels is  $345.73 \pm 310.57 \text{ pg/ml}$ . Similar results were observed in the study conducted by Rohan G Patil et al.<sup>9</sup>

#### Urea levels

In present study, 30 (60%) cases had S. Urea levels between 100-200 mg/dl followed by 12 (24%) cases had S. Urea levels between  $<100 \text{ mg/dl}$ . The mean S. Urea level in the study population is  $144.56 \pm 61.25 \text{ mg/dl}$  while in male it is  $137.05 \pm 65.28 \text{ mg/dl}$  & female is  $160.5 \pm 49.80 \text{ mg/dl}$ . This is similar to study by Nirav et al.,<sup>17</sup> where almost 76% cases had their S. Urea level in the range 101-250 mg/dl, with mean S. Urea level is 164.59 mg/dl.

#### Creatinine

In present study, 30 (60%) cases had S. Creatinine levels between 5- 12 mg/dl, while 13 (26%) cases had S. Creatinine levels between <5 mg/dl. The mean S. Creatinine levels in the study population was  $7.8 \pm 3.53$  mg/dl while in male it was  $7.47 \pm 3.24$  mg/dl & female is  $8.5 \pm 4.11$  mg/dl. The mean creatinine clearance was  $12.29 \pm 7.21$  ml/min/1.73 m<sup>2</sup>. Similar results were observed in other studies. In study by Nirav et al.<sup>17</sup> 62% of the patients had their S. Creatinine value in the range of 5-12 mg/dl, with mean value of 9.48 mg/dl.

#### Renal Size

In present study, 42 (84%) cases had reduced renal size, while 8 (16%) cases had normal renal size. Out of 8 cases, 4 (8%) cases with normal renal size were having diabetic nephropathy. Similar results were seen in study by Sandip T. Chaudhari et al.<sup>18</sup> where renal size was decreased in 80% of cases, normal in 18% and increased in 2% of cases.

#### Quality of life in study population

There were 20 (40%) cases with global quality of life<sup>226</sup> (GQOL) score between 30-45, another 20 (40%) cases with GQOL score between 46-60, 9 (18%) cases between 61-75, 1 (2%) case with GQOL score <30. The mean GQOL score of the study population was  $50.56 \pm 11.66$ . This stats quality of life between somewhat bad quality of life to moderately good quality of life as per GQOL<sup>5</sup> scale.

#### Conclusion

Most common cause observed for CKD in this study was diabetes followed by hypertension. So, these patients should be monitored for their renal function on regular basis with adequate control of diabetes and hypertension is required. Strict diet should be followed to avoid CKD related complications like fluid overload, pedal edema using salt restricted diet, avoid hyperkalemia by avoiding any food with high potassium like fruits, which can otherwise lead to development of arrhythmia. Regular blood work up to look for Anemia, which is very common in CKD patients, which is due to many reasons like iron, vitamin B12, Folic acid deficiency as well as related to blood loss and erythropoietin deficiency. Regular therapy with erythropoietin, IV iron supplementation whenever needed, Vitamin B12, D3 and Calcium supplements to be given to the patient. Hypocalcemia, hyperphosphatemia and hyperuricemia which are common in CKD, needs to be corrected. Patients with CKD in general population are ignorant to their own health and that leads to progression of kidney disease to ESRD. Thus, health awareness should be made in general population which may lower the incidence or delay the development of ESRD. At present for a very limited proportion of population renal replacement therapy is affordable, so the renal replacement therapy should be made more accessible and affordable in order to reduce morbidity and mortality even in remote places. The capacity building for other modalities for renal replacement therapy should be vigorously pursued in developing countries.

#### References

1. National Kidney Foundation. K/DOQI clinical practice guidelines for chronic kidney disease: evaluation, classification, and stratification. *Am J Kidney Dis* 2002; 39: S1– 266.
2. Levey AS, Stevens LA, Coresh J. Conceptual model of CKD: applications and implications. *Am J Kidney Dis* 2009; 53: S4–16.
3. GBD Chronic Kidney Disease Collaboration. Global, regional, and national burden of chronic kidney disease, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet*. 2020 Feb 29. 395 (10225):709-733.
4. Ene-Iordache B, Perico N, Bikbov B, Carminati S, Remuzzi A, Perna A, Islam N, Bravo

- RF, Aleckovic-Halilovic M, Zou H, Zhang L, Gouda Z, Tchokhanelidze I, Abraham G, Mahdavi-Mazdeh M, Gallieni M, Codreanu I, Togtokh A, Sharma SK, Koirala P, Uprety S, Ulasi I, Remuzzi G: Chronic kidney disease and cardiovascular risk in six regions of the world (ISN-KDDC): A cross-sectional study. *Lancet Glob Health* 4: e307–e319, 2016
5. Hyland, ME, & Sodergren, SC. (1996). Development of a new type of global quality of life scale, and comparison of performance and preference for 12 global scales. *Qual Life Res*, 5, 469-480.
  6. 2nd Annual report, CKD Registry Of India, 38th Annual Conference of Indian Society of Nephrology.
  7. K. S. Dharan, G. T. John, N. Neelakantan, A. Korula, N. Balakrishnan, M. G. Kirubakaran, C. K. Jacob; Spectrum of severe chronic kidney disease in India: A clinicopathological study; *Natl Med J India* 2006;19:250–2
  8. Rajapurkar MM, John GT, Kirpalani AL, Abraham G, Agarwal SK, Imeida AF, et al. What do we know about chronic kidney disease in India: First report of the Indian CKD registry? *BMC Nephrol.* 2012; 13(1):10
  9. Rohan G Patil, Deepak G Bhosle, Rizwan Abdul Hakim Malik. Vitamin B12 Deficiency In Chronic Kidney Disease. *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*. Volume 15, Issue 9 Ver. III (September. 2016), PP 22-25.
  10. Jha V. Current status of end-stage renal disease care in India and Pakistan. *Kidney IntSuppl.* 2013; 3(2):157–60.
  11. Sharma M, Doley P, Das HJ. Etiological profile of chronic kidney disease: A single- center retrospective hospital-based study. *Saudi J Kidney Dis Transpl.* 2018 Mar- Apr;29(2):409-413.
  12. Li L. End-stage renal disease in China. *Kidney Int.* 1996; 49(1):287–301.
  13. Sathyan S, George S, Vijayan P, Jayakumar M. Clinical and epidemiological profile of chronic kidney disease patients in a tertiary care referral centre in South India. *Int J Community Med Public Health* 2016;3:3487-92.
  14. Christopher Babua, Robert Kalyesubula, Emmy Okello, Barbara Kakande, Elias Sebatta, Michael Mungoma, Charles Kiiza Mondo. Cardiovascular risk factors among patients with chronic kidney disease attending a tertiary hospital in Uganda. *Cardiovasc J Afr* 2015; 26: 177–180.
  15. A M Rao, A R Bitla, E P Reddy, V Sivakumar, P V L N Srinivasa Rao. Lipid Abnormalities, Lipoprotein (A) And Apoprotein Pattern in Non- Dialyzed Patients with Chronic Kidney Disease. *Indian Journal of Clinical Biochemistry.* 2010;25(1)47-50.
  16. Choudhary N, A study of lipid profile in chronic kidney disease in pre- dialysis patients. *Int J Med Res Rev.* 2019;7(3):150-156.
  17. Sutariya Nirav, Aundhakar Swati, Kothia Divyen, Lathiya Nancy, Jayveer Atodadiya, Mandade Arjun. Evaluation of epidemiological and clinical profile of newly diagnosed
  18. Sandip T. Chaudhari et al Clinical Profile of End Stage Renal Disease in Patients Undergoing Haemodialysis *MVP Journal of Medical Sciences*, Vol 4(1), 8–13, January-June 2017