Assessment of Clinical Outcome and Quality of Life of Chronic Kidney Disease Patients at Zewditu Memorial Hospital and Tikur Anbesa Specialized Hospital, Addis Ababa, Ethiopia

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This is to certify that the thesis prepared by Teshome Berhe entitled "Assessment of Clinical outcome and quality of life of chronic kidney disease patients at Zewditu Memorial Hospital and Tikur Anbesa Specialized Hospital, Addis Ababa, Ethiopia" and submitted in partial fulfillment of the requirements for the Master of Pharmacy Degree in pharmacy practice complies with respect to originality and quality.

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Abstract

Assessment of clinical outcome and quality of life of chronic kidney disease patients at Zewditu Memorial Hospital and Tikur Anbesa Specialized Hospital.

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Chronic kidney disease (CKD) is a worldwide public health problem. Although there is a holistic management for chronic kidney disease, people with CKD have significantly higher rates of morbidity, mortality, hospitalizations, and healthcare utilization. Evaluating the clinical outcome and quality of life, is used to identify CKD patients in need of clinical attention and to evaluate interventions for CKD patients and lead to better outcome. The present study was aimed to assess the clinical outcome and quality of life of CKD patients at Zewditu Memorial Hospital and Tikur Anbesa Specialized Hospital. A cross-sectional study design was used. Data was collected using the Kidney Disease and Quality of Life (KDQOL™-36) tool and patients' medical records. Multivariate logistic regression analysis was used to determine factors associated with clinical outcome and quality of life (QOL). $P \leq 0.05$ was considered as statistically significant. To compare scores of QOL subscales by socio-demographic and disease-related factors, the Student's independent t-test and one-way ANOVA were conducted to compare two groups and three or more groups in the analysis of QoL. Out of the total of 300 CKD patients half (50.3%) of the patients developed CKD related complications ,one tenth of the CKD patients progressed to ESRD and near to one fourth of the total CKD patients had hospitalization event due to CKD during their life time. Forty two percent of CKD patients had diabetes mellitus and hypertension were managed with non-ACEIs based regimens plus insulin whereas two fifth of the total CKD patients with hypertension were managed with ACEIs/ARB based regimens. CKD patients treated with enalapril reduced the progression of ESRD by 80% (AOR=0.2, 95% CI(0.001-0.45,P=0.01). The progression to ESRD in patients with 0-2 complications was reduced by 87% when compared to those who had ≥3 complications (AOR=0.13 ,95% CI(0.02-0.85,P=0.03). Use of amlodipine **(**AOR=3.56, 95% CI (1.02-12.65 ,p=0.048) and atenolol (AOR=5.82 ,95% CI(1.46-23.27,p=0.01) were associated with poor outcome. Mean domain score on the physical component summary (PCS), mental component summary(MCS), burden of kidney disease(BKD), symptoms and problems of kidney

disease(SPKD) and effect of kidney disease (EKD) subscales were 50.4, 59.5, 63.1, 80.4, and 74.6, respectively. In multivariate analysis, the odds of impaired PCS QOL in rural residents was reduced by 90% when compared to the urban residents (AOR=0.10, 95%CI (0.02-0.64, P=0.015)). On the other hand, presence of ≥3 comorbidities (AOR=4.21, 95%CI (1.5-11.80, P=0.006), and ≥3 complications (AOR=5.85, 95%CI (1.62-21.08, P=0.007) were associated with impaired MCS QOL respectively. Almost one tenth of the total CKD patients had progressed to ESRD. Three or more CKD related complications, use of amlodipine and atenolol were the significant predictors of poor clinical outcome of the CKD patients. The overall mean score of PCS and MCS was impaired and below the standard level. Lowest score of KDQOL™-36 scales was found in the PCS compared to the domaines of MCS QOL. Furthermore, the study revealed that, level of education, elevated serum creatinin, and smoking status were the significant predictors of PCS QOL whereas presence of ≥3 comorbidities, ≥3 CKD related complications and hemoglobin level were the significant predictors of impaired MCS QOL.

Key words: Chronic kidney disease, clinical outcome, quality of life, end stage renal disease

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List of acronyms

CKD	Chronic kidney disease
CVD	Cardiovascular disease
ESRD	End stage renal disease
HRQOL	Health related quality of life
KDCS	Kidney disease component summary
KDIGO	Kidney disease improvement global outcome
KDQOI	Kidney Disease outcome quality initiative
KDQOL™-36	Kidney disease quality of life -36
MCS	Mental component summary
MHC	Mental health component
NKF	National kidney foundation
PCS	Physical component summary
PHC	Physical health component
TASH	Tikur Anbesa Specialized hospital
WHO	World health organization
ZMH	Zewditu memorial hospital

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1. Introduction

1.1. Background

CKD is defined as the presence of kidney damage, manifested by abnormal albumin excretion or decreased kidney function, quantified by measured or estimated glomerular filtration rate (GFR), that persists for more than 3 months(National, 2006, Levey et al., 2005).CKD can lead to progressive ,irreversible deterioration in renal function in which the body's ability to sustain metabolic and fluid and electrolyte balance fails, resulting in uremia or azotemia(Eckardt et al., 2009). Increasing prevalence of declining renal function, diabetes, hypertension, primary renal disorders, glomerulonephritis and obesity contributed for CKD to become one of the most common chronic diseases(Kazancioğlu, 2013). It is classified into five stages (stages1–5) according to renal function as measured by the estimated glomerular filtration rate (GFR) which is derived from age, sex, and serum creatinine concentration(Chapter, 2013) When these structural changes become conspicuous, it results in decreased kidneys' ability to process waste in the blood and perform other functions. During early stages patients may present with normal or slight decrease in Glomerular filtration rate (GFR) and Albuminuria; later it progresses, leading to end stage renal disease (ESRD) or kidney failure(Initiative, 2007, Whaley-Connell et al., 2008). End stage renal disease (ESRD) is irreversible and is fatal, unless treated by dialysis or kidney transplant(Saran et al., 2017).

From studies, the prevalence of chronic kidney disease has steadily increased over the last few decades. It is a global public health problem due to the rapid rise of common risk factors such as diabetes and hypertension resulting more profound burden that developing nations are not equipped to handle. This is associated with serious consequences, including, increased risk of mortality, accelerated cardiovascular disease(CVD) and increased risk of acute kidney injury(Vigil et al., 2015).

In sub-Saharan Africa, hypertension and diabetes mellitus are among the leading causes of end-stage renal disease and by 2020 the burden of diabetes and cardiovascular disease was have increased by 130% in Africa alone, with concomitant increases in the prevalence of CKD and ESRD(Ibrahim et al., 2016). Multiple factors including improvements in life

expectancy and increasing prevalence of comorbid conditions such as hypertension and diabetes have contributed to this rise. It has impacts the health-related quality of life (HRQoL)(Manavalan et al., 2017). Regarding treatment outcome ,a prospective study conducted in Canada on Chronic Kidney Disease in primary care revealed that, 4(0.2%) developed ESKD, but 308 (17.7%) evidenced CKD progression by KDIGO criteria. Stable CKD was observed in 593 participants (34.1%), and 336 (19.3%) met the criteria for remission. Remission at baseline and year 1 was associated with a high likelihood of remission at year 5 (odds ratio [OR] = 23.6, 95% CI 16.5–33.9 relative to participants with no remission at baseline and year 1 study visits). Multivariable analyses confirmed eGFR and albuminuria as key risk factors for predicting adverse as well as positive outcomes(Wise, 2016)

A few issues unique to the developing world which could potentially affect the HRQoL include age, economic status, literacy level, residency, total number of medications, and gender bias. Apart from the disease and its complications, socioeconomic and cultural environment of the patients also play a major role in determining quality of life (QOL). Hence, QOL is a neglected aspect of CKD care, as the available resources will be often diverted to address the general medical needs (Sa'ed et al., 2016)

According to the World Health Organization(WHO)(Unruh and Hess, 2007) QOL has been defined as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept incorporating in a complex way the person's physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features of the environment.

Based on the study done in the university of Alexandria hospital in Egypt, the impact of CKD on the patient's QOL has become increasingly recognized as an important outcome measure as patients' perception of their well-being and patient-reported outcomes (PROs) are becoming an integral part of the clinical and social evaluation of chronic illnesses and are increasingly considered a fundamental element for the assessment of the impact of therapeutic interventions. The quality of life of CKD patients is a frequently overlooked yet critical dimension when evaluating the care of these patients and may offer unique information for

comparing alternative treatment modalities, and to improve patient satisfaction and clinical outcomes(ElHafeez et al., 2012)

1.2. Statement of the problem

Chronic diseases became a major challenge to 21st century as world health policy. In developing countries, the growing prevalence of chronic diseases such as chronic kidney disease has severe implications on health and economic output. The rapid rise of common risk factors such as diabetes, hypertension, and obesity, especially among the people in developing countries, results in even greater and more profound burdens that developing nations are not equipped to handle(Nugent et al., 2011) .In sub-Saharan Africa, hypertension and diabetes mellitus are among the leading causes of end-stage renal disease. These prevalence rates increase significantly as age increases ,though the majority of CKD patients die (usually of cardiovascular disease) before they develop end stage renal disease (ESRD*)(O'Hare et al., 2007)*. Progressive CKD is linked to several complications with higher prevalence and intensity at lower levels of kidney function, which interact with each other(Fox et al., 2012). Cardiovascular complications represents the leading cause of mortality in CKD patients, and the prevalence and burden of this complication increases with declining kidney function(Go et al., 2004). CKD ultimately progresses to ESRD, the rate of which is dependent on coexisting pathologies and risk factors(Codreanu et al., 2006, Nugent et al., 2011) .

From a study by(Yuan et al., 2017) ,Chronic kidney disease (CKD) is associated with several adverse clinical outcomes, such as cardiovascular events, kidney failure requiring renal replacement therapy, mortality, and poor quality of life for survivors in general. A global report indicated that, 10% of the population is affected by CKD, and millions die each year due to high economic cost treatment(Hill et al., 2016). It affects 10 - 15% (western countries)(Levey et al., 2009), 14.82% (China) (Liu et al., 2008) of the adult population, many of whom require costly treatments. A study from Canada showed, the number of people living with ESRD tripled from1991 to 2010(El Morr et al., 2014)

Chronic Kidney disease is also associated with huge economic burden. In high-income countries treatment of end-stage kidney disease (ESRD) shares more than 2–3% of their annual healthcare budget, while patients with ESRD represent only 0.03% of total population, and lower socioeconomic status is associated with greater risk of end-stage kidney disease(Couser

et al., 2011). In developing countries, the burden posed by CKD is much greater because of additional risks associated with poverty like: infections, hazardous work, poor education and poor maternal health combined with additional cost of screening and treatment where these costs have to be paid directly by patients(Sawinski et al., 2018). Over half of all people requiring renal replacement therapy died due to a lack of access to dialysis or transplantation worldwide. Lack of access to renal replacement treatment in Africa, particularly middle and east Africa is the largest, where less than 3% of people requiring renal replacement therapy receive it(Liyanage et al., 2015). As a result, people with ESRD continue to die in the face of established treatment options and countries least equipped to provide dialysis or kidney transplantations are highly affected by the growing burden of CKD (Neuen et al., 2017). The therapeutic management of CKD in developing countries is expensive, unaffordable, and unavailable(Okpechi et al., 2017). Suboptimal management of co-morbid conditions, and low QoL have been the major problems in CKD patients and their occurrence can adversely impact the course of the disease(Rostami et al., 2013)

In those low-income countries, like Ethiopia, chronic disease is a growing problem. Like many other chronic diseases, the incidence of (CKD) in Ethiopia is rising because of increased risk factors such as high blood pressure and diabetes mellitus(Collins et al., 2009). Study from (Cruz et al., 2011) claimed that quality of life decreased in all stages of kidney disease. (CKD) patients have a reduced QoL and an increased frequency and severity of both symptoms and psychological distress, with the magnitude of these changes negatively correlated with GFR(Kefale et al., 2019, Rambod et al., 2008). One study on association of poorer quality of life with preventable factors demonstrated that attention should be given to psychosocial and medical interventions to improve QoL in chronic kidney disease patients. Besides, The available data on QoL of patients on conservative treatment and the relationship between the QoL and GFR is limited(Rostami et al., 2013).

According to search there are virtually not sufficient published reports in Ethiopia on the quality of life and clinical outcome of CKD patients. This study aimed at assessing the patients' quality of life and clinical outcome among the CKD patients at Zewditu Memorial Hospital and Tikur Anbesa Specialized Hospital.

Evaluation of clinical outcome and quality of life among CKD patients in Ethiopia can add new insight in the management of the CKD as it allows the quantification of the disease consequences according to the patient's perception and enables adjustment of medical decisions to their physical, emotional, and social needs. It also improves the adhesion to the therapeutic plan, the quality of the health care provided, and patient survival. At the end of this study pragmatic recommendations that can be implemented will be forwarded for all the concerned bodies. This research can also serve as baseline for future and further assessments on clinical outcome and QOL of CKD patients.

2. Literature review

2.1. Epidemiology of chronic kidney disease

The prevalence rates of CKD worldwide are high and have increased in the last few years to about 13-15%, with an increased prevalence of diabetes and hypertension which shows it is becoming one of the public health problems and it is the 12th highest cause of death and 17th highest cause of disability worldwide. It has taken on the status of public health concern in recent years, due to its increased prevalence among the world's population and its impact on morbidity and mortality in affected patients (Ababio et al., 2017). Studies in US and China population showed that prevalence of CKD based on the stage estimate has raised. And results have shown for stage 1 (1.8% & 3.33%), stage 2 (3.2% & 2.49%), stage 3 (7.7% & 7.07%) and stages 4 and 5 (0.35% & 0.97%)(Hsu et al., 2004)**.** Consistently ,Studies from the National Chronic Kidney Disease Fact Sheet, 30 million people or 15% of US adults are estimated to have CKD and the reported cause of CKD were indicated respectively as diabetes(44%),high blood pressure (29%), other cause(20%) and unknown cause of(7%) (Control and Prevention, 2017).

Studies from Egypt and East Africa have suggested that CKD is at least three or four times more frequent in developing countries (Amira et al., 2014). Of the approximately 1 million people in the world with severe chronic kidney disease who are being treated with some form of renal replacement therapy, 90 percent live in developed countries. In most developing countries, however, only 5 to 10 percent of patients who require renal replacement therapy can obtain it. However, the rapid rise in diabetes and hypertension, both of which predicted to drive epidemic in CKD, was dramatically escalating this burden(Lola N.RN and H., 2014)

2.2. Risk factors of chronic kidney disease

In one study conducted from 1996-2005 in Sanfrancisco, 15353 individuals with moderate-to-advanced CKD who received ambulatory care within a large public health were studied and the primary outcome of the study was progression to ESRD. The study claimed that Overall, 559 cases of ESRD occurred over a median follow-up of 2.8 years. Among traditional predictors of ESRD, younger age, male sex, non-white race/ ethnicity, public health insurance coverage, diabetes, lower kidney function, higher proteinuria, lower hemoglobin level, and lower serum albumin concentration were significantly associated with a higher adjusted ESRD risk ($p < .001$ for all). There was no significant association between HIV/AIDS ($p=.07$), viral hepatitis ($p=.11$), or non-English language ($p=.27$) and ESRD risk (Hall et al., 2013).

2.3. Comorbidities and complications of chronic kidney disease

A study conducted in the University of Southampton with a sample size of 1741 on the burden of comorbidity in people with chronic kidney disease stage 3 claimed that the mean baseline eGFR was 52 ml/min/1.73 m2. Only 78/1741 (4 %) had no comorbidities, 453/1741 (26 %) had one, 508/1741 (29 %) had two and 702/1741 (40 %) had >2 comorbidities. Hypertension was common (88 %), 24 % anemia, 23 %, ischaemic heart disease, 17 % diabetes and 12 % thyroid disorders. Median medication use was 5 medications (interquartile range 3–8) and increased with degree of comorbidity. CKD treatment burden and multimorbidity were independently associated with age, smoking, increasing body mass index and decreasing eGFR. CKD Treatment burden was also independently associated with lower education status. After median 3.6 years follow-up, 175/1741 (10 %) died. Greater multimorbidity was independently associated with mortality (hazard ratio(HR) 2.81 (95 % confidence intervals 1.72–4.58), $p < 0.001$) for 3 or more comorbidities vs 0 or 1)(Fraser et al., 2015).

2.4. Outcomes and associated factors of chronic kidney disease

A prospective cohort study conducted in United Kingdom to investigate with CKD outcomes after five Years showed that, 1,741 people with CKD stage 3 were undertaken at baseline, year 1, and year 5. After 5 years, 247 participants (14.2%) had died, most of cardiovascular causes. Only 4 (0.2%) developed ESKD, but 308 (17.7%) evidenced CKD progression by KDIGO criteria. Stable CKD was observed in 593 participants (34.1%), and 336 (19.3%) met the criteria for remission. Remission at baseline and year 1 was associated with a high likelihood of remission at

year 5 (odds ratio [OR] = 23.6, 95% CI 16.5–33.9 relative to participants with no remission at baseline and year 1 study visits)(Shardlow et al., 2016).

A study from Italy investigated that Estimated rates of ESRD and death was 8.3 (95% confidence interval [CI], 7.4 to 9.2) and 5.9 (95% CI 5.2 to 6.6), respectively. Risk of ESRD and death increased progressively from stages 3 to 5. ESRD was more frequent than death in stage 4 and 5 CKD, whereas the opposite was true in stage 3 CKD. Younger age, lower body mass index, proteinuria, and high phosphate predicted ESRD, whereas older age, diabetes, previous cardiovascular disease, ESRD, proteinuria, high uric acid, and anemia predicted death ($P<0.05$ for all). Among modifiable risk factors, proteinuria accounted for the greatest contribution to the model fit for either outcome(ESRD ,Death)(De Nicola et al., 2011).

A retrospective study done in the Federal University of Minas Gerais (UFMG) ,Brazil ,107 patients with CKD stage 2–4 were followed up for a median time of 94 months. Fifty-seven patients (53.3%) progressed to CKD stage 5.After adjustment for time-fixed model, three baseline variables were found to be independent predictors of CKD stage 5: glomerular disease (HR = 3.0, $P = 0.015$), CKD stage 4 (HR = 2.6, $P = 0.001$) and severe proteinuria (HR = 4.1, $P = 0.006$). After adjustment for the time-dependent model, three variables were found to be independent predictors of CKD stage 5: proteinuria as time-dependent covariate (HR = 1.9, $P = 0.041$), CKD stage 4 (HR = 2, $P = 0.0086$) and baseline serum albumin <3.5 g/dl (HR = 2.6, $P = 0.0015$)(Soares et al., 2008).

A hospital based quantitative cross-sectional study conducted in Ethiopia on prevalence of CKD and associated factors among patients with kidney problems showed that 66 (15.6%) of participants have normal/stage 1, 49 (11.6%) of participants have stage 2, 82(19.4%) of the participants have stage 3, 62 (14.7%) stage 4 and 163 (38.6%) stage 5 CKD respectively. Those patients who were in the age group of >68 were three times more likely (AOR 3.16 (CI 1.36, 7.35); P=0.07) to develop CKD as compared to those who were under 18(Kore and Yohannes, 2018)

2.5. Management of CKD comorbidities and complications

A primary goal of treatment for patients with CKD is risk reduction of progression to ESRD. CKD is a growing healthcare problem with a high risk for poor outcomes, including CVD and progression to ESRD. Accurate staging of CKD is critical to disease management because treatment recommendations are guided by stage(Fraser and Blakeman, 2016).For patients with

established CKD and/or diabetes with albuminuria, recent findings have recommended a blood pressure (BP) goal < 130/80 mmHg. Bp level above 130/80 mmHg in CKD patients requires lifestyle modifications and multiple antihypertensive medications. According to recent guidelines, angiotensin-converting enzyme (ACE) inhibitors should be the drugs of first choice. Angiotensin II receptor blockers (ARBs) should be used if the ACE inhibitor is not tolerated. Non-dihydropyridine CCBs consistently reduce albuminuria and slow the decline in kidney function. Dihydropyridine CCBs should not be used as monotherapy in proteinuric CKD patients but always in combination with a RAAS blocker(Elisaf, 2018).

ACEs inhibitors are cornerstone of antihypertensive, Reno protective, cardiovascular, risk-modifying therapy in diabetes; they retard progression of diabetic kidney disease in chronic kidney disease patients and reduce proteinuria in type 1 and type 2 Diabetes mellitus. Most CKD patients are volume expanded, necessitating sodium restriction and diuretic treatment. Ideally, these high-risk hypertensive patients are treated with ACE inhibitor- diuretic or ARB-diuretic combinations(Fraser and Blakeman, 2016). Similar to the above studies, Study from (Judd and Calhoun, 2015) come with ACEI or ARB, dietary salt restriction and appropriate diuretic therapy make up the mainstay of HTN treatment in patients with CKD. Insulin is preferably used for patients with kidney impairment(Albers et al., 2010). Insulin therapy, particularly using the new insulin analogues, allows adequate management of hyperglycemia in diabetic patients with CKD patients, with different therapeutic regimens that must be individualized in order to avoid hypoglycemia. Metformin may be used alone or in combination with other oral anti-diabetic drugs but must be discontinued when the glomerular filtration rate is less than 30mL/min(Iglesias et al., 2014).

Report from the American Family Physician update on the management of CKD revealed that statins used in the treatment of dyslipidemia and in reducing cardiovascular risk may also have a role in preventing progression of kidney disease and reducing albuminuria(Dasari P).

Patients with CKD and volume overload generally respond to the combination of dietary sodium restriction and diuretic therapy, usually with a loop diuretic given daily. Some investigators have also claimed that limiting sodium intake may also help decrease progression of CKD by lowering intraglomerular pressur(Fraser and Blakeman, 2016). Diuretics are commonly used and represent the cornerstone in the management of CKD patients. Anemia management in CKD is a balance between optimizing erythropoiesis and minimizing adverse effects associated with therapeutic

agents that treat anemia. Use of erythropoietin stimulating agents (ESAs) along with iron supplementation to treat anemia are important elements in CKD care. Despite extensive experience with these agents, many questions remain regarding optimal and safe therapeutic end points. Iron supplementation (oral or intravenous) is usually the first step in anemia management(Kdigo, 2012, Kliger et al., 2013).

Intravenous iron is more efficacious at correcting iron deficiency, improving hemoglobin levels, and reducing ESA use and blood transfusions, but is often underutilized because of clinician apprehension of infusion related reactions and iron overload(Kovesdy and Kalantar-Zadeh, 2009).

2.6. Quality of life in chronic kidney patients

In recent years, much attention has been focused on exploring the impact of physical and mental illness on overall quality of life. The switch to the measurement of psychosocial issues in addition to biomedical measures has been shown to play an important role in ensuring positive patient outcome from both a clinician's and patient's perspective, and is an important outcome measure when evaluating treatment(Theofilou, 2013)).

A study conducted in the Hospital of St. Raphael, Canada, revealed that Baseline measures of HRQOL were reduced in CKD patients in proportion to the severity grade of CKD. Moreover, Physical functioning score declined progressively with more advanced stages of CKD and so did the score for role-physical.in this study, female gender and the presence of diabetes and a history of cardiovascular co-morbidities were also associated with reduced HRQOL (physical composite score: male: 41.0 10.2; female: 37.7 10.8; P < 0.0001; diabetic: 37.3 10.6; nondiabetic: 41.6 10.2; P < 0.0001; history of congestive heart failure, yes: 35.4 9.7; no: 40.3 10.6; P < 0.0001; history of myocardial infarction, yes: 36.1 10.0; no: 40.2 10.6; P < 0.0001). Anemia and beta blocker usage were also associated with lower HRQOL scores(Mujais et al., 2009).

Whereas, a study conducted in India demonstrated that, Illiteracy and unemployment were associated with significantly lower Kidney deseas component score(KDCS), physical component score (PCS), and mental component score (MCS). Age ≥50 years was associated with poor (PCS) (29.49 ± 8.20 vs. 34.17 ± 9.99; $P < 0.001$). Hemoglobin <10 g/dL was associated with poor KDCS (58.93 ± 13.09 vs. 65.55 ± 13.38; $P < 0.001$) and PCS (29.56 ± 8.13 vs. 33.37 ± 9.82; $P < 0.001$). On the other hand, the presence of comorbidities such as diabetes and

hypertension had no impact on the composite scores. KDCS, (MCS), or (PCS) did not vary among patients having high serum phosphorus (≥4.5 mg/dL), low albumin (<3.5 g/dL), and elevated parathyroid hormone (≥150 pg/ml). On multiple linear regression analysis, the predictors of KDCS were unemployment ($P < 0.001$) and illiteracy ($P = 0.03$). Unemployment ($P < 0.001$) and age ($P < 0.001$) were predictors of PCS whereas literacy level ($P < 0.001$) was predictive of MCS(Manavalan et al., 2017).

A cross-sectional study from Palestine indicated that, the results of multiple linear regression showed a significant negative association between HRQOL with age, total number of chronic co-morbid diseases and the total number of chronic medications. However, a significant positive association was found between HRQOL with male gender, university education level and patients who live in village(Sa'ed et al., 2016). A study conducted in USA showed that ,stage 4 CKD patients had lower QoL score than stage 5 CKD patients and hemoglobin was the predictor for both physical and mental domains(Perlman et al., 2005).The importance of QoL has been increasingly recognized by health care providers, regulatory agencies, and researchers, both within and outside the renal community(Kimmel and Patel, 2006).

3. Objective

3.1. General objective

- ✓ To assess clinical outcome, and quality of life of chronic kidney disease patients at Zewidtu Memorial hospital and Tikur Anbesa Specialized Hospital.

3.2. Specific objective

- ✓ To assess management practice of chronic kidney disease patients at Zewidtu Memorial Hospital and Tikur Anbesa Specialized Hospital.
- ✓ To assess clinical outcome of chronic kidney disease patients at Zewidtu Memorial Hospital and Tikur Anbesa Specialized Hospital.
- ✓ To determine predictors of clinical outcome of chronic kidney disease patients at Zewidtu Memorial Hospital and Tikur Anbesa Specialized Hospital
- ✓ To assess the quality of life of chronic kidney disease patients at Zewidtu Memorial Hospital and Tikur Anbesa Specialized Hospital.
- ✓ To determine factors associated with the quality of life of chronic kidney disease patients at Zewidtu Memorial Hospital and Tikur Anbesa Specialized Hospital.

4. Methodology

4.1. Study area and period

The study was conducted in the renal clinic of Zewditu Memorial Hospital (ZMH) and Tikur Anbesa Specialized Hospital (TASH) in patients who have a diagnosis of CKD. ZMH is found in kirkos Sub city, Addis Ababa, Ethiopia. It is established by Emperor Haile Selassie and the 7th Adventist missionary besides "File-weha" in 1933 E.C. It has 300 beds for the catchment population of more than five million. Currently, it has over 502 health professionals providing inpatient, outpatient, and emergency services with over 8 main diagnostic health services. Among these, the outpatient renal clinic serves both inpatients and outpatients with all types of renal disease.

Tikur Anbesa Specialized Hospital (TASH) is the largest referral hospital in the country. It has over 700 beds, and serves about 310,000 and 32,000 patients per year in its outpatient and inpatient departments, respectively. The renal clinic also provides services on average 30 patients per day.

4.2. Study design and period

A cross sectional study design was used .and it has two phases. The study was conducted from March 20 , 2019 to July 15, 2019.

4.3. Source population

All CKD patients being evaluated and treated at the outpatient renal clinic of (ZMH) and (TASH) during the study period were included as a source of population. Whereas the study population of this study were all CKD patients being evaluated and treated at renal clinic of both hospitals and who fulfilled the inclusion criteria were recruited.

4.4. Sample size and sampling methods

All CKD patients (160 and 140 from ZMH and TASH) attending the renal clinic of ZMH and TASH during the study periods (4 months)) and who fulfilled the inclusion criteria were recruited.

4.5. Eligibility criteria

4.5.1. Inclusion criteria

- ✓ Patients Aged ≥ 18 years and CKD patients who attended the hospitals renal clinic at the time of data collection and who are willing to participate in the study were included.
- ✓ CKD patients on treatment
- ✓ CKD patients on follow-up for ≥ 6month.

4.5.2. Exclusion criteria

- ✓ Patients with chart of incomplete information
- ✓ Patients with cognitive impairment
- ✓ Pregnant women

4.6. Study variables

4.6.1. Dependent variables

- Clinical outcome(ESRD development, CKD related complications and hospitalization events)
- Quality of life

4.6.2. Independent variables

- Sociodemographic characteristics (Sex, age, marital status, educational status, income status, religion and residency).
- Duration of CKD treatment ,number & types of medications
- Current CKD stage, medical history/risk factors(diabetes, hypertension, & dyslipidemia and heart disease), laboratory investigations(renal function test , urine analysis , elcectrolyte tests,FBS and lipid profiles)
- Smoking status, physical activity, diet issue

4.7. Data Collection procedure and instrument

An English version of kidney disease quality of life (KDQOL™-36)(HaysRD etal.,1994) tool was translated in to Amharic version. The Amharic version was again back translated to English to check the consistency of meaning. A structured questionnaire was developed to collect the socio-demographic characteristics and clinical characteristics and secondary data were collected retrospectively using structured data abstraction formats from medical chart to record laboratory results, time since CKD diagnosis, stage of CKD, current medications, co-

morbidities, CKD treatment regimens and other relevant medical and medication histories. It also includes the Medical Outcomes Study Kidney Disease Quality of Life (KDQOL™-36). The questionnaire has two phases. The first phase was patient interview phase, while the other was patient chart review. The 1st phase of the questionnaire asks about sociodemographic characteristics, physical activity and quality of life of the patients using the kidney disease quality of life in patients with chronic kidney disease. The 2nd phase includes clinical characteristics, laboratory investigations and management practice taken from the patient record.

CKD, current type of CKD treatment and comorbid conditions) were filled through chart review by data collectors. KDQOL survey is a kidney disease-specific measure of health related quality of life (HRQOL) with five subscales. The first version contained the Medical Outcomes Study 36 (MOS SF-36) as a generic chronic disease core, and added items relevant to patients with kidney disease, such as symptoms, burden of illness, social interaction, staff encouragement, and patient satisfaction(HaysRD et al., 1994) The SF-12 measure of physical (PCS) and mental (MCS) functioning (1-12), with items about general health, activity limits, ability to accomplish desired tasks, depression and anxiety, energy level, and social activities. Burden of Kidney Disease subscale (13-16), with items about how much kidney disease interferes with daily life, takes up time, causes frustration, or makes the respondent feel like a burden. Symptoms and Problems subscale (17-28b), with items about how bothered a respondent feels by sore muscles, chest pain, cramps, itchy or dry skin, shortness of breath, faintness/dizziness, lack of appetite, feeling washed out or drained, numbness in the hands or feet, nausea, or problems with dialysis access. Effects of Kidney Disease on Daily Life subscale (29-36**)**, with items about how bothered the respondent feels by fluid limits, diet restrictions, ability to work around the house or travel, feeling dependent on doctors and other medical staff, stress or worries, sex life, and personal appearance.

4.8. Data quality management

Training was given to the data collectors (three BSc nurses) to familiarize them with the data collection instrument and on how to collect the necessary data from patient medical charts and how to conduct patient interview. Subsequent support was given by the principal investigator as needed. Pre-test was done on 5% of the sample for completeness of variables one week before the actual data collection started. Based on the results obtained from pre-test, amendment was

made on the assessment tools and way of assessment based on the inputs found on pre-test. The principal investigator was closely supervising the data collection on a daily basis. At the end of each data collection days, the principal investigator checked the completeness of filled questionnaire and recorded information to ensure its quality.

4.9. Data analysis and interpretation

The collected data was checked for its completeness and consistency. Data was entered and analyzed using statistical package for social science (SPSS) version 23. Descriptive statistics included mean and standard deviation for continuous variables and frequency and percentage for categorical data were used to summarize socio-demographic and relevant clinical characteristics of the study participants. Student's independent t-test and one-way ANOVA were conducted to compare scores of two groups and three or more groups in the analysis of QoL, respectively. After univariate analysis was done, Independent predictors were identified by a multivariate logistic-regression analysis. $P \leq 0.05$ was considered as statistically significant in all tests of significance.

4.10. Ethical consideration

Ethical approval was obtained from the ethics review Committee School of Pharmacy, Addis Ababa University, and also an official letter of support was submitted to the hospitals to get approval from the respective heads of department of internal medicine and renal clinic to conduct the study in the clinic of both hospitals. Informed consent was requested from study participants to confirm their willingness for participation after explaining the purpose of study and its benefit. Participants were assured about the confidentiality of their information obtained in the study by excluding any personal identifier in the data collection form. Participant were informed the right to withdraw at any point of the interview.

4.11. Operational definition

Clinical outcome: Clinical outcome was explained as ESRD, CKD related complications and hospitalization events due to CKD.

Primary outcomes: was the outcome measure of end stage renal disease development.

Poor outcome: When patients developed ESRD.

End-stage renal disease (ESRD): is defined as irreversible decline in a person's own kidney function, which is severe enough to be fatal in the absence of dialysis or transplantation. ESRD is included under stage 5, where it refers to individuals with an estimated glomerular filtration rate less than 15 mL per minute per 1.73 m2 body surface area, or those requiring dialysis irrespective of glomerular filtration rate(ABBASI, 2010).

Hyperkalemia serum potassium concentration greater than approximately 5.5 mEq/L (Jun et al., 2019).

Hypertension: Clinic /Office systolic BP ≥140/90mm Hg(Crim et al., 2012).

Cardiovascular disease: Coronary artery disease, cardiomyopathy, valvular heart disease, myocardial infarction, congestive heart failure, cerebrovascular disease, atrial fibrillation, peripheral arterial disease(Herzog et al., 2011).

Laboratory investigations: represent the recent or the current measurements taken during the study period

Fluid overload: presence of peripheral edema during presentation as diagnosis or patient on recent diuretic medications for fluid overload indication during the study period

Quality of Life has been defined as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns

Impaired QOL: was explained when the overall mean score of sub-scales was <70.

Not impaired QOL: was explained when the overall mean score of the sub scales was ≥70.

5. Result

5.1. Demographic and clinical characteristics of patients

A total of 300 CKD patients who fulfilled the inclusion criteria were included in this study.

Off them 179(59.7%) were males. The age range of the CKD patients was 18-87 years. More than two third (71%) of CKD patients age were <60 years. Out of total, almost half (50.3%) of them were married and more than half (53%) were Orthodox Christianity followers. Over three forth (81%) CKD patients were lived in urban area. Near to one-third (36.3%) of the study participants had a primary level of education. In 19.3%, of the CKD patients were government employee .The details of socio-demographic characteristics are summarized in (Table 1).

Table 1:Socio-demographic characteristics of CKD patients on follow-up at Zewditu Memorial Hospital and Tikur Anbesa Specialized Hospital, Addis Ababa, Ethiopia, March 20 to July 15, 2019(N=300).

Variable		Frequency(N)	Percent (%)
Sex	Male	179	59.7
	Female	121	40.3
Age	<60	213	71
	≥60	87	29
Marital status	Single	79	26.3
	Married	151	50.3
	Divorced	29	9.7
	Widowed	41	13.7
Religion	Orthodox	160	53
	Muslim	87	29
	Protestant	19	6.3
	Catholic	19	6.3
	Others	15	5
Residency	Rural	57	19
	Urban	243	81
Educational status	Can not read and write	25	8.3
	Primary	109	36.3
	Secondary	82	27.3
	Higher education	84	28
Occupation	Government employee	58	19.3
	NGO	49	16.3
	Retired	47	15.7
	House wife	45	15
	Merchant	33	11
	Farmer	24	8
	Others*	44	14.7
Monthly income (birr)	≤860	108	36
	861-1500	45	15
	1501-3000	60	20
	3001-5000	47	15.7
	>5001	40	13.3

Daily workers ,Butchers ,No work

Among 300 CKD patients, 24.7% of the total patients had history of hospitalization due to CKD in their life time. The mean systolic blood pressure (SBP) was 127.01 (SD ±17.04) mmHG. Two hundred fifty two (84%) patients had SBP of <140 and 9% had SBP of ≥159 mmHG. The mean (SD) diastolic blood pressure (DBP) was 77.41[SD±11.97].) Two hundred eighty one (93%) patients had DBP of <90 and (0.7%) were with DBP of ≥110 mmHG. The mean GFR was 45.41 (SD±26.56) ml/min/1.73m^2. Almost two fifth (38.3%) of the patients had CKD stage three [30-

59 ml/minut/1.73 m^2] followed by CKD stage four [15-29 ml/minut/1.73 m^2] (23.7%) and stage five[<15 ml/minut/1.73 m2] accounted (9.3%){Table 2).

Table 2: Clinical characteristics of CKD patients on follow up at Zewditu memorial hospital and Tikur Anbesa Specialized hospital, Addis Ababa ,Ethiopia ,March 20 to July 15 ,2019,(N=300).

Variables		Frequency(N)	Percent (%)
Hospitalization event due to CKD		300	100
	Yes	74	24.7
	No	226	75.3
SBP(n=300)			
	<140	252	84
	140-159	21	7
	>159	27	9
DBP(n=297)			
	<90	281	93.7
	91-110	14	4.7
	>110	2	0.7
GFR(CKD-EPI formula) (n=300)	≥90	23	7.7
	60-89	63	21
	30-59	115	38.3
	15-39	71	23.7
	<15	28	9.3

SBP: Systolic blood pressure; DBP: Diastolic blood pressure; GFR: Glomerular filtration rate; CKD: chronic kidney disease.

As shown from figure 1 , 67% of the patients had a 5 years follow up since patients diagnose with CKD. The mean (SD) duration of CKD patients attending at ZMH and TASH was 4.61(SD±3.09) with the range of 0.5-16 years.

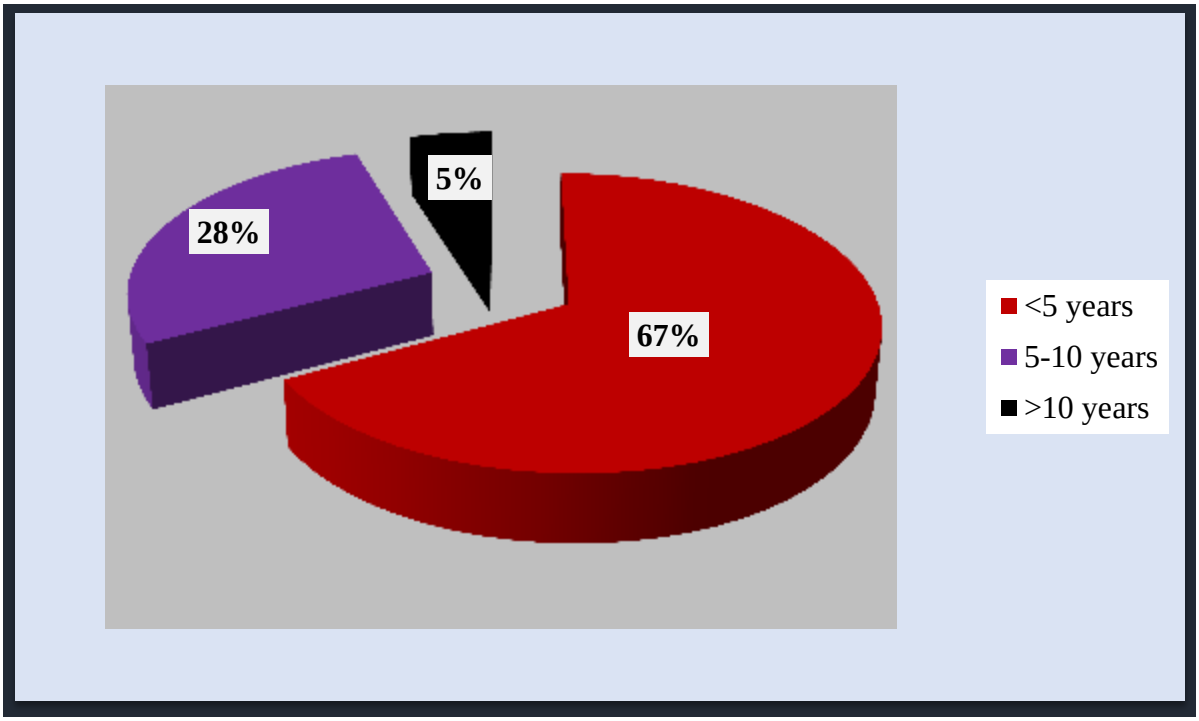

Figure 1: Frequency distribution of CKD patients follow up duration at ZMH and TASH, Addis Ababa, Ethiopia, March 20 to July 15, 2019, (N=300)

5.2. Comorbidities and complication of chronic kidney disease patients

As data showed in table 4, 277(92.3%) of CKD patients had comorbidities. The most common co-morbidities were hypertension 240(80%) followed by diabetes mellites 149(46.9%) and dyslipedimia 114(38). In 37.7% had sing comorbidity, 30% had two comorbidities and 24.7% had ≥ 3 comorbidities. In the present study, around half (50.3%) of the patients had complications. Two hundred sixty two (87.3%) of the patients had 0-2 complications. Most of the patients 238(79.3%) were prescribed with <5 medications and (20.7%) of the patients were prescribed with medications ≥5 drugs (Table 3).

Table 3: Over all profile of comorbidities and related factors in patients attending Zewditu Memorial Hospital and Tikur Anbesa Specialized Hospital, Addis Ababa, Ethiopia, March 20 to July 15 ,2019, (N=300

Variables			Frequency (N=300)	Percent (100%)
Comorbidities		No	23	7.7
		Yes	277	92.3
No comorbidities		0	23	7.7
		1	113	37.7
		2	90	30
		≥3	74	24.7
Specific comorbidities(n=277)	Diabetes mellites	No	151	53.3
		Yes	149	46.7
	Hypertension	No	60	20
		Yes	240	80
	Dyslipidemias	No	186	62
		Yes	114	38
	Obstruction	No	282	94
		Yes	18	6
	IHD	No	282	94
		Yes	18	6
	Others*	No	256	85.34
		Yes	44	14.66
Complication		No	149	49.7
		Yes	151	50.3
No complications		0-2	262	87.3
		≥3	38	12.7
No. medications		<5	238	79.3
		≥5	62	20.7

*venous thrombosis, peripheral neuropathy, Asthma, nephrotic syndrome, gout arthritis *

IHD: Ischemic heart disease.

As can be seen from data in figure 2, of the patients progressed to ESRD, 3.6% had no comorbidity, 35.7% had single comorbidity.

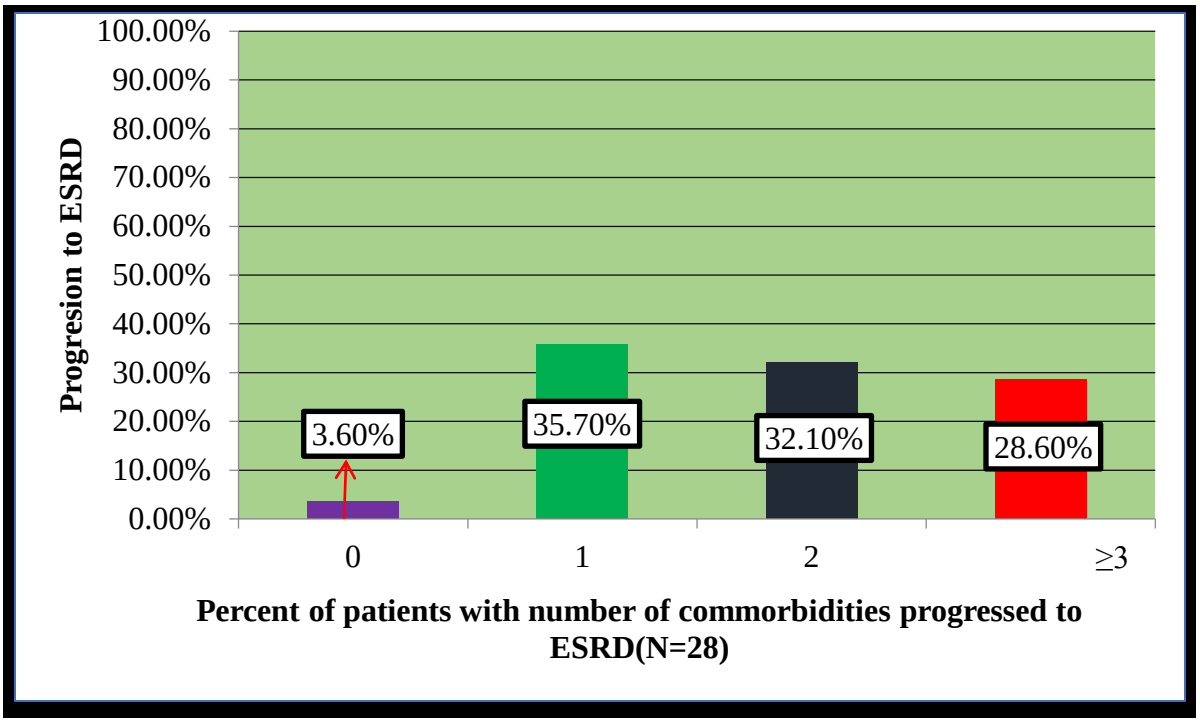

Figure 2: Percent of patients with number of comorbidities progressed to end stage renal disease at Zewditu Memorial Hospital and Tikur Anbesa Specialized Hospital, Addis Ababa ,Ethiopia ,March 20 to July 15, 2019, ((N=300

ESRD: End stage renal disease

5.3. Specific complications of chronic kidney disease patients

As shown in figure 3, the commonly seen types of specific complications in this study were, fluid overload 96(32%) ,CVD 78(26%) and anemia 63(21%).

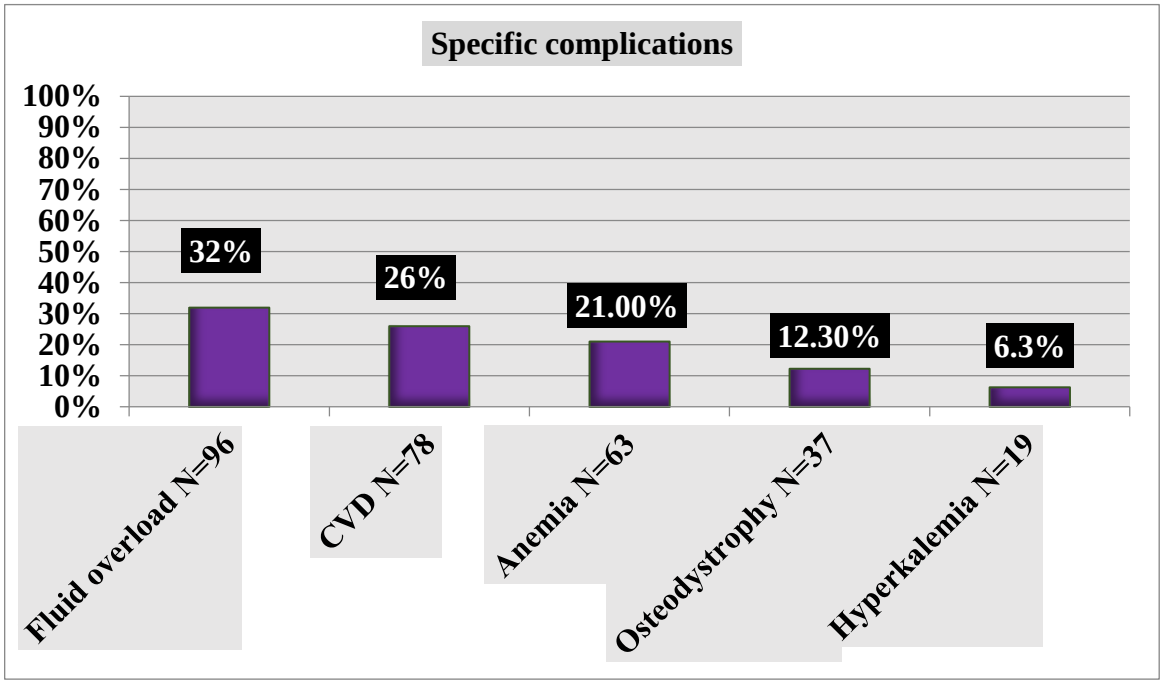

Figure 3:Profile of specific complicationes among patients attending Zewditu Memorial Hospital and Tikur Anbesa Specialized Hospital ,Addis Ababa ,Ethiopia ,March 20 to July 15 ,2019 ,(N=300)

Laboratory findings

Out of a total 300 CKD patients, 11.7% had elevated (≥100 mg/dl) low density lipoprotein. Around 5.7% of the patients were seen to have low high density lipo-protein (<40 mg/dl) and 9% had elevated (≥150 mg/dl) triglyceride. On 24 hour urine collection protein excretion rate (mg/day), 17.3% had ≥300 mg/24 hour urine collection. Of the patients with FBS investigation, 13% had an FBS of ≥150mg/dl. In 190(63.3) had an elevated BUN. Serum creatinine was high in 77.3% of the patients. In 21.3% of the patients serum calcium was low. In 25.7%, 9.7% of the patients had elevated serum potassium and serum phosphate respectively. Near to half of (49.3%) the patients with Hg investigation had hemoglobin value of ≥11 g/dl.

Table 4: Patients' laboratory finding and related factors at Zewditu Memorial Hospital and Tikur Anbesa Specialized hospital ,Addis Ababa ,Ethiopia, March 20 to July 15 ,2019,(N=300)

Types of laboratory tests	Values	Frequency (N)	Percent (%)
Total cholesterol(TC)mg/dl(N=63)	<200	34	11.3
	≥200	29	9.7
Low density lipo-protein (LDL) mg/dl(N=58)			
	<100	23	7.7
	≥100	35	11.7
High density lipo-protein(HDL) mg/dl(N=45)			
	<40	17	5.7
	≥40	28	9.3
Triglyceride(TG) mg/dl(N=53)			
	<150	26	8.7
	≥150	27	9
24 hour urine collection protein excretion rate(mg/day)(N=76)			
	<30	3	1
	30-300	21	7
	≥300	52	17.3
Fasting plasma glucose(FBS) mg/dl N(145)			
	<150	106	35.3
	≥150	39	13
Blood urea nitrogen (BUN) mg/dl (N=206)			
	Normal(≤20)	16	5.3
	Elevated(>20)	190	63.3
Serum creatinin (Scrmg/dl(N=293)			
	Normal(≤1.2)	61	20.3
	Elevated (>1.2)	232	77.3
Calcium (Ca) mg/dl)(N=95)			
	≤8.5	64	21.3
	>8.5	31	10.3
Potassium (k) mEq/L)(N=203)			
	≤5.3	184	59
	>5.3	19	8.7
Phosphate (p)mg/dl)(N=81)			
	<4.5	52	17.3
	≥4.5	29	9.7
Hemoglobin(Hg)(N=199)			63.3
	≤11	63	17
	>11	136	49.3

5.4. Laboratory findings and clinical characteristic across CKD stages

Glomerular filtration rate (GFR) was seen to progressively decline across all stages of CKD. Blood urea nitrogen and serum creatinine results were progressively increasing across the CKD stages. Concerning electrolytes, result showed that Phosphate (P) and potassium (K) in stage 4-5 were seen to be elevated. Hemoglobin level of the patients was decreased going from stage 1 to stage 5 CKD whereas Fasting plasma glucose (FBS) was seen to increase from early to late stage of chronic kidney disease. Regarding to clinical characteristics, 113(37.7%) of the patients had single comorbidity and 38(12.7) had ≥ complications. Detailed data is shown in (Table 5).

Table 5: Clinical and biochemical profile of the CKD patient across CKD stages attending Zewditu memorial hospital and Tikur Anbesa specialized hospital, Ethiopia ,March 20 to July 15 2019, (N=300)

Variables	Over all	CKD Stages(ml/min/1.73m2				
		1(n=23) ≥90	2(n=63) 60-89	3(n=115) 30-59 ml/min	4(n=71) 15-29	5(n=28) <15
GFR(ml/min)	45.4±26.6	105.1±14.8	69.96±8.3	42.70±8.45	22.57±4.1	10.3±2.8
BUN(mg/dl)	58.26±35.6	29.2±13.09	36.44±13.42	49.46±18.7	74.13±30.5	117.6±51.4
Creatinin(mg/dl)	2.5±3.2	0.95±0.16	1.3±0.2	1.85±0.4	3.80±5.6	6.29±2.0
Calcium (mg/dl)	7.9±1.7	7.03±0.1	9.1±0.8	7.5±.2.02	7.82±1.9	7.92±.9
Potassium(Meq/L)	4.3±0.9	3.9±0.9	3.4±.835	3.9±1.8	4.52±1.7	4.58±1.8
Phosphate (mg/dl)	4.1510±1.7	4.2±.1.4	3.4±0.84	3.9±1.8	4.53±1.7	4.56±1.8
Hg(g/dl)	14.4±14.7	13.99±2.9	15.81±10.13	16.9±23.6	12.01±3.0	10.69±3.5
FBS(mg/dl)	135.68±44.0	129.6±26.3	130.9±53.17	134.5±44.95	139.05±43.6	143.0±38.7
AU(mg/24 hr.)	796.2±1030	223.3±80.2	293.3±280.2	587.0±880.7	970.3±1101.	1497±1383
No. comorbidity						
	0	4(17.4)	8(12.7)	4(3.5)	6(8.5)	1(3.6)	23(7.7)
	1	8(34.8)	27(42.9)	48(41.7)	20(28.2)	10(35.7)	113(37.7)
	2	7(30.4)	19(30.2)	30(26.1)	25(35.2)	9(32.1)	90(30)
	≥3	4(17.4)	9(14.3)	33(28.7)	20(28.2)	8(28.6)	74(24.7)
No. complication	0-2	23(100)	60(95.2)	107(93)	58(81.7)	14(50)	262(87.3)
	≥3	0(0)	3(4.8)	8(7)	13(18.3)	14(50)	38(12.7)

CKD: chronic kidney disease; GFR: Glomerular filtration rate; BUN: Blood urea nitrogen; FBS: Fasting blood sugar; AU: Albumin urea/24hour Urin collection; No. comorbidities: Number of comorbidities; No. complication: Number of complicationes

5.5. Non-drug management profile of chronic kidney disease patients

Out of total, majority (83.7%), of the patients had a dietary plan with the clinicians or any health care providers. Only 49(16.3%) of the participants had no agreed to dietary plan. Of the patients who had an agreed dietary three-fifth (60.3%) of the patients were according to plan. Regarding intense moderate exercise, around (68.7%) of all CKD patients had a history of intense moderate

exercise which was <3 days per week and 83% had <150 minutes per week of intense moderate exercise. Concerning to smoking habit status 12.7% and (2%) were previous and current smoker respectively (Table 6).

Table 6: Non drug management approaches for the CKD patients on follow up at renal clinic of Zewditu memorial hospital and Tikur Anbesa Specialized hospital, Addis Ababa ,Ethiopia ,March 20 to July 15, 2019,(N=300)

Variables		Frequency (N=300)	Percent (%)
Agreed dietary plan with health providers	Yes	251	83.7
	No	49	16.3
Do according to plan	Yes	181	60.3
	No	119	39.7
Days in a week exercising intense moderate exercise	<3	206	68.7
	≥3	94	31.3
Total minuts per week doing moderat intense exercise	<150	249	83
	≥150	51	17
Previous smoker	yes	38	12.7
	no	262	87.3
Current smoker	yes	6	2
	no	294	98

5.6. Therapeutic management profiles of chronic kidney disease patients.

From the total CKD patients, 117(39%) and 7(2.3%) of patients took ACEIs and ARBs respectively. Of CCBs, amlodipine was prescribed for about 113 (37.3%) CKD patients .Out of the total CKD patients 90(30%) of the patients took beta blockers (BBs). Insulin (28.3%) and furosemide (29.6%) started for the total CKD patients during the management of CKD. Aspirin was taken in (17.3%) of all the participants for cardiovascular management (Table 7).

Table 7: Medications used for chronic kidney disease patients attending at Zewditu Memorial Hospital and Tikur Anbesa Specialized hospital, Addis Ababa ,Ethiopia ,March 20 to July 15 ,2019

Variables		eGFR (ml/min/1.73 $m^{2)}$					
		Medications prescribed by GFR category and CKD stages/patient					
		1(n=23) ≥90	2 (n=63) 60-89	3 (n=115) 30-59	4(n=71) 15-29	5(n=28) <15	Total (n=300)
ACEI	Enalapril	10(43.5)	33(52.4)	53(46.1)	13(18.3)	1(3.3)	110(36.7)
	Lisinopril	1(4.3)	1(1.6)	1(0.9)	2(2.9)	2(7.1)	7(2.3)
ARBs	Losartan	0(0)	1(1.4)	2(1.7)	0(0)	0(0)	3(1)
	Candesartan	1(3.3)	0(0)	2(1.7)	0(0)	1(4.3)	4(1.3)
CCBs	Amlodipine	3(13)	11(17.5)	48(41.7)	33(47.8)	18(60)	113(37.3)
	Nifidipin	3(13)	3(4.8)	10(8.7)	19(27.5)	6(20)	41(13.7)
BBs	Atenolol	2(8.7)	10(15.9)	24(20.9)	18(26.1)	12(40)	66(22)
	Metoprolol	0(0)	2(3.2)	5(4.3)	5(7.2)	1(3.3)	13(4.3)
	Carvedilol	0(0)	1(1.6)	3(2.6)	4(5.8)	3(10)	11(3.7)
Anti-diabetic medications	Insulin	2(8.7)	14(22.2)	29(25.2)	29(42)	11(36.7)	85(28.3)
	Metformin	6(26.1)	13(20.6)	22(19.1)	0(0)	1(3.3)	42(14)
	Glibenclamide	0(0)	2(3.2)	9(7.8)	1(1.4)	1(3.3)	13(4.3)
Diuretics	Furosemide	2(8.7)	12(19)	24(20.9)	32(45.1)	19(67.9)	89(29.7)
	Hydrochlorothiazide	4(17.4)	12(19)	22(19.1)	6(8.7)	0(0)	44(14.7)
	Spironolactone	1(4.3)	4(6.3)	4(3.5)	10(14.5)	2(6.7)	21(7)
Statins		7(30.4)	17(27)	53(46.1)	28(40.6)	9(30)	114(38)
Other medications	Iron preparation	2(8.7)	3(4.8)	17(14.8)	23(32.4)	14(50)	59(19.7)
	ASA	3(13)	13(20.6)	15(13)	17(23.9)	4(14.3)	52(17.3)
	Calcium supplement	1(4.3)	1(1.6)	6(5.2)	10(14.1)	13(46.4)	31(10.3)
	Antibiotic	0(0)	5(7.9)	11(9.6)	5(7.2)	3(10)	24(8)
	Steroid	1(4,3)	6(9.5)	10(8.7)	2(2.9)	1(3.3)	20(6.7)
	Amitriptyline	0(0)	1(1.6)	2(1.7)	3(4.3)	4(13.3)	10(3.3)
Others		4(17.4)	12(19)	20(17.5)	11(15.9)	5(17.2)	52(17.4)
TNM	<5	22(95.7)	58(92.1)	93(80.9)	51(73.9)	14(46.7)	238(79.3)
	≥5	1(4.3)	5(7.9)	22(19.1)	18(26.1)	16(53.3)	62(20.7)

*Beclomethasone, risperidone, sildenafil, warfarin, thyroxin

ACEI/ARBs: Angiotensin converting enzyme inhibitors/Angiotensin receptor blockers

CCB/BB/DUs: Calcium Chanel blockers/Beta blockers/Diuretics; TNM: Total number of medication

5.7. Management practice for comorbidities and complications of CKD

From the total number of CKD patients with DM plus HTN, 42(42%) patients took Non-ACEIs based regimen +Insulin and 26(26%) were prescribed with ACEIs based regimen+ insulin. Iron preparations (93.7%) and calcium supplements (83.8%) were commonly used for the treatment

of CKD patients with anemia and osteodystrophy respectively. The present study also revealed that furosemide 89(92.7%) was commonly prescribed for the management of CKD patients with fluid overload and ASA was taken in 52(66.7%) of the CKD patients who had CVD as complication (Table 8).

Table 8: Drug regimens for the management of chronic kidney disease comorbidities and complications at Zewditu Memorial Hospital and Tikur Anbesa specialized Hospital, Addis Ababa, Ethiopia, March 20 to July 15 ,2019 ,(N=300)

Management practice of comorbidities			Frequency (N)	Percent (%)
CKD+HTN +DM (n=100)	ACEIs based regimen+ insulin	No	74	74
		Yes	26	26
	ACEIs based regimen +MTF	No	85	85
		Yes	15	15
	Non-ACEIs based regimen +Insulin	No	58	58
		Yes	42	42
	Non-ACEIs based regimen +MTF	No	90	90
		Yes	10	10
	Others	No	93	93
		Yes	7	7
Management practice of complications				
Anemia(n=63)	Iron supplements	No	4	6.3
		Yes	59	93.7
Osteodystrophy (n=37)	Calcium supplements	No	6	16.2
		Yes	31	83.8
Fluid buildup (n=96)	Furosemide	No	7	7.3
		Yes	89	92.7
Hyperkalemia(n=19)	Calcium gluconate	No	9	47.4
		yes	10	52.6
CVD (n=78)	ASA	No	26	33.3
		Yes	52	66.7

ACEI+insulin+MTF; Non-ACEIs +Insulin +MTF; MTF +glibenclamide.

DM: Diabetes mellites; ACEI: angiotensin converting enzyme inhibitors; MTF: Metformin

5.8. Clinical outcome of chronic kidney patients

Out a total of 300 CKD patients, half (50.3%) of them developed CKD related complications (see in figure 4)

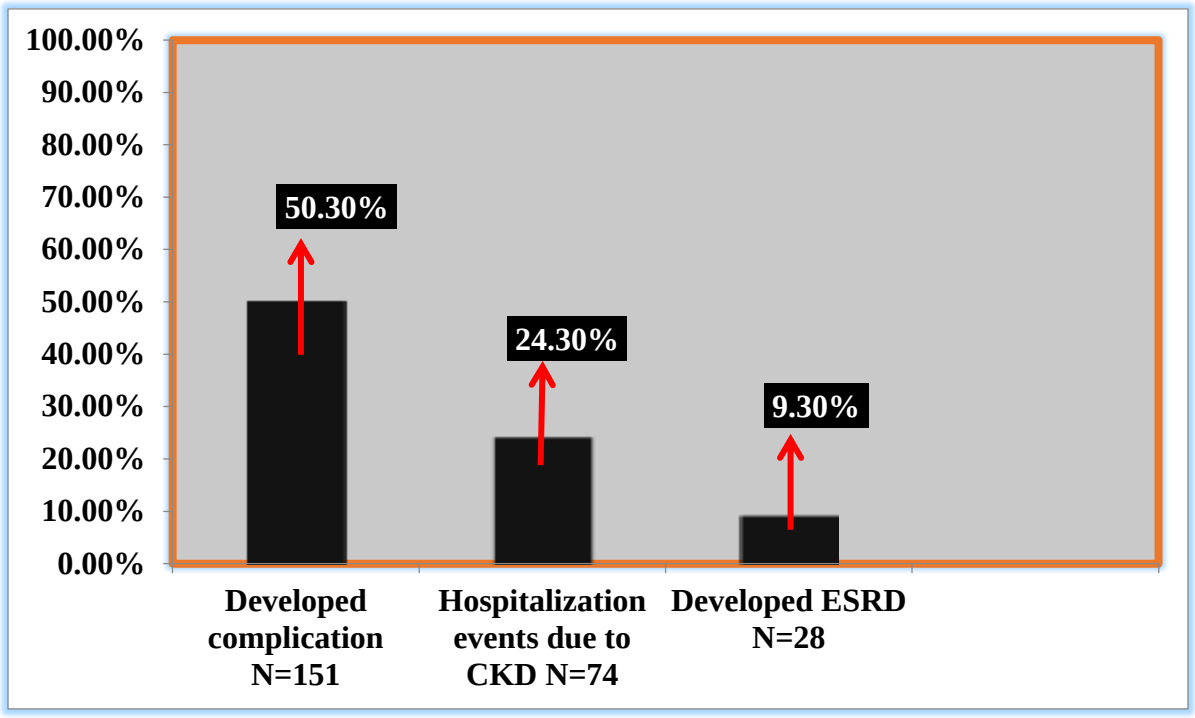

Figure 4: Clinical outcome of CKD patients attending Zewditu Memorial Hospital and Tikur Anbesa Specialized Hospital, Addis Ababa, Ethiopia, March 20 to July 15,2019 ,(N=300)

5.9. Quality of life and its associated factors

During the analysis of QOL, Student's independent t-test and one-way ANOVA were conducted to compare two groups and three or more groups in the analysis of QoL, respectively. According to the present study, there was no significant mean deference across sex groups in the KDQOL™-36 scale composite scores except for symptoms and problems of kidney disease (SPKD) where there was statistical difference among groups ($P<0.05$).Age group showed significant mean difference ($P<0.001$) in all scales of the KDQOL™-36 except in burden of kidney disease (BKD) where it was not statistically significant. Younger ages (<60 years old) patients had higher mean score in all subscales compared to the older ages (≥60 years) by the comparative statistical analysis. Regarding residency, Urban settlers had higher score in PCS compared to rural settlers ($P<0.001$). Results from the comparative statistical analysis also had shown statistical mean score difference in educational status in all subscales where PCS ($P<0.05$) ,MCS ($P<0.001$) ,BKD($P<0.05$),SPKD($P<0.001$) and EKD($P<0.05$). Regarding occupation, non-governmental organizations had higher mean scores and statistically significant in PCS ($P<0.001$) and SPKD ($P<0.001$)) (Table 9).

Table 9: Mean differences Of KDQOL™-36 scales with Socio-demographic characteristics of patients with CKD at ZMH and TASH, Addis Ababa, Ethiopia, March 20 to July 15 ,2019 ,(N=300).

		PCS	MCS	BKD	SPKD	EKD
Overall		50.5±27.4	59.5±21.8	63.13±24.8	80.4±14.5	74.62±16.6
Sex	Male	51.8±26.4	61.1±20.9	64.7±24.1	81.95±13.0	75.81±15.9
	Female	48.4±28.8	57.2±22.8	60.9±25.6	78.1±16.2	72.9±17.3
	P-value	0.288	0.121	0.191	0.023*	0.130
Age	<60	53.7±26.3	61.4±21.9	63.4±24.97	82.3±13.6	76.7±16.4
	≥60	42.5±28.5	55.06±20.7	62.4±24.3	75.6±15.8	69.5±15.9
	P-value	0.001	0.023	0.756	<0.001	0.001
Marital Status	Single	56.8±23.5	65.6±20.1	67.0±22.4	85.6±10.9	79.0±17.2
	Married	51.4±26.9	58.1±21.2	62.9±26.2	80.1±14.9	74.1±15.3
	Divorced	49.6±30.6	55.9±23.9	62.5±25.3	74.5±14.8	73.4±18.7
	Widowed	35.4±29.0	55.6±23.6	56.9±22.0	75.4±15.9	68.8±16.7
	p--value	0.001*	0.030*	0.204	<0.001*	0.012*
Residency	Rural	38.8±27.7	54.9±21.7	61.5±26.1	79.2±14.5	75.2±15.9
	Urban	53.2±26.6	60.6±21.7	63.5±24.5	80.7±14.5	74.5±16.7
	P-value	<0.001*	0.073	0.586	0.503	0.783
Educational status	Can not read and write	38.7±30.0	46.7±18.9	56.0±27.2	71.0±17.1	66.9±15.3
	primary	46.4±27.4	56.9±22.6	59.9±25.7	78.1±14.2	73.6±16.1
	secondary	54.6±26.6	61.5±22.1	63.6±27.6	81.5±14.4	75.8±16.4
	Higher education	55.1±25.8	64.8±19.2	68.97±18.1	85.1±12.3	77.0±17.2
	P-value	0.010*	<0.001*	0.033*	< 0.001*	0.043*
Occupation	Farmer	38.1±30.2	57.2±24.4	62.8±27.4	84.6±13.1	80.3±14.9
	Government employee	58.4±23.9	63.5±18.7	64.4±20.9	85.8±11.3	77.6±14.9
	NGO	60.6±23.2	65.4±17.1	66.7±25.8	84.2±12.6	75.8±17.6
	Merchant	56.4±25.9	63.0±22.9	66.0±23.8	80.0±14.8	2.3±17.6
	House wife	40.4±28.5	51.9±22.8	54.5±28.3	71.0±16.6	68.5±16.2
	Retired	46.2±26.8	57.2±21.5	65.3±24.7	76.9±14.9	73.5±16.4
	Others	40.4±28.3	51.9±24.9	54.5±22.9	71.0±12.7	68.4±16.8
	P-value	<0.001*	0.034*	0.259	<0.001*	0.052
Monthly income	Very low	40.6±27.6	56.1±22.4	62.0±24.4	79.6±15.1	74.3±16.7
	Low	51.4±29.8	57.6±20.9	60.1±29.2	74.3±14.7	76.1±13.5
	Average	55.8±22.5	56.5±21.1	66.3±23.7	80.4±15.0	71.4±16.1
	Above average	63.8±21.8	69.3±18.9	62.2±24.2	85.9±9.9	78.9±16.3
	High	52.3±28.1	64.3±21.6	65.9±23.0	82.9±14.2	73.4±14.2
	P-values	<0.001*	0.003*	0.676	0.002*	0.199

PCS: Physical component summary; MCS: Mental component summary; BDK: Burden of kidney disease; SPKD: Symptoms and problems of kidney disease; EKD: Effect of kidney

As data from table 10, mean score of patients in PCS and MCS was high in stage 1 and low in stage 5 CKD patients(p<0.001 ,(P=0.005). Patients with three or more comorbidities had low mean score of PCS(40.7±28.9 ,p<0.001) and MCS(55.0±19.9 ,p<0.05).Regarding to complication status ,patients who had complication were seen to have impaired score among all KDQOL™-36 domains, PCS(<0.001) ,MCS(p=0.012), BKD(P=0.038),SPKD(P<0.002) ,EKD(p<0.001) and were statistically significant during the comparative statistical analysis. It also showed that patients who had three or more complications were seen to have impaired score across all domains except in SPKD.

Table 10: Comparative statistical analysis of the mean difference of KDQOL™-36 domains of patients with chronic kidney disease based on clinical parameters at Zewditu memorial Hospital and Tikur Anbesa Specialized Hospital ,Addis Ababa ,Ethiopia ,March 20 to July,2019 ,(N=300)

Variables		**PCS**	**MCS**	**BKD**	**SPKD**	**EKD**
CKD stage	Stage 1	71.9±19.8	72.1±16.6	67.1±21.4	86.8±9.5	80.3±13.3
	Stage 2	53.1±27.1	62.6±22.1	62.9±25.2	82.9±14.9	79.2±16.3
	Stage 3	53.5±24.4	59.6±21.1	65.4±25.3	82.1±12.8	76.4±16.1
	Stage 4	41.6±28.3	55.7±22.9	57.7±25.2	74.9±16.1	67.9±17.1
	Stage 5	36.6±29.0	51.6±19.9	64.5±21.8	76.1±14.9	69.1±13.9
	P-value	<0.001*	0.005*	0.289	<0.001*	<0.001*
No. Comorbidities	1	57.2±25.9	63.9±21.9	65.4±23.0	83.6±12.7	79.4±15.3
	2	48.3±25.7	56.6±21.9	60.8±26.9	80.8±14.5	72.9±15.8
	≥3	40.7±28.9	55.0±19.9	61.8±25.1	74.0±15.6	67.9±17.2
	P-value	<0.001*	0.006*	0.340	<0.001*	<0.001*
Complications	No	56.4±23.7	62.7±22.0	66.1±24.1	83.0±13.8	77.9±15.6
	Yes	44.6±29.5	56.4±21.1	60.2±25.1	77.8±14.7	71.3±16.8
	P-value	<0.001*	0.012*	0.038*	0.002*	0.001*
No. complications	0-2	53.2±26.2	60.8±21.9	63.4±24.8	81.5±14.1	75.3±16.7
	≥3	31.0±27.4	50.9±19.1	61.2±24.2	72.9±15.3	69.8±15.2
	P-value	<0.001*	0.008*	0.606	<0.001*	0.056
No. Medications	<5	54.7±25.8	61.2±22.1	62.9±25.2	82.2±13.8	77.2±16.4
	≥5	34.2±27.4	53.3±19.3	64.0±22.9	73.5±15.2	64.7±13.2
	P-value	<0.001*	0.011*	0.752	<0.001*	<0.001*

PCS: Physical component summary; MCS: Mental component summary; BDK: Burden of kidney disease; SPKD: Symptoms and problems of kidney disease; EKD: Effect of kidney disease.*the mean difference is significant at < 0.05 (ANOVA).

PCS and MCS mean score was low at systolic blood pressure (SBP) of >159 mmHg (P=0.089, 0.122) and diastolic blood pressure of (DBP) of >110 mmHg(p=0.084 ,0.013). Patients with hemoglobin(Hg) level of ≤11 g/dl had low score of PCS and MCS(p=0.08 ,p=0.725) (Table 11).

Table 11: Comparative statistical analysis of the mean difference of KDQOL™-36 domains of patients with chronic kidney disease based on clinical parameters at Zewditu memorial Hospital and Tikur Anbesa Specialized Hospital ,Addis Ababa ,Ethiopia ,March 20 to July 15 ,2019 ,(N=300)

Variables		PCS	p-value	MCS	p-value
SBP	<140	51.9±26.56		60.5±21.88	
	140-159	45.1±30.98	0.089	57.4±20.19	0.122
	>159	40.9±30.31		51.8±20.75	
DBP	<90	51.2±27.39		60.4±21.47	
	91-110	40.8±26.34	0.084	44.0±21.65	0.013*
	>110	16.6±5.89		43.8±13.55	
Hg	≤11	42.6±30.48		59.2±23.08	
	>11	50.7±27.52	0.080	60.5±22.58	0.725
FBS	<150	51.1950±27.51		64.8742±21.87	
	≥150	42.5214±31.27	0.107	56.4658±23.29	0.046*

PCS: Physical component summary; MCS: Mental component summary; SBP: Systolic blood pressure; DBP: Diastolic blood pressure; FBS: Fasting plasma glucose; Hgb: Hemoglobin.

*The mean difference is significant at < 0.05(ANOVA)

5.10. Quality of life of KDQOL™-36 domains across CKD stages

PCS mean score of the total CKD patients was declined from the early stage of CKD to more advanced stages of CKD across the stages which was statistically significant at (p<0.001). MCS mean score of the patients also indicated that there was a progressive decline in mean score of the patients across the stages although it was not statistically significant (P=0.05).The highest and lowest mean summary score of KDQOL™-36 domains across the CKD stages was ,PCS(71.92±19.83 ,in stage 1) and (36.60±29.01 ,in stage 5) ;MCS(72.09±16.55 ,in stage 1) and (51.61±19.94, in stage 5); BKD(67.11±21.42, in stage 1) and (57.74±25.29 ,in stage 3). Whereas the highest and lowest mean score in SPKD was (86.80±9.45,in stage 1) and(74.97±16.08 ,in stage 4) ; EKD(80.29±13.30 ,in stage 1) and (67.93±17.12, in stage 4) respectively(Figure 5).

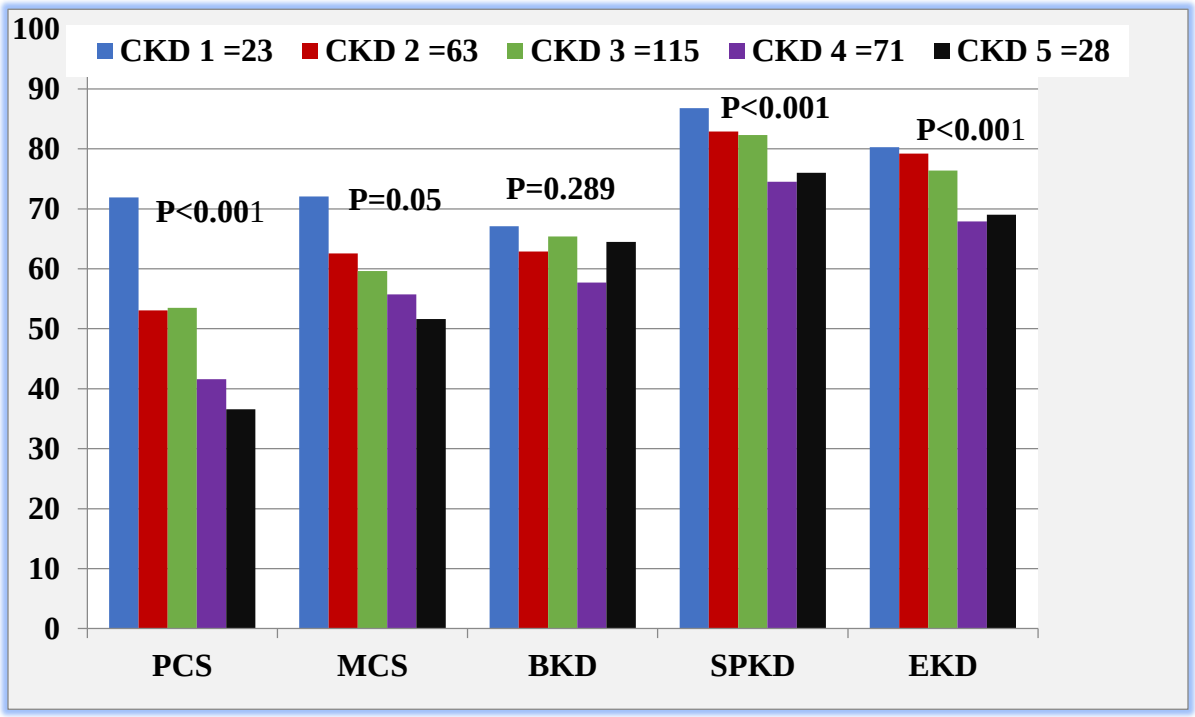

Figure 5: Domains of the quality of life showing a decline in scores with the stages of chronic kidney disease (CKD) at Zewditu memorial Hospital and Tikur Anbesa Specialized Hospital ,Addis Ababa ,Ethiopia ,March 20 to July 15 ,2019 ,(N=300)

CKD: Chronic kidney disease; MCS: Mental component summary; BDK: Burden of kidney disease; SPKD: Symptoms and problems of kidney disease; EKD: Effect of kidney disease

5.11. Predictors of end stage renal disease

As described in (Table 12), Binary Logistic regression was used to assess the association of each independent variables of clinical outcome of the CKD patients. The binary logistic regression analysis gave out anemia ,cardiovascular disease ,hyperkalemia ,fluid overload ,number of complications ,hemoglobin ,Enalapril ,atenolol ,iron supplement ,amitriptyline ,calcium gluconate and amlodipine as factors associated with clinical outcome at statistical significance test of ($P \leq 0.25$). In multi regression analysis, number of complicationes, enalapril use, atenolol use and amlodipine use, were variables which were found to have association with the clinical outcome of CKD patients. Patients who were amlodipine **(**AOR=3.56: 95% CI (1.02-12.65)) and atenolol (AOR=5.82:95% CI (1.46-23.27)) users were associated with poor outcome. The progression to ESRD in patients with 0-2 complications was reduced by by 87% when compared to those who had not (AOR=0.13 ,95% CI(0.02-0.85,P=0.03). No associations were found between any other socio-demographic or clinical variables and clinical outcomes.

Table 12: Bivariate and multivariate logistic regression analysis of clinical outcome in CKD patients at Zewditu memorial Hospital and Tikur Anbesa Specialized Hospital ,Addis Ababa ,Ethiopia ,March 20 to July 15 ,2019 ,(N=300)

Variables		ESRD		COR(95%CI)	P-value	AOR(95%CI)	P-value
		Yes	No				
Anemia	Yes	15(23.8)	48(76.2)	5.39(2.41-12.05)	0.000	1.03(0.15-7.27)	0.98
	No	13(5.5)	224(94.5)	1.00		1.0	
CVD	Yes	13(16.7)	65(83.3)	2.76(0.16-0.80)	0.012	1.64(0.37-7.35)	0.517
	No	15(6.8)	207(93.2)	1.00		1.00	
Hyperkalemia	Yes	6(31.6)	13(68.4)	5.44(0.06-0.53)	0.002	0.36(0.04-3.28)	0.36
	No	22(7.8)	259(92.2)	1.00		1.00	
Fluid overload	Yes	15(15.6)	81(84.4)	2.72(1.24-5.97)	0.013	0.43(0.08-2.19)	0.31
	No	13(6.4)	191(93.6)	1.00		1.00	
No. complication	0-2	14(5.3)	248(94.7)	0.09(0.041-0.23)	0.000	0.13(0.02-0.85)	0.03*
	≥3	14(36.8)	24(63.2)	1.00		1.00	
Hemoglobin	≤11	13(46.4)	50(79.3)	5.28(2.1-13.3)	0.000	2.87(0.49-16.6)	0.24
	>11	15(53.5)	139(93.9)	1.00		1.00	
No. medication	<5	12(5)	226(95)	0.15(0.07-0.34)	0.000	0.56(0.12-2.85)	0.48
	≥5	16(25.8)	46(74.2)	1.00		1.00	
Enalapril	Yes	1(0.9)	109(99.1)	0.055(0.01-0.41)	0.005	0.2(0.001-0.45)	0.01*
	No	27(14.2)	163(85.8)	1.00		1.00	
Iron sup.	Yes	14(23.7)	45(76.3)	5.04(2.25-11.30)	0.000	0.50(0.04-6.50)	0.59
	No	14(5.8)	227(94.2)	1.00		1.00	
Amlodipine	Yes	17(15)	96(85)	2.83(1.28-6.29)	0.011	3.56(1.02-12.7)	0.04*
	No	11(5.9)	176(94.1)	1.00		1.00	
Atenolol	Yes	12(18.2)	54(81.8)	3.03(1.35-6.78)	0.007	5.82(1.46-23.3)	0.01*
	No	16(6.8)	218(93.2)	1.00		1.00	
Calcium gluconate	Yes	4(40)	6(60)	0.14(0.04-.51)	0.003	3.89(0.16-96.2)	0.41
	No	24(8.3)	266(91.7)	1.00		1.00	
Amitriptyline	yes	4(40)	6(60)	7.39(1.95-28.0)	0.003	14.73(0.8-270)	0.070
	No	24(8.3)	266(91.7)	1.00		1.00	

CVD: Cardiovascular disease

5.12. Predictors of QOL in CKD patients

In multivariate analysis, the odds of impaired PCS QOL in rural residents was reduced by 90% when compared to the urban residents (AOR=0.10, 95%CI (0.02-0.64, P=0.015)). Smoking status was found to have an association with KDQOL™-36 domains in that the odds of impaired PCS QOL in those who had previous smoking history was associated to be increased by 1.74 times than those who had not a previous smoking history (AOR, 1.74 ,95%CI (0.03-0.98, P=0.05)). similarly ,the odds of impaired PCS QOL in CKD patients who were unable to read and write was found to be increased by 6.48 times than those with higher level of education (AOR=6.48 ,95%CI (0.79- 59.27, P=0.004)) (Table 13).

Table 13:Bivariate and multivariate analysis to observe association between socio-demographic and clinical variables and quality of life of chronic kidney disease patients at Zewditu memorial hospital and Tikur Anbesa specialized hospital, Addis Ababa ,Ethiopia ,March 20 to July 15,2019(N=300)

Variables		PCS Quality of Life					
		Impaired N (%)	Not impaired N (%)	COR(95%CI)	P-value	AOR(95%CI)	p-value
Residency	Rural	46(23.5)	11(10.6)	0.38(0.19-.78)	0.008	0.10(0.02-0.64)	0.015
	Urban	150(76.5)	93(89.4)	1		1	
Previous smoker	Yes	32(16.3)	6(5.8)	3.18(1.3-7.89)	0.012	1.74(0.03-0.98)	0.05
	No	164(83.4)	98(94.2)	1		1	
Education	Can't read &write	19(9.7)	6(5.8)	0.59(0.22-1.65)	0.032	6.48(0.79- 59.27)	0.004
	primary	73(37.2)	36(34.6)	0.94(0.51-1.71)		2.08(0.63- 6.98)	
	secondary	49(25)	33(31.7)	0.93(0.51-1.70)		6.44(1.82- 22.80)	
	Higher	55(28.1)	29(27.9)	1		1	
Scr	>1.2 mg/dl	160(83.8)	72(70.6)	0.47(0.26-.82)	0.020	2.12(0.14-0.02)	0.024
	≤1.2 mg/dl	31(16.2)	30(29.4)	1		1	

PCS: Physical component summary; Scr: Serum creatinine

In the multivariate analysis, the odds of impaired MCS QOL in rural residents was also reduced by 60% when compared to the urban residents (AOR, 0.40, 95%CI (0.16-1.02, P=0.050)). On the other hand, the odds of impaired MCS QOL in CKD patients with three or more comorbidities was increased by 4.21 times than those who had not(AOR=4.21 ,95%CI(1.5-11.80 ,P=0.006)). Similarly, the odds of impaired MCS QOL in CKD patients with Hg level of ≤11gm/dl was increased by 2.43 times than CKD patients with Hg level of > 11 gm/dl(AOR=2.43 95%CI(0.99-5.98 ,P=0.050)),(Table 14).

Table 14:Bivariate and multivariate analysis to observe association between socio-demographic and clinical variables and quality of life of chronic kidney disease patients at Zewditu memorial hospital and Tikur Anbesa specialized hospital, Addis Ababa ,Ethiopia march 20 to July 15,2019(N=300)

Variables		MCS Quality of Life					
		Impaired N (%)	Not impaired N (%)	COR(95%CI	P-value	AOR(95%CI)	p-value
Residency	Rural	39(68.4)	18(31.6)	0.61(0.33-1.120	0.011	0.40(0.16-1.02)	0.050
	Urban	138(56.8)	105(43.2)	1		1	
≥3comorbidity	Yes	10(62.5)	6(16)	2.49(1.34-4.63)	0.004	4.21(1.5-11.80)	0.006
	No	167(58.8)	117(41.2)	1		1	
No. complication	≥3	39(68.40)	18(31.6)	2.93(1.29-6.64)	0.010	5.85(1.62-21.08)	0.007
	0-2	138(56.8)	105(43.2)	1		1	
Hg(mg/dl)	≤11	30(58.8)	21(41.2)	1.03(0.54-2.0)	0.090	2.43(0.99-5.98)	0.050
	>11	88(59.5)	60(40.5)	1		1	

MCS: Mental component summary; Hg: Hemoglobin

6. Discussion

The purpose of the study was to assess clinical outcome and QoL of CKD patients attending at ZMH and TASH. The mean (SD) age of CKD patients was 49.9±16.48 which was consistently reported from Ghana(46.7 ± 16.2 years)(Elliot K. Tannor, 2019) ,Ethiopia(47±15.7years)(Damtie et al., 2018) ,but lower than report from east London(60±11.9 years)(Ali et al., 2013). In the present study hypertension was the most common comorbidity of the CKD patients accounted for (80%).This was in line with that of a study done by(Stefanski et al., 1996) which claimed that hypertension was present in approximately 80 to 85% of patients with CKD. This was revealed by other studies too, in USA(77.6%)(Wu et al., 2016) ,in Ethiopia(91.1%) (Belayneh Kefale, 2018.). Regardless of the etiology, the final common pathway for irreversible kidney damage has been hypothesized to be increased intraglomerular hypertension which is caused by loss of glomeruli resulting in hypertrophy and hyper filtration of the remaining nephrons(Mallappallil et al., 2014). The mean SBP was 127.01±17.04 mmHg which was similarly reported from Japan (125.4 ± 16.0 mmHg) (Yamashita et al., 2011).

In the current study, amlodipine was the common antihypertensive drug used for the management of CKD patients which was prescribed in about (37.3%). Enalapril was prescribed in 36.7% of the patients across all stages of CKD. Only 13(18.3%) and 1(3.3%) was taken in stage 4 and 5 CKD patients respectively despite the present study showed higher percentage of the patients had hypertension history. This seems very low although robust evidences on the use of ACEIs/ARBs in the late stage of CKD. The probable reason for this may be the reticence of physicians to prescribe ACEIs because of the fear that ACEIs can lead to a marked increase of serum creatinin following the drugs and/or fear of ACEIs related hyperkalemia during the course of treatment(seyed ali sadjadi etal.,2009). The use of an ACEI or an ARB have theoretical advantage because of the role of angiotensin in progression of CKD, and their proven beneficial effects on proteinuria(Lewis et al., 1993).

The mean(SD) (SBP ,DBP) in this study was (127.01±17.04 ,77.4±11.9) which was in line with the recommendation from American Diabetes Association (target <140/80 mmHg),Canadian Hypertension Education Program (target <140/90 mmHg for CKD) ,the European Society of Cardiology/European Society of Hypertension (target <140 mmHg systolic for CKD) and The 2012 KDIGO clinical practice guideline for the management of blood pressure in CKD to

consider a higher blood pressure goal of 140/90 mmHg in patients with CKD without albuminuria or proteinuria.

The present study showed that statins were commonly prescribed for about 38% of CKD patients. This was in agreement with other studies (Fink et al., 2012, Tonelli et al., 2003). This might be because statins reduce the relative risk of cardiovascular events among patients with and without CKD. However, the benefit is greater in patients with CKD to reducing cardiovascular risk. Regarding complications, half (50.3%) of the CKD patients developed CKD related complications. This was in accordance with (Vassalotti et al., 2016) which indicated that progressive CKD is linked to several complications with higher prevalence and intensity at lower levels of kidney function, which interact with each other and these complications contribute to high morbidity and mortality and poor quality of life. CKD management includes reducing the patient's risk of CKD progression and risk of associated complications, such as anemia , cardiovascular disease , as mineral and bone disorder ,acute kidney injury and, and metabolic acidosis, as well(KDIGO,2012).

The present finding showed that 21% of the patients had anemia history and iron preparation was prescribed in about (93.7%) of the anemic patients. This is in line with the recommendations of KDIGO, 2012 guideline. Although evidences stated that the use of iron supplements and erythropoietin are the important elements in the management of anemia with CKD (KDIGO, 2012), erythropoietin was prescribed in only 22% of the patients with anemia which seems low based on the different recommendations for the management of anemia with CKD. The reason in this difference might be because of patients' inability to afford and lack of access to erythropoietin stimulating agents (ESA).

In the present study, the proportion of patients with osteodystrophy was 12.3%. Furthermore, about 83.3% of CKD patients with osteodystrophy complication were treated by calcium supplements. This is in line with a study in Canada (Stigant et al., 2003) but different from studies by (Malluche et al., 2008), (Mathew et al., 2007) stating that the use of calcium-based phosphate binders have been associated with the development of low bone turnover, bone loss, and worsening of vascular calcifications and low-cost calcium-based phosphate binders is controversial because of the potential of these agents to exacerbate tissue calcium deposition. The probable difference might be inaccessibility of sevelamer hydrochloride and lanthanum carbonate in the hospitals settings.

In the present finding, aspirin was prescribed in about 66.7% of the patients. This was supported by other studies(Jain et al., 2013), (Inker et al., 2014). The possible reason may be since burden of CVD among CKD patients is substantial; CKD patients may take aspirin for secondary prevention of CVD.

In the current study, one tenth (9.3%) of the CKD patients progressed to ESRD which was higher than a study in Canada (3%) (Sud et al., 2015). A recent study also suggested that a person born in the US today has a lifetime risk of developing CKD stages 3a+, 3b+, 4+, and ESRD of 59.1%, 33.6%, 11.5%, and 3.6%, respectively(Grams et al., 2013). Our study was also higher than North India(0.2%)(Otero et al., 2005), Taiwan(0.2%) (Wen et al., 2008) and Zuni Indians, USA(1.6%) (Dirks et al., 2005). This discrepancy may be due to higher attention given in those countries to decrease CKD progression toward the late stage of CKD and/or ESRD. The other reason may be the socio demographic and socioeconomic difference and its impact on health outcome of CKD patients among the countries. The other reason that there is higher proportion of patients with higher CKD stages in this study is because of referral and detection bias. Most patients with milder CKD who have no symptoms are less likely to be diagnosed as opposed to other countries that have a better health care in detecting asymptomatic CKD. The referral bias is that as these are tertiary care centers, there are expected worse stages of CKD referred to these care centers where as milder CKDs would be managed at primary and secondary health care levels.).

In the present study, 24.3% of the study participants had a hospitalization event due to CKD during their life time. This was lower than a study conducted in USA (64.6%) (Hall et al., 2018) and in Japan(34%) (Iimuro et al., 2019). This discrepancy may be in the USA study the methodology was longitudinal follow up whereas our study was cross sectional which may lead to less strict patient follow up and miss hospitalized patients. The other discrepancy may be the sample size difference where our sample size was smaller than the two countries, forgetfulness of being hospitalized by our patients during the course of their CKD illness, being reluctant to tell about their hospitalization event, unavailability of documents of hospitalization history of the patients.

In the current study, multivariate analysis indicated that use of enalapril in the management of CKD was found to have protective effect. This was supported by a study done by (Kumela Goro et al., 2019).The possible reason might be ACEIs can reduce blood pressure and proteinuria in

hypertensive patients with chronic renal insufficiency and the importance of ACEIs in prevention of cardiovascular mortality and morbidity as general can help CKD patients to have better outome. In the current study the use of atenolol and amlodipine were associated with poor outcome. The probable reason may be that calcium channels blocker and beta blockers can decrease cardiac output and can further reduce renal perfusion. This decrement may exacerbate glomerular filtration rate reduction (GFR) which may lead to end stage renal disease (ESRD). Alternatively it may be a simple difference in the group of patients that the medications are used in as patients with worse stages of CKD (ESRD pts for example) ACEIs/ARBs may not be prescribed. The other plausible reason may be that atenolol is less effective lowering of the blood pressure and less effective in vascular protection compared to other antihypertensive medications. Moreover, patients who had 3 or more complications were significantly associated with ESRD. Increasing complications noted may be due to the presence of various comorbidities such as diabetes and hypertension. Similar study around the world supported this study(Levin et al., 2001). Besides, CKD patients in this study who have many complications were progressed to end stage renal disease. The probable reason for this finding may be due to CKD patients with many complications are more likely on many drugs at the same time and may also be at advanced stage of CKD which may lead to end stage renal disease. Therfore, Proper control of these risks factors can decrease episode of end stage renal disease in CKD patients.

Regarding QOL, the KDQOL™-36 domains which make up the physical QoL had more impairments than domains that constitute the mental QoL although both domains mean score was <70. However ,normal healthy populations usually have mean scores above this level based on different studies(Cruz et al., 2011). Our study was in line with a study by (Bohlke et al., 2008). The seemingly reason for present finding may be, having higher rates of complications which can affect their physical ability to do regular activities and patients may adapt their psychological situation of their disease and its management situations that directly affect patients' QoL over time. Overall, mean (SD) score of KDQOL™-36 domains in this study were as follows: Mean (SD) score of PCS was (50.5±27.4) , mean (SD) score of MCS was (59.5±21.8) ,mean (SD) sore of BKD was (63.13±24.8) ,mean (SD) score of SPKD was (80.4±14.5) and mean(SD) score of EKD was (74.62±16.6) respectively and mean scores on the SPKD were numerically higher than mean scores on the other 4 subscales. This was in line with

a study conducted in USA indicating the highest mean (SD) score in SPKD subscale and comparable mean score of the other domains to our study(Cohen et al., 2019).

In this study, multivariate analysis demonstrated that CKD patients who were from rural area had better QOL in PCS and MCS domains. The odds of impaired PCS QOL in rural residents was reduced by 90% when compared to the urban residents (AOR=0.10, 95%CI (0.02-0.64, P=0.015)) This was in agreement with a study conducted in Pakistan (Anees et al., 2014).The plausible reason may be the difference in their utilization of medical care in both groups and lack of concerns about their health in the rural residents ,difference in regular daily activities where rural people do more daily activities that reduce cardiovascular disease and CKD related complications. In the current study, participants with a higher level of education had better PCS than patients with lower education level. The odds of impaired PCS QOL in CKD patients who cannot read and write was found to be increased by 6.48 times when compared with those with higher level of education (AOR=6.48 ,95%CI (0.79- 59.27, P=0.004)). This finding was similar with other previous studies (García-Llana et al., 2013, Fukushima et al., 2016). The credible reason may be due to educated participants have greater access to information about their disease, better economic conditions, and better capacity to evaluate traumatic phenomena (Silverberg etal(2005) and Kimel etal (2008). The other probable reason also may be that CKD patients with higher education mainly participate in activities that require more intellectual over those that require greater physical effort. Thus, low educational status may attribute the poor QoL of CKD patients. The odd of impaired PCS QOL in CKD patients with elevated serum creatinin was associated with 2.12 times more likely to have impaired PCS QOL (AOR=2.12 ,CI(0.14-0.02,p=0.024). This was in contrary to a study by(Allen et al., 2002). This discrepancy might be due to the difference in the serum creatinine level proportionate to dietary protein intake and somatic (skeletal muscle) mass of participants or nutritional change in general. Different studies revealed that hemoglobin >11g/dl was found to be associated with better QoL. In this study, low hemoglobin level was found to be associated with impaired MCS QOL. Besides ,A study by(Perlman et al., 2005) indicated that hemoglobin level was a positive predictor of QoL. The likely reason may be due to low level of hemoglobin may be associated with various complications which may result in impairment of physical and mental QOL.

In the present study, the odds of impaired MCS QOL in CKD patients with the presence of three or more comorbidities was found to be increased by 4.21times when compared with those who

have not (AOR=4.21, 95%CI(1.5-11.8). Some reports have suggested that the presence of comorbidities is a major determinant of a decline in QOL (Merkus et al., 1999, Mingardi et al., 1999). A study from Brazil on QOL of patients with CKD demonstrated that, three or more comorbidities had a negative impact on the PCS and MCS domains(Cruz et al., 2011). This might be the cumulative impact of comorbidity on the patient's quality of life. It also may be that the illness burden experienced by CKD patients is not only associated with CKD itself and its concordant diseases, but in particular suffer from comorbidities that are unrelated with the pathogenesis and management of CKD. Improved management of CKD, including its allied comorbid chronic conditions, may ultimately lead to a better quality of life for the CKD patients. Presences of different CKD complications were found to be associated with low score on MCS in this study. This was demonstrated by other study too (Silverberg et al., 2005). The odds of impaired MCS QOL in CKD patients with three or more complications was increased by 5.85 times when compared than those who had not (AOR=5.85 ,95%CI(1.62-21.08 ,P=0.007).The possible reason may be ,CKD patients with multiple complications may promptly progress to advanced stage which in turn affects their QOL. The other reason may be due to pill burden indicated for the management of different CKD related complications. In this study, Sex, income, CKD stage, occupation and pill burden were not significantly associated with QOL, which were predictors in different studies around the world. The possible discrepancy may be due to difference in study design, sample size and management approaches between studies in different countries.

7. Limitation of the study

Since our study was a cross-sectional study, it might limit assessment of prognosis of the CKD patients. In addition to this, the cross sectional nature of this study design hinders the possibilities of assessing for causal and effect relationships.

Because of small in sample size and a cross sectional study, it is very difficult to generalized it.

8. Conclusion

In this study, relatively higher number of CKD patients had developed complications. Almost one tenth of the total CKD patients had progressed to ESRD. About two fifth of the CKD patients with diabetes mellitus plus hypertension comorbidities were managed with non-ACEIs based regimens plus insulin. Enalapril use was associated with better outcome. Whereas, three or more CKD related complications, use of amlodipine and atenolol were associated with poor outcome of the CKD patients. Regarding QOL, the overall mean score of PCS and MCS was impaired and below the standard level. Rural residency was a positive predictor of better QOL in the domains of PCS and MCS QOL. Educational level, elevated serum creatinin, smoking status was significantly associated with PCS. On the other hand presence of three or more comorbidities, three or more CKD related complications and hemoglobin level were identified as predictors of impaired QOL in the domains of MCS QOL.

9. Recommendation

- ☞ Since the prevalence of comorbidities like hypertension and diabetes mellitus was high among the CKD patients, strict BP and glycemic control should be clearly indicated to slow the rate of decline in eGFR and disease progression as general.
- ☞ Clinicians and other concerned bodies involved in the management of CKD comorbidities and complications should consider how to improve the QOL of the CKD patients.
- ☞ Interventions to reduce hospitalization, CKD progression and CKD related complications should pay close attention during CKD management.

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11. Annex

Annex I: Questionnaire

Part I : Socio-demographic characteristic of chronic kidney disease patients attending renal clinic at ZMH and TASH ,Addis Ababa, Ethiopia

Socio-demographic characteristics

1. Sex: □Male □Female
2. Age (year)_____
3. Marital status: □Single □Married □Divorced □Widowed
4. Religion: □Orthodox □Muslim □ protestant □ Catholic □Others specified _____
5. Occupation: □ Farmer □Gov't employee □ NGO employee □Merchant/trade □House wife
□ Retired □others specify _____
6. Educational status: □Cannot read and write □Primary (1-8) □Secondary (9-12) □Higher Education (Diploma & above)
7. Place of Residence: □ Rural □ Urban
8. Monthly income (ETB): _____

Part II: - Disease related factors

9. CKD since diagnosis_____
10. Hospitalization event due to CKD: Yes□ No□

Part III: Non-pharmacological Approaches of CKD Care

11. Diet

A. Do you have dietary plan you set with your doctor? Yes□ No□
B. If yes to q. no 11.1, do you adhere to your plan? Yes□ No□

12. Exercise

A. Do you have exercise plan you set with your doctor? Yes□ No□
B. If yes to q. no 12.1, do you adhere to your plan? Yes□ No□
C. How many days per week you do moderate intensity exercise? _____ Day(s)
D. How many minutes per week you do moderate intensity exercise? _____ Minutes
E. Other forms of exercise, if any_____

13. Cigarette Smoking

A. Do you ever smoke cigarettes? Yes□ No□
B. Are you currently a smoker? Yes□ No□

Annex II:-Data abstraction format for assesment of quality of life in CKD patients at Zewditu memorial hospital and TASH, Addis Ababa, Ethiopia, 2019

-This survey includes a wide variety of questions about your health and your life. We are interested in how you feel about each of these issues.

1. In general, would you say your health is?

Excellent□	Very good□	Good□	Fair□	Poor□
1	2	3	4	5

The following items are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

	Yes limited a lot	Yes limited a little	NO, not limited At all
2.Moderate activities, such as moving a table, Pushing a vacuum cleaner, bowling, or playing golf	1	2	3
3.Climbing several flights of stairs	1	2	3

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?		
	Yes	No
4.Accomplished less than you would like	1	2
5.Were limited in the kind of work or other activities	1	2
During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?		
	yes	no
6.Accomplished less than you would like	1	2
7.Didn't do work or other activities as carefully as usual	1	2

8. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

Not at all□ A little bit□ Moderately□ Quite a bit□ Extremely□

1 2 3 4 5

These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 week

	All of the time	Most of the time	A good bit of the time	Some of the time	A little of the time	None of the time
9. Have you felt calm and peaceful?	1	2	3	4	5	6
10. Did you have a lot of energy?	1	2	3	4	5	6
11. Have you felt downhearted and blue?	1	2	3	4	5	6

12. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?

All of the time Most of the time some of the time A little of the time None of the time

1 2 3 4 5

<u>Your Kidney Disease</u>

How true or false is each of the following statements for you?

	Definitely true	Mostly true	Don't know	Mostly false	Definitely false
13.My kidney disease interferes too much with my life	1	2	3	4	5
14. Too much of my time is spent dealing with my kidney disease	1	2	3	4	5
15.I feel frustrated dealing with my kidney disease	1	2	3	4	5
16.I feel like a burden on my family	1	2	3	4	5

During the past 4 weeks, to what extent were you bothered by each of the following?

	Not at all bothered	Somewhat bothered	Moderately bothered	Very much bothered	Extremely bothered
17. Soreness in your muscles?.	1	2	3	4	5
18. Chest pain?	1	2	3	4	5
19.Cramps	1	2	3	4	5
20. Itchy skin?	1	2	3	4	5
21. Dry skin?	1	2	3	4	5
22. Shortness of breath	1	2	3	4	5
23.Faintness or dizziness	1	2	3	4	5
24. Lack of appetite	1	2	3	4	5
25.Washed out or drained	1	2	3	4	5
26.Numbness in hands or feet	1	2	3	4	5
27.Nausea or upset stomach	1	2	3	4	5
28[a]. (Hemodialysis patient only) Problems with your access site?	1	2	3	4	5
28[b](Peritoneal dialysis patient only) Problems with your catheter site?	1	2	3	4	5

Effects of Kidney Disease on Your Daily Life

Some people are bothered by the effects of kidney disease on their daily life, while others are not. How much does kidney disease bother you in each of the following areas?

	Not at all bothered	Somewhat bothered	Moderately bothered	Very much bothered	Extremely bothered
29. Fluid restriction?....	1	2	3	4	5
30. Dietary restriction?.	1	2	3	4	5
31. Your ability to work around the house? ...	1	2	3	4	5
32. Your ability to travel?	1		3	4	5
33. Being dependent on doctors and other medical Staff?	1	2	3	4	5
34. Stress or worries caused by Kidney disease?	1	2	3	4	5
35. Your sex life?	1	2	3	4	5
36. Your personal appearance?	1	2	3	4	5

Annex III: Data abstraction format

Part 1: Clinical data (Scr, BUN, FBS, BP, CKD stage, etc.)

1.1. GFR_____ 1.2.CKD stage_____ 1.3.BUN_____ 1.4.Scr_____ 1.5.Albumin urea_____ 1.6.Serum calcium_____ 1.7.Serum phosphate_____ 1.8.serum potassium_____ 1.9.Blood pressure_____ 1.10. Hemoglobin	1.11.Total cholesterol_____ 1.12.LDH cholesterol_____ 1.13.HDL cholesterol_____ 1.14.Trigleycerid_____ 1.15.Fasting plasma glucose_____ 1.16. Others_____ _____

Part II: Medical History and CKD Complications

9. Presence of medical history Yes ☐ No ☐

10. If the response for the above question is Yes, which of the following Medical history? (Can tick more than once)

Comorbid conditions	Yes	No	unknown
Diabetes mellitus			
Hypertension			
Dyslipidemia			
Ischemic Heart Disease			
Infection			
Obstruction			
Others, Specify			

11. Presence of CKD complications Yes □ No □

12. If the response for the above question is present, which of the following CKD complication is present? (Can tick more than once)

Complications secondary to CKD	Yes	No	unknown
CVD			
Fluid buildup			
Osteodystrophy			
Hypertension			
Anemia			
Hyperkalemia			
Others, specify			

Part III: Medications and Dietary/Exercise

1. Total number of prescribed drugs _____ (In number)
2. List of prescribed medications

Type of medication	Yes	No		Yes	No
Metformin			Amlodipine		
Glibenclamide			Atenolol		
Enalapril			Metoprolol		
Lisinopril			Carvedilol		
Insulin			HCT		
Statins			Spironolactone		
Losartan			Iron		
Nifedipine			Calcium Suppl		
Frusemide			Antibiotics		
ASA			Calcium gluconate		
Others specify					

Part IV: Management Practice of CKD comorbidities and complications

1) Management of CKD with DM and hypertension _____
2) Management of CKD with Hypertension_____
3) Management of CKD with DM_____
4) Management of CKD with CVD
5) Management of Anemia _____
6) Management of Osteodystrophy_____
7) Management of hyperkalemia
8) Management of Fluid Build up_____

(የአማርኛ መጠይቅ ቅጽ)

አዲስ አበባ ዩኒቨርስቲ

ፋርማሲ ት/ት ክፍል እና ህክምና ት/ት ክፍል

ጤና ይስጥልኝ እኔ _____ እባላለሁ፡፡ በአሁኑ ወቅት በአዲስ አበባ ዩኒቨርሲቲ ፈርማሲ ትምህርት ክፍል ተማሪ ሲሆን ይህ ጥናት የማስተርስ ማሟያ ወረቀት ነው፡፡ በዘውዲቱ መታሰቢያ ሆስፒታል እና በጥቁር አንበሳ ስፐሻላይዝድ ሆስፒታል ወስጥ በመታከም ላይ በሚገኙ የኩላሊት ታማሚዎች ስለ ህመማቸው ሁኔታ እና ውጤት መረጃ ለመሰብሰብ የተዘጋጀ መጠይቅ ነው፡፡

የዚህ ጥናት አለማ ስለ እርስዎ ጤንነት ፣ስለሚደረግልዎት ህክምና እና ውጤት ለማጥናት ነው፡፡ መጠይቁ ቢበዛ 20 ደቂቃ የሚወስድ ሲሆን በዚህ ጥናት ወስጥ የእርስዎ ተሳታፊነት ሙሉ በሙሉ በእርስዎ ፈቃደኝነት የተመሰረተ ነው፡፡ በዚህ ጥናት ውስጥ ለመሳተፍም ሆነ ላለመሳተፍ መወሰንዎ በሆስፒታሉ ውስጥ በሚያገኙት አገልግሎት ምንም ዓይነት ተጽዕኖ የማይኖረው ሲሆን ቃለ መጠይቁን በማንኛውም ስዓት ማቋረጥ ወይም አለመመለስ ይችላሉ፡፡ በጥናቱ ውስጥ ለተነሱት ጥያቄዎች የሚሰጡዋቸው መልሶች ሙሉ በሙሉ በምስጢር የሚጠበቁ ሲሆን የእርስዎም ስም በማንኛውም መልኩ በጥናቱ ውስጥ አይገለጸም እንዲሁም የሚሰጡት ምላሽ ከእርስዎ ማንነት ጋር በማንኛውም መልኩ አይያያዝም በዚህ መጠይቅ ውስጥ ለቀረቡት ማንኛውም ጥያቄዎች ትክክለኛ ወይም የተሳሳተ የሚባል ምልስ የለም

በጥናቱ ለመሳተፍ ፍቃደኛ ነዎት?

አዎ☐ አይደለም☐

Annex I፡ መጠይቅ

ክፍል አንድ፡ እርስዎን በተመለከተ አጠቃላይ መጠይቅ

1. ዕድሜ _____

2. እድሜ _____

3.የጋብቻ ሁኔታ _____,

ያላገባ/ች□ ባለትዳር□ አግብቶ የፈቱ□ የትዳር ጓደኛን በሞት ያጡ□

4.ሃይማኖት፡- ኦርቶዶክስ□ ሙስሊም□ ካቶሊክ□ ፕሮቲስታንት□ ሌላ□

5.የስራ ቅጥር ሁኔታ፡- አርሶ አደር□ የመንግስት ሰራተኛ□ የግል መስሪያ ቤት ተቀጣሪ□ ነጋዴ □ ጡረተኛ/በጡረታ ከስራ የተገለለ□ የቤት እመቤት□ ሌሎች ይገለፁ□

6. የትምህርት ደረጃ፡- ማንበብ እና መፃፍ አልችልም□ አንደኛ ደረጃ ት/ት(1-8 ክፍል)□ ሁለተኛ ደረጃ መስናዶ ት/ት (9-12ኛ ክፍል)□ ከፍተኛ ትምህርት (ሰርተፍኬት, ዲፕሎማ, የመጀመሪያ ዲግሪ ከዚያ በላይ)□

7.መኖሪያ ቦታ፡- ገጠር□ ከተማ□

8.ወርሃዊ ገቢ (በብር)_____(በቁጥር ጻፍ)

<u>ክፍል ሁለት፡ ከህመሙ ጋር የተገናኙ ነገሮች</u>

9.ህመሙ የቆየበት ጊዜ፡- _____

10.ሆስፒታል ተኝቶ የታከሙበት ጊዜ አለ?---------- አዎ□ አይደለም□

<u>ክፍል ሶስት ፡ከታዘዙሎዎት መዳኒት ውጭ ለኩላሊትዎ እንክብካቤ የሚደርጉት ነገር በተመለከተ</u>

11. <u>አመጋገብ</u>

ሀ. ከሃኪምዎ ጋር ስለ አመጋገብ ስነ-ሥርዓት የተስማሙበት እቅድ አለ? አዎ□ አይደለም□

ለ. ለ 11.1 መልስዎ አዎ ከሆነ በአግባቡ ይጠቀማሉ? አዎ□ አይደለም□

12. <u>እንቅስቃሴ</u>

ሀ. ከሃኪምዎ ጋር ስለ የአካል እንቅስቃሴ የተስማሙት እቅድ አለ? አዎ□ አይደለም□

ለ. ለ12.1 መልስዎ አዎ ከሆነ በእቅዱ መሰረት ይሰራሉ? አዎ□ አይደለም□

ሐ. በሳምንት ስንት ቀን መጠነኛ እንቅስቅሴ ያደርጋሉ?_____

መ. በቀን ስንት ደቂቃ መጠነኛ እንቅስቃሴ ያደርጋሉ? _____

ሰ. ሌሎች ካሉ ይግለፁ _____

13. <u>ሲጋራ ማጨስ በተመለከተ</u>

ሀ. ሲጋራ አጭሰው ያቃሉ? አዎ☐ አይደለም☐

ለ. አሁንስ ያጨሳሉ? አዎ☐ አይደለም☐

ሐ. ለ13.1 መልስዎ አዎ ከሆነ በቀን ስንት ያጨሳሉ? _____(ፓኬት)

ሀ. ከግማሽ በታች☐ ለ. ግማሽ☐ ሐ. ከግማሽ በላይ☐

Annex II: እርስዎንና ጠንነትዎንን በተመለከተ የተወሰኑ ነገሮች ለማወቅ እንፈልጋለን፡፡ እባክዎትን የሚከተሉት ጥያቄዎች እርስዎ ትክክለኛ ነው ብለው የማኑበትን በማክበብ ይመልሱ ትክክለኛ መልስ ወይም የተሳሳተ መልስ የሚባል የለም የሚሰጡት መረጃ ሁሉ ምስጢራውነቱ በደንብ የተጠበቀ ይሆናል፡፡

1.ባጠቃለይ ስለ ጤንነትዎ ምን ይላሉ?

እጅግ በጣም ጥሩ	በጣም ጥሩ	ጥሩ	ደካማ	ዝቅተኛ
1	2	3	4	5

የሚከተሉት ተራ ቁጥሮች ስለ በቀን የሚያደርጉዋቸው እንቅስቃሴዎች ይመለከታል: አሁን ባለብዎት የጤና ሁኔታ የሚከተሉትን ተራ ቁጥሮች ከማድርግ ይገድብዎታል/ይከለክልዎታል? መልስዎ አዎ ከሆነ ምን ያህል?

	በብዛት	በትንሹ	በጭራሽ
2.መጠነኛ እንቅስቃሴ: እንደ ጠረጰዛ መግፋት፡ቀለል ያለ ስራ በመስራት፣ክዋስ በመጫወት	1	2	3
3. ብዙ ደረጃ የመውጣት ችግር አለብዎት?	1	2	3

ባለፈው አራት ሳምንት ውስጥ በአካላዊ ጤናዎትን ምክንያት በስራዎ እና በመደበኛ ተግባራት ላይ ችግር ገጥሞዎታል? የሚከተሉትን ተ.ቁ ይመልሱ?

	አዎ	አይደለም
4. ሊሰሩ ከፈለጉት በታች ሰርተዋል?	1	2
5. የመገደብ ሁኔታው እንደየ ስራው ይለያያል?	1	2

በባለፈው አራት ሳምንት ውስጥ በስሜት መጎዳት ምክንያት (ድብርት እና ጭንቀት) በስራዎ እና በመደበኛ ተግባራት ችግር ገጥምዎታል? የሚከተሉትን ተራ ቁጥር ይመልሱ

	አዎ	አይደለም
6. ሲሰሩ ሊሰሩ ከሚፈልጉት በታች ሰርተዋል?	1	2
7. ሲሰሩ እንደወትሮ አልሰሩም?	1	2

8. በባለፈው አራት ሳምንት ውስጥ የሰውነትዎ ህመም ምን ያህል በመደበኛ ስራዎት(ቤት እና ከቤት ስራ ውጭ)ተጽእኖ አሳድሮብዎታል?

ም

ምንም	በትንሹ	መጠነኛ	በጣም ትንሽ	መጥፎ/ሀይለኛ
1	2	3	4	5

የሚቀጥሉት ጥያዎች በባለፈው አራት ሳምንት ውስጥ የነበረብዎት የስሜት መጠን እና የነበሩ በአጠቃላይ ሁኔታ ይጠይቃሉ እባክዎትን ለእያንዳንዱ ጥያቄ የነበረብዎትን ስሜት ይግለጹ በባለፈው አራት ሳምንት ውስጥ ምን ያህል ጊዜ _____

	ሁሉ ጊዜ	አብዛኛው ጊዜ	በተወሰነ ጊዘ	አልፎአልፎ	በትንሽ ጊዜ	ምንም
9.መረጋጋት ወይም ሰላማዊ ስሜት ነበረብዎት?	1	2	3	4	5	6
10.በጣም ብዙ ጉልበት ነበረዎት	1	2	3	4	5	6
11.አዝነው ነበር?	1	2	3	4	5	6

12. በባለፈው አራት ሳምንት ውስጥ የእርስዎ የአካላዊ ጤና ወይም የስሜት ችግር ለጤናማ ማህበራዊ እንቅስቃሴ (ከቤተሰብ ;ከጓደኛ እና ከጎረቤት ጋር ያላቸው ትስስር ምን ያህል ተጽእኖ ፈጥሮብዎታል?

ሁሉ ጊዘ	አብዛኛው ጊዘ	በተወሰነ ጊዘ	በትንሽ	ምንም
1	2	3	4	5

<u>ኩላሊትዎን በተመለከተ</u>

የሚከተሉትን ጥያቄዎችን ለእርስዎ ምን ያህል እውነት ወይም ስህተት ናቸው?

	በእርግጥ እውነት	አብዛኛው እውነት	አላወቅም	አብዛኛው ስህተት	በእርግጥ ስህተት
13. የኩላሊት ህመም ለሂወቴ በጣም ትልቅ ተጽእኖ አለው?	1	2	3	4	5
14.አብዛኛው ጊዜየን የማጠፋው ኩላሊቴን መታመም ሳስብ ነው	1	2	3	4	5
15. ስለኩላሊት ህመም ሳስብ እፈራለሁ እጨነቃለሁ	1	2	3	4	5
16. ለቤተሰቦቼ ሸክም የሆንኩ ይሰማኛል?	1	2	3	4	5

በባለፈው አራት ሳምንት ውስጥ ከሚከተሉት በያንዳንዱ ምን ያክል ተጨንቆ ያውቃሉ?

	በጭራሽ	በተወሰነ መልኩ	በመጠኑ	በጣ መ	እጅግ በጣም
17. የጡንቻ መታመም	1	2	3	4	5
18.መሸማቀቅ	1	2	4	5	6
19. የልብ ህመም	1	2	3	4	5
20. የቆዳ ማሳከክ	1	2	3	4	5
21. የቆዳ ድርቀት	1	2	3	4	5
22. የእስትንፋስ ማጠር	1	2	3	4	5
23.የማዞር ስሜት	1	2	3	4	5
24. የምግብ ፍላጎት ማጣት	1	2	3	4	5

25.ተነሳሽነት ማጣት/አለመኖር	1	2	3	4	5
26.የእግር/እጅ የመደንዘዝ ስሜት	1	2	3	4	5
27.የማቅለሽለሽ ስሜት	1	2	3	4	5
28ᵘ·ለደም ማጣራት የሚመለከታቸው ሂመምተኞች ብቻ የአከሰስ ሳይት(መዳረሻ ቦታ ችግር አለ?	1	2	3	4	5
28ᵘ·የፐሪቶንየም ማጣራት የሚመለከታቸው ሂመምተኞች ብቻ(የ ካቴተር ማስገቢያ ላይ ችግር አለ?)	1	2	3	4	5

<u>የኩላሊትዎን ህመም በሂዎት ያስከተለው ውጤት</u>

አንዳ አንድ ሰዎች የኩላሊት ህመም በሂዎታቸው ውስጥ ሊያስከትለው በሚችል ውጤት ይጨነቃሉ አንዳንዶቹ ደግሞ አይጨነቁም የእርስዎ አስተያየት በሚከተሉት ዙሪያ የኩላሊት ህመም ምን ያህል ያስጨንቅዎታል?

	በጭራሽ	በትንሹ	በመጠኑ	በጣም	እጅግ በጣም
29. የፈሳሽ እገዳ/ገደብ	1	2	3	4	5
30. የምግብ እገዳ/ገደብ	1	2	3	4	5
31. በቢትዎ አካባቢ የመስራት አቅም መቀነስ	1	2	3	4	5
32. የመጓዝ ችሎታዎ	1	2	3	4	5
33. በዶክተር እና በሊሎቸ ጤና ባለሞያዎች ጥገኛ የመሆን	1	2	3	4	5
34. በኩላሊትዎ ህመም የመጣ ጭንቀት	1	2	3	4	5
35. የግበረ ስጋ ግንኙነት	1	2	3	4	5
36. የሰውነትዎ አቋም	1	2	3	4	5

ለጥያቄዎቹ ምላሽ በመስጠትዎ እናመሰግናለን