

**EFFECTS OF CORONAVIRUS DISEASE 2019 PANDEMIC ON THE  
QUALITY OF LIFE OF PATIENTS ON HEMODIALYSIS AT THE RENAL  
UNIT OF KENYATTA NATIONAL HOSPITAL AND THEIR COPING  
STRATEGIES**

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REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF  
SCIENCE IN NURSING (RENAL NURSING) OF THE UNIVERSITY OF  
NAIROBI**

**NOVEMBER, 2021**

## DECLARATION

This dissertation is my original work and has not been presented in any other institution for examination purposes.

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## CERTIFICATE OF APPROVAL

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## **DEDICATION**

I dedicate this dissertation to my dear parents Mr. and Mrs. Nyakundi, my loving husband Mr. Dennis and our children Liam and Valora for their love, sacrifice and support.

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## **ABBREVIATIONS AND ACRONYMS**

<b>AKI</b>	Acute Kidney Injury
<b>CI</b>	Confidence Interval
<b>CKD</b>	Chronic Kidney Disease
<b>COVID-19</b>	Coronavirus Disease 2019
<b>CVD</b>	Cardiovascular Disease
<b>DALYs</b>	Disability-Adjusted Life Years
<b>ERC</b>	Ethics and Research Committee
<b>ESKD</b>	End-Stage Kidney Disease
<b>FGDs</b>	Focus Group Discussions
<b>HD</b>	Hemodialysis
<b>HRQoL</b>	Health-Related Quality of Life
<b>KNH</b>	Kenyatta National Hospital
<b>KRT</b>	Kidney Replacement Therapy
<b>MERS</b>	Middle East Respiratory Syndrome
<b>MoH</b>	Ministry of Health
<b>PD</b>	Peritoneal Dialysis
<b>QoL</b>	Quality of life
<b>SARS</b>	Severe Acute Respiratory Syndrome
<b>SARS-CoV-2</b>	Severe Acute Respiratory Syndrome Coronavirus 2
<b>SPSS</b>	Statistical Package for Social Sciences
<b>WHO</b>	World Health Organization

## OPERATIONAL DEFINITIONS

**Coping strategy:** These refer to ways employed by hemodialysis patients when they experience different challenges during the coronavirus disease 2019 (COVID-19) pandemic.

**COVID-19:** The name of the illness caused by the coronavirus SARS-CoV-2.

**Effects of coronavirus Disease 2019 Pandemic:** This is how coronavirus disease 2019 (COVID-19) pandemic has influenced the quality of life of hemodialysis patients in different ways, for example, the patient's physical health, psychological status and socioeconomic status.

**Hemodialysis Patients:** Persons with end-stage kidney disease being treated using the hemodialysis mode of kidney replacement therapy.

**Renal patients:** These are recipients of health care who have kidney insufficiency and most of them are on renal replacement therapy like hemodialysis.

**Renal Unit:** This is the department in a health care institution that caters for patients who have kidney disease including ESKD hence requiring hemodialysis.

**Quality of life domains:** Are important aspects of human life used to measure or indicate a person's general well-being and that include physical health, psychological/mental status, socio-economic status and social interactions status.

## ABSTRACT

**Background:** End-stage kidney disease is the final stage of chronic kidney disease marked by the total and permanent loss of kidney function, with hemodialysis being the most widely used treatment. Hemodialysis patients have increased risk of severe coronavirus disease 2019 (COVID-19) infection and its related effects. It was imperative therefore that the effects of COVID-19 pandemic on the quality of life (QoL) of hemodialysis patients were investigated to inform necessary interventions.

**Objective:** To determine the effects of COVID-19 pandemic on the QoL of patients on hemodialysis at the renal unit of KNH and their coping strategies.

**Methodology:** This study utilized a descriptive cross-sectional study design. The study site was KNH renal unit. The study population was 120 hemodialysis patients at KNH renal unit. A study sample of 91 hemodialysis patients was selected using simple random sampling technique. A researcher-administered questionnaire containing close-ended questions based on the research objectives was the study tool. The study tool was pre-tested at the Moi Teaching and Referral Hospital, Eldoret using 10% of the study sample. The study data was analyzed with descriptive statistics such as means, percentages and frequencies using SPSS version 26. Findings were presented in tables. Association between the study variables was estimated using Pearson's multivariate correlation analysis at 95% confidence interval. Ethical principles of information confidentiality, anonymity in data reporting, voluntary participation and appropriate ethical approvals were observed.

**Results:** Physical health aspects adversely affected by the COVID-19 pandemic were performance of activities of daily living (mean = 3.33); leisure activities (mean = 3.07) and mobility and capacity to work (mean = 2.93). Some of the adverse psychological effects of COVID-19 pandemic on the respondents included fear of health deterioration (mean = 3.54); feeling mentally distressed and/or anxious (mean = 2.59) and fear of contracting COVID-19 (mean = 3.93). Some of the adverse socio-economic effects of COVID-19 pandemic on the respondents were greater financial difficulties in their jobs (mean = 4.24); struggle to meet the costs of treatment (mean = 3.64) and rising costs of living which made life much more difficult (mean = 4.20). Coping strategies adopted by the patients included adhering to issued COVID-19 pandemic prevention guidelines - 100% and seeking social and emotional support from family and friends - 84.2%. A statistically significant negative association was also established between COVID-19 pandemic effects and the physical health status ( $r = -0.469$ ,  $p = 0.029$ ), psychological wellbeing ( $r = -0.612$ ,  $p = 0.018$ ) and socio-economic status ( $r = -0.671$ ,  $p = 0.000$ ) of the respondents.

**Conclusion:** Patients on hemodialysis undergoing treatment at KNH's renal unit did experience various physical, psychological and socio-economic effects of COVID-19 pandemic which adversely affected their QoL.

**Recommendations:** There is need for awareness creation among patients on hemodialysis at KNH's renal unit on the need for continued vigilance against the prevailing COVID-19 pandemic through strict observance of Ministry of Health guidelines on COVID-19 prevention.

## **CHAPTER ONE: INTRODUCTION**

### **1.1 Introduction**

This chapter discusses the background of the study, problem statement, justification of the study, research questions and study objectives, study hypotheses and significance of the study.

### **1.2 Background of the Study**

#### **1.2.1 An Overview of Chronic Kidney Disease and Its Management**

Chronic kidney disease (CKD), marked by a progressive loss in kidney function over time, remains a major global public health issue in light of the fact that it is an important contributor to morbidity and mortality from non-communicable diseases in both developed and developing countries (Carney, 2020). End-Stage Kidney Disease (ESKD) represents the most advanced stage of CKD which is characterized by the total and permanent loss of kidney function requiring treatment with a kidney transplant or hemodialysis (Bikbov et al., 2020). As such, ESKD is the irreversible and progressive kidney failure where the body fails to maintain metabolic and electrolytic balance, resulting in uremia, metabolic acidosis, anemia, electrolyte imbalances and endocrine disorders (Ortiz, 2019). It is primarily diagnosed with blood and urine tests with a glomerular filtration rate (GFR) of 15 or less denoting kidney failure or ESKD. CKD becomes even more dangerous given that it is often asymptomatic and is associated with significantly elevated risks of cardiovascular disease and stroke (Ammirati, 2020).

Latest statistics from the World Health Organization (WHO) on the global burden of chronic kidney disease indicate that an estimated 1.2 million people died from CKD in 2019 worldwide. In addition, 7.6% of all cardiovascular disease (CVD) deaths (about 1.4 million) could be attributed to impaired kidney function. Together, deaths due to CKD or to CKD-attributable CVD accounted for 4.6% of all-cause mortality worldwide in 2019. The statistics also indicate that there has been a significant increase in all-age mortality rate from CKD of 41.5% between 1990 and 2019 with the current global prevalence rate of CKD standing at 9.1% (at 9.5% for women and girls and at 7.3% for men and boys). Further, chronic kidney disease resulted in 35.8 million disability-adjusted life years (DALYs) in 2019 with an additional 25.3 million CVD DALYs also attributed to ESKD in the year with diabetic nephropathy accounting for almost a third

of these CKD DALYs. Most of the burden of CKD is concentrated in low income index countries with CKD burden being particularly high in Oceania, sub-Saharan Africa and Latin America while being lower in South and East Asia, Europe and Australasia (WHO, 2020).

When CKD patients get to the ESKD stage, the need for kidney replacement therapy (KRT) becomes inevitable. Available KRT options include hemodialysis (HD), peritoneal dialysis (PD) and kidney transplant (Surendra et al., 2019). Globally, around three million ESKD patients are currently receiving KRT, and this number is expected to increase to between 5 and 10 million by 2030, with the ongoing epidemics of obesity, diabetes, and hypertension likely to aggravate this problem (Bikbov et al., 2020). Hemodialysis is the most prevalent type of KRT around the world accounting for 82% with PD and kidney transplant accounting for the remaining 18% (Cockwell & Fisher, 2020). However, although the KRTs are available in most countries, frequently most of the vulnerable populations, particularly in low income settings, have no access to the treatment due to its affordability, in turn leading to numerous premature deaths across the world (Thurlow et al., 2021).

### **1.2.2 An Overview of Coronavirus Disease 2019 Pandemic**

The coronavirus disease 2019 (COVID-19) pandemic caused by the novel coronavirus 2 (SARS-CoV-2) is a rapidly evolving health condition that has caused worldwide concern as it threatens global human health and public safety (Wang et al., 2020). The disease is a highly transmissible and pathogenic coronavirus that emerged in late 2019 in Wuhan China and now has become a global pandemic. It has overwhelmingly surpassed earlier reported respiratory syndromes including SARS and MERS in terms of both the number of infected people and mortality and continues to pose an extraordinary threat to global public health (He, Deng & Li, 2020).

Latest WHO statistics on COVID-19 pandemic indicate that, as of 15th June 2021, total number of cases was 176.8 million, total deaths were 3.82 million and total recoveries were 160.9 million worldwide. Globally, as of 15<sup>th</sup> June 2021, countries with the highest numbers of COVID-19 cases included United States (34.3 million), India (29.5 million), Brazil (17.4 million), France (5.74 million) and Turkey (5.33 million), with



United States, Brazil and India also having the highest number of COVID-19 deaths, though countries like Mexico, Peru, Italy, United Kingdom and Russia have also reported a high COVID-19 death toll (WHO, 2021). Similarly, as of 15<sup>th</sup> June 2021, Africa has had 5.09 million total cases with 135,083 million total deaths and an estimated 4.55 million total recoveries with South Africa (1.75 million), Morocco (523,890) and Tunisia (368,908) leading with number of reported cases (WHO, 2021). Kenya, as of 15<sup>th</sup> June 2021, has had a total of 175,337 COVID-19 cases with 3,410 total deaths and 120,208 total recoveries (MoH, 2021). An estimated 2.4 billion COVID-19 vaccine doses have been administered globally, as of 15<sup>th</sup> June 2021, with 12.7% of the world population having received at least one dose of a COVID-19 vaccine, although only about 0.8% of people in low-income countries have received at least one dose (WHO, 2021).

SARS-CoV-2 is spread primarily via respiratory droplets during close face-to-face contact. The infection can be spread by asymptomatic, pre-symptomatic, and symptomatic carriers. The average time from exposure to symptom onset is 5 days, and 97.5% of people who develop symptoms do so within 11-14 days (Tang et al., 2020). The most common symptoms are fever, cough, sore throat, fatigue and shortness of breath. Treatment for individuals with COVID-19 includes best practices for the supportive management of acute hypoxic respiratory failure (Rabi et al., 2020). Since December 2020, effective vaccines have become available although the primary methods to reduce the spread of the infection/disease are face masks, hand-washing (or sanitizing), social distancing and contact tracing (Chatterjee et al., 2020).

### **1.2.3 Effects of COVID-19 Pandemic on Health Services and Systems**

The ongoing COVID-19 pandemic presents a clear threat to health services and systems across the globe. As countries, world over, ramp up efforts to curb the COVID-19 pandemic, the magnitude of the impact the pandemic has had, and still has, on health services and systems is beginning to unfold (Rocha et al., 2021). There is strong evidence that COVID-19 pandemic has significantly contributed to a decline in uptake of various essential health services including utilization of hemodialysis services among ESKD patients across the globe largely due to its disruption of routine health care services (Rabb, 2020). Emerging evidence suggests that, in the wake of the 2<sup>nd</sup>

and 3rd waves of COVID-19 pandemic, a significant proportion of patients including those with chronic non-communicable diseases such as CKD continue to miss out on critical care services during the COVID-19 pandemic due to COVID-19 related movement restrictions, fear of contracting the infection and hospitals' diversion of resources and personnel to management of COVID-19 patients (Trivedi, 2021). Hence, unless urgent action is taken, the COVID-19 pandemic may invariably dent utilization of routine and essential health care services for the long term (Singh et al., 2021).

Consequently, it is important for governments and their partners, world over, to ensure critical health care services such as continued administration of KRTs to ESKD patients continue to receive the attention they deserve even amidst the fight against the COVID-19 pandemic (Bruchfeld, 2020). This is particularly crucial in low resource countries where the need to meet the demands of COVID-19 pandemic management while simultaneously ensuring the continued provision of essential health care services is a daunting task (Lai et al., 2020). There is need therefore for health authorities and institutions around the world to prioritize appropriate management of existing health care services and structures, while also strengthening the capacity of health systems now and in the future to ensure that they not only withstand the effects of pandemics such as COVID-19 but also continue to effectively function regardless of emerging challenges (Trivedi, 2021).

#### **1.2.4 Effects of COVID-19 Pandemic on Hemodialysis Patients**

Emerging evidence indicates that the ongoing COVID-19 pandemic has had significant adverse effects on different aspects of life of patients on hemodialysis across the globe largely due to its associated health care services disruptions (McMahon et al., 2020). For instance, reviews by Bruchfeld (2020) and Trivedi (2021) showed that there was a significant drop in the number of ESKD patients presenting for the weekly hemodialysis sessions during the COVID-19 pandemic period compared to the pre COVID-19 pandemic period. This was attributed to the patients' fear of contracting the COVID-19 infection as well as to COVID-19 related movement restrictions. Similarly, in a review on effects of COVID-19 on hemodialysis patients, it was established that a significant proportion of ESKD patients continued to miss out on medication refills and scheduled hemodialysis sessions appointments during the COVID-19 pandemic largely

due to COVID-19 related movement restrictions, their fear of contracting the infection and shift of health care workers' attention to COVID-19 patients (Kocak et al., 2021). Similar observations were made by Li et al. (2020) who pointed that the ongoing COVID-19 pandemic had invariably affected utilization of hemodialysis services among ESKD patients in China due to COVID-19 pandemic related lockdowns, movement restrictions and general fear of contracting the infection among the ESKD patients.

On the physical health domain, reviews by Diao et al. (2020), Li et al. (2020) and Antoun et al. (2021) reported that the physical health status of hemodialysis patients was poorer during the COVID-pandemic period compared to the pre COVID-19 pandemic period. This was attributed to the patients' inability to engage in physical exercises due to COVID-19 related lockdowns and outdoor activities restrictions. Similarly, reviews by Lee et al. (2020), Rabb (2020), Ikizler and Kliger (2020) and Sousa et al. (2021) reported that COVID-19 pandemic occasioned adverse psychological effects on hemodialysis patients evidenced by an upsurge in reported/identified cases of depression, anxiety, mental distress, fear, stress levels, irritability and feelings of helplessness and social isolation among surveyed ESKD patients. Further, COVID-19 pandemic has also occasioned adverse socio-economic effects on the HD patients' lives such as loss of livelihoods, diminished family incomes and deteriorating family financial position as reported in reviews by Apata et al. (2021), Kocak et al. (2021) and Rocha et al. (2021).

### **1.3 Statement of the Problem**

Hemodialysis patients are a special group of patients because they make the larger group of patients on KRT, they attend dialysis sessions twice or thrice weekly and they have a compromised immune response which puts them at an increased risk of contracting COVID-19. This may in turn put their health and life in danger especially in light of CKD's association with other comorbidities and more so the increased risk of cardiovascular disease (Diao et al., 2020). Chronic kidney disease is a major public health problem in Kenya. Ministry of Health's statistics indicate that an estimated 4 million Kenyans have CKD with a significant proportion of this population progressing to kidney failure. Out of these, about 10,000 CKD patients have end stage kidney

disease and require dialysis, yet only 10% of those who need dialysis are able to access the services (MoH, 2021).

Statistics from KNH's Renal Unit indicated that the level of utilization of scheduled hemodialysis services among ESKD patients had dropped by 25% during the COVID-19 pandemic period compared to the pre COVID-19 period. The records further indicated that the incidence of missed hemodialysis sessions, during the COVID-19 pandemic period, had increased among ESKD patients seen at the Unit possibly due to COVID-19 related lockdowns and movement restrictions in the country, notwithstanding the provision for sick persons to access treatment even with the imposed movement restrictions. The statistics also indicated an increase in reported Acute Kidney Injury (AKI) cases in ESKD patients during the COVID-19 pandemic period attributed to COVID-19 infection (KNH Renal Unit Records, 2021). This raised serious concerns as ESKD patients' survival and QoL largely depended on their adherence of prescribed KRT. Consequently, this study sought to investigate the effects of COVID-19 pandemic on the QoL and coping strategies among hemodialysis patients at the Renal Unit of Kenyatta National Hospital.

#### **1.4 Justification of the Study**

This study sought to contribute to knowledge on the effects of COVID-19 pandemic on hemodialysis patients at KNH and their coping strategies. This was by investigating the effects of COVID-19 pandemic on the QoL of patients on hemodialysis at the renal unit of KNH and their coping strategies. This was in appreciation of the fact that end-stage kidney disease patients belonged to the high risk category of persons likely to suffer severe coronavirus disease owing to their compromised immune system, which in turn increased their risk of morbidity and mortality. It was also in appreciation that any barriers to access of needed health care among the hemodialysis patients attributable to COVID-19 related lockdowns and movement restrictions put into jeopardy the survival and QoL of these patients. Further, it was in recognition of the fact that the on-going COVID-19 pandemic exerted a heavy burden on the country's economic and health system and on the individual hemodialysis patients and their families, impeding their access to needed care, which in itself adversely impacted these patients' care outcomes. It is hoped that the findings of this study could inform the development of necessary

policies and interventions to enhance the QoL of hemodialysis patients attending KNH's Renal Unit during the COVID-19 pandemic era.

### **1.5 Research Questions**

1. What were the physical effects of COVID-19 pandemic on the QoL of patients on hemodialysis in the renal unit of Kenyatta National Hospital?
2. What were the psychological effects of COVID-19 pandemic on the QoL of hemodialysis patients in the renal unit of Kenyatta National Hospital?
3. What were the socio-economic effects of COVID-19 pandemic on the QoL of hemodialysis patients in the renal unit of Kenyatta National Hospital?
4. What coping strategies were employed by patients on hemodialysis at the renal unit of Kenyatta National Hospital against the effects COVID-19 pandemic on their QoL?

### **1.6 Objectives of the Study**

#### **1.6.1 Broad Objective**

To determine the effects of COVID-19 pandemic on the QoL of patients on hemodialysis at the renal unit of Kenyatta National Hospital and their coping strategies

#### **1.6.2 Specific Objectives**

1. To establish the physical effects of COVID-19 pandemic on the QoL of patients on hemodialysis at the renal unit of Kenyatta National Hospital.
2. To determine the psychological effects of COVID-19 pandemic on the QoL of patients on hemodialysis at the renal unit of Kenyatta National Hospital.
3. To identify the socio-economic effects of COVID-19 pandemic on the QoL of patients on hemodialysis at the renal unit of Kenyatta National Hospital.
4. To establish the coping strategies employed by patients on hemodialysis at the renal unit of Kenyatta National Hospital against effects of COVID-19 pandemic on their QoL.

### **1.7 Research Hypotheses**

- H<sub>01</sub> COVID-19 pandemic did not affect the QoL of patients on hemodialysis at the renal unit of Kenyatta National Hospital.
- H<sub>02</sub> Hemodialysis patients in Kenyatta National Hospital had no coping strategies against effects of COVID-19 pandemic on their QoL.

### **1.8 Significance of the Study**

The findings from this study could go a long way in informing policy reforms in KNH concerning care for hemodialysis patients and especially on how best the hospital may support the patients to enhance their QoL during similar pandemics. The study findings are also beneficial to the patients and the public at large in understanding the surrounding environment of the patients during the pandemic and the best coping strategies patients can employ to reduce the negative effects of COVID-19. In addition, the study findings will contribute to the existing literature on patients under hemodialysis in Kenya and how COVID-19 had impacted on them, as such providing a reference point for future researchers with an interest on similar study area/subject.

## 1.9 Conceptual Framework

### Independent variables

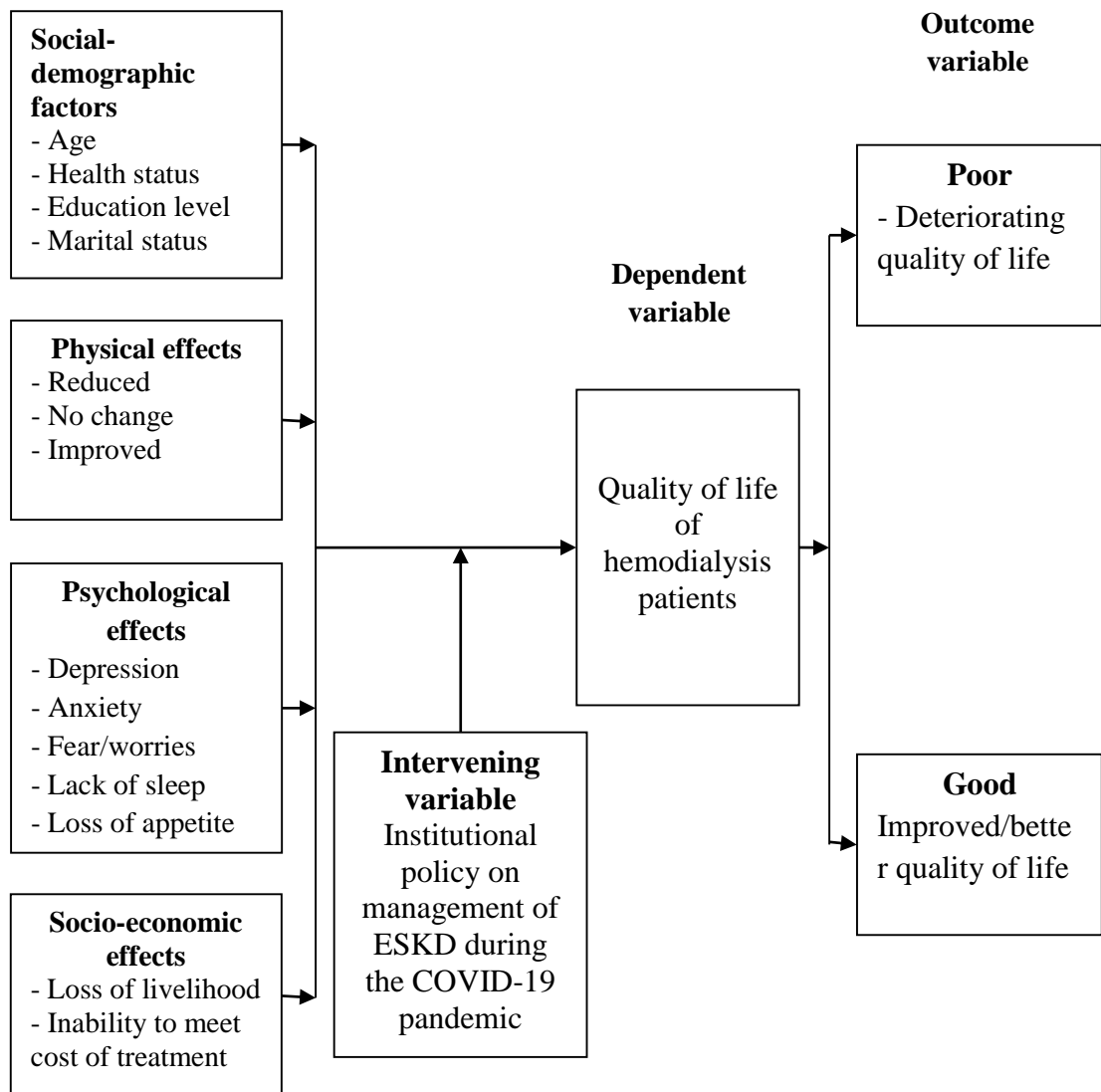


Figure 1.1: Conceptual framework

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

This chapter discusses literature review on both the theoretical and empirical aspects that related to the effects of COVID-19 and the coping strategies that hemodialysis patients used during the COVID-19 pandemic as guided by the objectives of the study. The chapter also highlights gaps in reviewed empirical literature and ends with the study's conceptual framework.

### **2.2 Hemodialysis Patients' Social-Demographic Factors and COVID-19 Pandemic**

A cross-sectional survey study carried out in the Kingdom of Saudi Arabia evaluated the QoL of hemodialysis patients during COVID-19 pandemic. As part of its objectives, the study sought to determine the social-demographic attributes of surveyed hemodialysis patients and their COVID-19 status. According to the study, the social-demographic factors positively associated with an increased risk of contracting COVID-19 were increasing age and pre-existing health conditions. In the study, the odds of COVID-19 infection were found to be 2.3 times higher among older hemodialysis patients (those aged 70 years and above) compared to in younger hemodialysis patients. Similarly, the odds of infection with COVID-19 were significantly higher among CKD patients with other comorbidities such as diabetes and hypertension (Algahtani et al., 2021).

In the United States, Apata (2021) did a study to evaluate COVID-19 infection control measures and outcomes in urban dialysis centers serving predominantly African-American communities. The study participants were CKD patients on hemodialysis treatment attending the selected urban dialysis centers. The participants were selected using purposive sampling and data was gathered using interviewer-administered questionnaires. Descriptive statistics and odds ratios at 95% confidence interval were applied in analyzing the data. The findings illustrated that increased risk of infection with COVID-19 positively correlated with being male, being aged 60 years and above, having other underlying health conditions (such as chronic respiratory disease, heart disease and hypertension) in addition to CKD as well as being African-American in itself. The study's findings also revealed that having other comorbidities and being elderly (aged 60 years & above) also positively correlated with increased risk of severe



COVID-19 disease. The study concluded that special focus should be given to the high risk groups such as the elderly and those with underlying health conditions.

In another study, Farouk, Fiaccadori, Cravedi and Campbell (2020) explored the link between COVID-19 and kidney illness with a view of establishing characteristics of CKD patients that predisposed them to get infected with COVID-19. Using simple random sampling techniques, a sample of 130 CKD patients on hemodialysis were selected for the study. Questionnaire-based interviews were held and the obtained data was analyzed using both descriptive and inferential statistics. It was clear from the findings of the study that gender, age, socio-economic background and health condition were all significant determinants of the risk of contracting COVID-19 among the surveyed hemodialysis patients. According to the study, the odds of getting infected with COVID-19 were significantly higher among male CKD patients, CKD patients aged 60 years and above, CKD patients with other underlying health conditions as well as among CKD patients who came from low socio-economic backgrounds.

A study performed in Spain explored the COVID-19 clinical course and outcomes of 36 hemodialysis patients. The study adopted a cross-sectional descriptive design with the study site being a local district hospital in Madrid. The 36 participants were purposively selected and interviewed using focus group discussions (FGDs) regarding their experiences with COVID-19. The observations made in the study were that the hemodialysis patients' age, health status and socio-economic status had a relationship with the severity of experienced COVID-19 illness. The results showed that hemodialysis patients aged 60 years and above had a 2.5 times higher odd of experiencing severe COVID-19 illness compared to those aged below 50 years. Similarly, hemodialysis patients with other comorbidities, particularly those with diabetes, chronic heart illness and chronic lung disease had a 4 times higher likelihood of experiencing severe COVID-19 disease compared to those CKD patients without other comorbid conditions. A 1.3 times higher odd for severe COVID-19 illness was also noted in hemodialysis patients from economically disadvantages populations (Goicoechea et al., 2020).

In a study done on minimizing the risk of COVID-19 among patients on dialysis in United Kingdom, similar observations as to the association of demographic attributes of hemodialysis patients and COVID-19 were made. In the study a positive and significant association was established between COVID-19 and the following demographic characteristics of the surveyed dialysis patients: increasing age, having other underlying health conditions apart from CKD and not having a health insurance (Ikizler & Kligler, 2020). Similarly, in a study carried out in Turkey focusing on COVID-19 in hemodialysis patients, higher odds of risk of infection with COVID-19 were seen in hemodialysis patients aged 65 years and above, those with other health conditions apart from CKD, those who came from low socio-economic backgrounds and among male CKD patients pointing to the significance of socio-demographic factors in relation to risk of COVID-19 among patients undergoing hemodialysis (Kocak, Kayalar, Karaosmanoglu & Yilmaz, 2021).

### **2.3 Effects of COVID-19 Pandemic on Physical Health of Hemodialysis Patients**

Physical health forms a critical component of the well-being of hemodialysis patients. Thus, being able to engage in physical activities is a marker of the QoL of CKD patients undergoing hemodialysis or other forms of KRTs (Kim et al., 2019). As such, chronic kidney disease patients are encouraged to engage in physical activities during their normal daily living. However, the intensity of physical activities should be moderated based on the patients' progress with treatment and their general physical well-being (Novick et al., 2020). It is generally acknowledged that engaging in physical exercises or activities is beneficial to CKD patients under dialysis as it helps them control weight gain, it strengthens their muscles and bones and helps improve their energy levels (Lee, Hwang & Huang, 2020).

An empirical study carried out in China explored the impact of COVID-19 pandemic on the well-being of patients with end-stage kidney disease. As part of its objectives, the study sought to shed light on the impact of COVID-19 pandemic on the physical health of the end-stage kidney disease patients. Data was collected using interviewer-administered questionnaires and analyzed both descriptively and using chi-square test statistic at 95% CI. The key finding of the study was that there was reduced physical activity level among most (70%) of the ESKD patients during the COVID-19 period

compared to their physical activity level in the pre COVID-19 period. As a consequence of the reduced physical activity level during the COVID-19 period, most of the ESKD patients acknowledged experiencing low energy levels and tiring quickly than before. The study underlined the view that COVID-19 pandemic had adverse effects on the physical health of CKD patients under hemodialysis in the country (Li et al., 2020).

Similarly, in another study carried out in China, Ma et al. (2020) looked at the effects of COVID-19 pandemic in hemodialysis patients. One of the study's focuses was to review how COVID-19 pandemic affected the physical health of Chinese patients undergoing hemodialysis. According to the study findings, there was unanimity among majority of the hemodialysis patients that COVID-19 pandemic adversely affected their physical health. The study reported that due to strict COVID-19 restrictions on movement and outdoor physical activities, most of the hemodialysis patients experienced increased difficulties in performing basic physical activities such as lengthy walks, lifting objects, going up stairs and participating in physical sports, attributed to low energy levels and fatigue. The study concluded that COVID-19 pandemic adversely impacted the physical health of the surveyed hemodialysis patients.

A study carried out in India evaluated the impact of COVID-19 pandemic on the well-being of chronic kidney disease patients who were undergoing hemodialysis. One of the well-being domains evaluated was the physical health status of the recruited hemodialysis patients prior to and during the COVID-19 pandemic. To evaluate the impact of COVID-19 pandemic on the participants' physical health status, the participants were queried on their level of physical activity prior to and during the COVID-19 pandemic. From the findings, majority of the participants acknowledged that their current level of physical activity (that is, during the COVID-19 pandemic) was notably lower compared to their physical activity level prior to the pandemic. The study established that many of the participants experienced increased difficulties in performing routine physical activities during the COVID-19 pandemic than they were prior to the emergence of the COVID-19 pandemic (Trivedi et al., 2020).

A study carried out in United Kingdom investigated how COVID-19 pandemic associated restrictions and increased shift to use of telemedicine in the care of CKD patients impacted the patients' physical activity index in the country. Study data was collected via telephone interviews conducted among 20 adult CKD patients on hemodialysis. The data was transcribed into narrative form and, thereafter analyzed in relevant themes using conceptual content analysis method. The study established that the physical activity level of the surveyed ESKD patients was significantly hindered by the COVID-19 pandemic associated restrictions. The study thus called for more proactive care of end-stage kidney disease patients during the pandemic, and advocated for increases of appropriate physical activity resources for this cohort (Antoun et al., 2021).

Similarly, a study carried out in Portugal explored the impacts of COVID-19 pandemic on non-COVID-19 ESKD patients undergoing hemodialysis. The study adopted a mixed-methods study design with the study participants selected from a single dialysis centre in the country. Qualitative data was obtained via semi-structured interviews performed among 20 CKD patients undergoing dialysis sessions in the selected dialysis centre while quantitative data was sought from their medical records. Findings from thematic analysis suggested several negative impacts of COVID-19 pandemic on treatment-related health behaviors which included increased difficulties in managing dietary restrictions during the lockdown and diminished physical activity level. The study concluded that there was need for measures to mitigate the undesirable effects of the COVID-19 pandemic on the ESKD's physical health (Sousa et al., 2021).

#### **2.4 Psychological Effects of COVID-19 Pandemic on Hemodialysis Patients' QoL**

Depression and anxiety are major emotional reactions that affect how hemodialysis patients cope with treatment and even the disease itself. Existing evidence suggests that about 40.2% of patients undergoing HD have experienced depression and/or anxiety and which is associated with poor treatment compliance, increased risk of suicide and lower QoL (Kim & Kim, 2019). During the pandemics, more attention is given on the pathogen by scientists and healthcare professionals and the secondary effects of the pandemic like on human psychiatry tend to be neglected (Ornell et al., 2020) and from history, epidemics and disease outbreaks have caused mental illnesses for example the

patients that were isolated during the MERS outbreak experienced high levels of stress (Kim et al., 2019). In a study done in the western part of Pennsylvania and Mexico by (Lee et al., 2020) showed that patients experienced anxiety, depression and poor sleep and 81.7% acknowledged being moderately to extremely worried about the COVID-19 effect on emotions and interpersonal relationships (Lee et al., 2020).

In a mixed-methods study done in United States, Sousa et al. (2021) explored the experiences of hemodialysis patients during the COVID-19 pandemic. According to the findings, 75% of the hemodialysis patients acknowledged experiencing mental distress and anxiety attributable to concerns over their ability to continually access care during the COVID-19 pandemic due to imposed movement restrictions. Other participants also indicated that they felt depressed due to fears of contracting the COVID-19 virus and were anxious as they lacked adequate information regarding the overall long-term consequences of the COVID-19 pandemic. In addition to that the patients acknowledged that news about the high death toll attributable to the COVID-19 pandemic increased their anxiety and worry levels.

A study done in United States assessed the effects of COVID-19 pandemic on the psychosocial health of HD patients in a local dialysis center. Study respondents were recruited using multilevel sampling methods with the key data collected being the psychological health during the COVID-19 pandemic. Results of the study showed that close to 80% of the participants reported being moderately to extremely-worried about COVID-19 pandemic's effects on their mental/emotional health and on their interpersonal relationships. Over 85% were scared of going for dialysis treatments due to risk of contracting COVID-19. Overall, 27% of the participants had clinical levels of depressive symptoms while 12% met the clinical threshold for anxiety. About 33% reported poor sleep quality over the last month and 85% felt overwhelmed by difficulties occasioned by the COVID-19 pandemic. As such, COVID-19 pandemic was perceived as adversely impacting on the psychological health of the hemodialysis patients in United States (Lee, Steel et al., 2020).

A study conducted in Netherlands investigated the mental health of dialysis patients prior to and during the COVID-19 pandemic. Patients undergoing hemodialysis who filled in a health-related quality of life (HRQoL) questionnaire during the pandemic and six to three months prior were included. A McNemar test was used to compare presence of mental health-related symptoms prior to and during the COVID-19 pandemic.

Analysis of the data was done using multiple linear regression. The study observed no differences in the presence of the following mental health-related symptoms between prior to and during the COVID-19 pandemic period: feeling anxious, feeling sad, worrying, feeling nervous, trouble falling asleep, and trouble staying asleep. The study concluded that the mental health of dialysis patients appeared to be unaffected by the COVID-19 pandemic (Bonenkamp et al., 2021).

Bhattacharjee and Acharya (2020) investigated the psychological effects of COVID-19 pandemic on the mental health of ESKD patients in United States. According to the study, the psychological challenges experienced by ESKD patients in United States during the COVID-19 pandemic period were depression, distress, anxiety and emotional strain. The causes of these psychological difficulties during the COVID-19 pandemic included movement restrictions, inability to strictly follow prescribed medical regimen, worries about potential contracting of the COVID-19 virus, as well as concerns over potential effects of COVID-19 infections on their other comorbidities. Other causes of the psychological problems experienced during the COVID-19 pandemic by the ESKD patients were worries over loss of livelihood and worries over disrupted close social networks.

In a study performed in United Kingdom, a review of mechanisms to minimize the risk of COVID-19 infection among hemodialysis patients was conducted. The study also sought to establish the psychological experiences of the country's hemodialysis patients during the COVID-19 pandemic. The study utilized qualitative data collection and analysis methods. The study established that majority of the surveyed chronic kidney disease patients undergoing hemodialysis therapy did experience psychosocial challenges in the form of depression, mental distress and anxiety. This was as a result of concerns over effects of COVID-19 pandemic on their health condition, fears about

inability to access dialysis centres due to COVID-19 pandemic related mobility restrictions and concerns over loss of jobs owing to the economic effects of COVID-19 pandemic. The study therefore concluded that COVID-19 pandemic occasioned a wide range of psychological challenges among kidney disease patients undergoing through dialysis treatment in United Kingdom (Ikizler & Klinger, 2020).

Rabb (2020) undertook a study focusing on major challenges to patient care for kidney disease patients during the COVID-19 pandemic. Data collection involved use of questionnaire-based interviews and was analyzed thematically using qualitative data analysis methods. Findings from the study revealed that the psychological challenges experienced by the kidney disease patients during the COVID-19 pandemic included mood swings, emotional ups and downs, anxiety and mental distress owing to the fear of contracting the COVID-19 infection and its potential effects on the patients' health status. Requirements for social isolation and mobility restrictions were also sources of the patients' mental distress. The study concluded that more needed to be done to address the often neglected component of psychological wellbeing among the kidney disease patients at this time of COVID-19 pandemic.

## **2.5 Socio-Economic Effects of COVID-19 Pandemic on Hemodialysis Patients' Quality of Life**

About 1 billion people in the low- and middle-income countries can't afford and utilize health services (Gordon, Booyesen & Mbonigaba, 2020) and hemodialysis patients and their families are not spared either, they face economic burden and their monthly income isn't enough to cover all the hemodialysis expenses (Kassa et al., 2020). The low social economic status is a barrier to healthful eating and the patients face food insecurity with limited access to foods that are nutritious and affordable (Crews et al., 2019). A study done in Brazil indicated that patterns of social-economic vulnerability caused more COVID-19 deaths than age and existing chronic diseases (Rocha et al., 2021).

Increases in access to dialysis in Africa is unaffordable for the countries that want sustainable benefit packages (Crosby et al., 2020) and in South Africa, HD costs are higher compared to PD costs and that is because of the frequency of dialysis sessions,

the cost of purchasing the HD solutions and also the cost of maintaining the dialysis equipment (Makhele et al., 2019). Kenya is a lower middle income country, but unlike other countries that have the same social-economic development, all the KRT are available but the costs are slightly high where the cost of hemodialysis is approximately Int\$ 16,845.10 and the cost of PD is Int\$ 12,633.83 (Mushi et al., 2015)

COVID-19 pandemic has increased patient worries especially fear of infecting themselves and/or their loved ones and other insecurities like housing and food because of the economic effect of the pandemic. The lockdown has caused tremendous losses to the economy and contributed to widespread loss of employment although the intention of the lock down was to minimize the spread of the disease (Lee et al., 2020; Bhattacharjee & Acharya, 2020). The pandemic has also brought positive changes, for example, the patients are spending more time with their families and neighbors and they are also adopting different health behaviors like hand washing, limiting alcohol and smoking, becoming more religious, often eating at home and not taking things for granted (Lee et al., 2020).

The Wuhan Health Commission reported that COVID-19 is a disease that involves human to human transmission (Du Toit, 2020) but the disease can be limited if the public health response strategies are put in place early and this involves strengthening infection control programs especially in the low and middle income countries even through media partnerships to prevent societal fear (Hopman et al., 2020)

The measures therefore include use of hand sanitizers, use of face masks and patients maintaining a distance of 6 feet apart from each other (Ikizler & Kliger, 2020). A simple triple layered surgical mask is effective in reducing the transmission of COVID-19 by preventing respiratory droplets (Trivedi et al., 2020). In addition to that, other infection control strategies are, improving the uptake of influenza vaccine, pneumococcal and COVID-19 vaccines (Apata et al., 2021). During the COVID-19 pandemic, there have been resource shortages even to the world's wealthiest countries and that includes shortages of ventilators and personal protective equipment and this has affected hemodialysis patients too. Kenya therefore blocked export of all the face masks (McMahon et al., 2020).



## **2.6 Gaps in Literature Review**

The above reviewed empirical studies pointed to a general consensus that several social demographic factors that included increasing age/being elderly, having other underlying health conditions apart from ESKD, hailing from poor socio-economic background and being male were positively associated with increased risk of COVID-19 infection as well as severe COVID-19 disease among most of the ESKD patients. It was also evident from the empirical literature review that COVID-19 pandemic adversely affected the physical, psychological and socio-economic wellbeing of hemodialysis patients in turn lowering their QoL in most of the settings. Further, out of the 22 studies reviewed, 15 were from the developed countries in Europe and North America while 6 were from the developing countries in Asia and Middle East. Only one was from the sub-Saharan region precisely in South Africa. This clearly showed that most of the reviewed empirical studies were conducted in other countries whose healthcare settings and systems differed with that of Kenya. It was therefore evident from the empirical literature review that there was paucity of empirical research on COVID-19 pandemic effects on the QoL and coping strategies among hemodialysis patients in Kenya and hence the need for the current study. Consequently, this research study provides results on the effects of COVID-19 pandemic on the QoL of patients on hemodialysis at the renal unit of KNH and their coping strategies.

## **2.7 Theoretical Framework**

The theoretical framework of this study was anchored on the Roy Adaptation Model developed by Sister Callista Roy in 1970 and subsequently refined over the years. The Roy Adaptation Model presents the person as a holistic adaptive system in constant interaction with the internal and the external environment. According to this model, the main task of the human system is to maintain integrity in the face of environmental stimuli. The goal of nursing then is to foster successful adaptation (Roy, 2009).

The major concepts of the Roy Adaptation Model include: 1) Adaptation - This is the goal of nursing and reflects mechanisms that individual persons and groups utilize to positively respond to environmental changes or to create harmonious human-environmental integration; 2) Person - perceived as a bio-psycho-social being in constant interaction with a changing environment, and who uses innate and acquired

mechanisms to adapt to the environment; 3) Environment - acts as the stimuli and represents all conditions, circumstances, and influences surrounding and affecting the development and behavior of persons and groups whether focal, contextual or residual; 4) Health - reflects the outcome of adaptation and is represented by a health-illness continuum. Health is defined as a state and process of being and becoming an integrated and whole that reflects person and environment mutuality; and 5) Nursing - whose primary role is promoting successful/effective adaptation and health of persons and/or groups (Roy, 2009).

The key assumptions of the Roy Adaptation Model are that: the person is a bio-psycho-social being meaning the person is in constant interaction with a changing environment; to cope with a changing world, the person uses both innate and acquired mechanisms which are biological, psychological and social in origin; to respond positively to environmental changes, the person must adapt and that the person has 4 modes of adaptation: physiologic needs, self-concept, role function and inter-dependence (Phillips, 2010).

The Roy Adaptation Model is commonly used in nursing practice. To use the model in practice, the nurse follows Roy's six-step nursing process: (1) Assess the behaviors manifested from the four adaptive modes (physiological-physical mode, self-concept-group identity mode, role function mode, and interdependence mode). (2). Assess and categorize the stimuli for those behaviors. (3). Make a nursing diagnosis based on the person's adaptive state. (4). Set goals to promote adaptation. (5). Implement interventions aimed at managing stimuli to promote adaptation and (6). Evaluate achievement of adaptive goals (Phillips, 2010). Andrews and Roy (1986) pointed out that by manipulating the stimuli rather than the patient, the nurse enhances the interaction of the person with their environment, thereby promoting health.

The model was relevant to the current study as it offered a suitable framework for the selection of the current study's variables. Further, its concepts are clearly and consistently defined and the model is logical and easy to understand and apply in nursing practice. In addition, the model's concepts could be related to the current study in this way - the focal stimuli are the aspects that immediately confront the person and

require direct attention. In this study the focal stimuli was COVID-19 pandemic. Contextual stimuli include the other stimuli present and affecting the situation, and in this study the contextual stimuli included, social-economic effects, psychological effects and physical health status. Residual stimuli are those whose effects on the situation are not clear and in this study they included age, gender and marital status. Therefore, the nursing goal was to promote adaptation of the patient to the prevailing environment, in this case being to help the hemodialysis patients cope with the COVID-19 pandemic.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

This chapter provides a framework of the guide on how the study was conducted. It therefore discusses the study design, study site, study population, inclusion and exclusion criteria, sample size and sampling technique, data collection instruments and procedures, study tool pretesting, validity and reliability of the study tool, research assistants' recruitment, data analysis, ethical considerations and study limitations.

### **3.2 Study Design**

The study utilized a descriptive cross-sectional research design aimed at establishing the effects of the COVID-19 pandemic on the QoL of hemodialysis patients at the renal unit of KNH. This research design presents facts concerning variables being investigated as they exist at the time of study as well as trends that are emerging. This was the most suitable study design because it reduced the chances of having unforeseen confounders in the study and it also allowed the researcher to investigate many variables especially during data collection.

### **3.3 Study Site**

Kenyatta National Hospital (KNH) Renal Unit was the site where the research was conducted. KNH is the oldest and largest teaching and referral hospital in Kenya. It was founded in 1901 with 40 patients with the hospital having grown over the years to its current bed capacity of about 2,000. It is located about four kilometers from the Nairobi city center, off Ngong road on Hospital road. The facility offers a wide range of specialized in and out-patient health care services. The specialized health-care services provided at KNH include radiotherapy, heart surgery, neurosurgery, oncology, diabetic, renal dialysis and kidney transplant operations, plastic and reconstructive surgery, orthopedic surgery and burns management among others. The hospital also facilitates medical training and research and participates in national healthcare planning.

KNH's renal unit is the largest in the country and serves patients with different renal issues from all counties in the country. KNH's renal unit had 26 dialysis beds. Most of the hemodialysis patients attended at the unit had 2 dialysis sessions per week. Approximately 40 patients were dialyzed in the unit per day. The services offered in

the renal unit included hemodialysis, peritoneal dialysis, management of ESKD patients' pre- and post-kidney transplant, patient counselling and patient investigations such as kidney biopsy (KNH Renal Unit, 2021).

### **3.4 Study Population**

The study population consisted of ESKD hemodialysis patients in the renal unit of KNH. According to data obtained from the Information and Statistics Office of KNH's renal unit, there were approximately 120 ESKD patients undergoing hemodialysis in the renal unit. This constituted the study population.

### **3.5 Inclusion and Exclusion Criteria**

#### **3.5.1 Inclusion criteria**

The study included;

- i. All patients with ESKD undergoing HD in the renal unit at KNH.
- ii. ESKD hemodialysis patients aged 18 years and above.
- iii. ESKD hemodialysis patients who consented to participate in the study.

#### **3.5.2 Exclusion criteria**

The study excluded;

- i. Hemodialysis patients who were mentally unstable.
- ii. Critically ill hemodialysis patients.
- iii. Hemodialysis patients who failed to consent to participate in the study.

### **3.6 Sample Size**

The sample size was calculated using Fischer's formula, as outlined by Denscombe (2014), as follows;

$$no = \frac{z^2 pq}{e^2}$$

Where;

no = Desired sample size (if the population was greater than 10,000).

Z = Standard normal deviation at the required confidence interval (1.96)

$p$  = The proportion in the target population estimated to have characteristics being measured (0.5)

$q = (1-p) = (1-0.5) = 0.5$

$e$  = The level of statistical significance (0.05)

$$\text{Hence } n_0 = \frac{(1.96)^2 (0.5) (0.5)}{(0.05)^2}$$

$$n_0 = (0.9604/0.0025)$$

$$n_0 = 384$$

The population for the study was 120 hemodialysis patients who were less than 10,000 and thus Fischer's formula was utilized for smaller population sample size calculation as follows;

$$n_f = n / [1 + n/N]$$

Where  $n_f$  = desired sample size when the total population was less than 10,000

$n$  = estimated sample size when the total population (N) was greater or equal to 10,000

$N$  = estimated total population

$$\text{Therefore, } 384 / (1 + [384/120]) = 384/4.2 = 91.4.$$

Hence, the study sample size comprised of 91 hemodialysis patients in KNH.

### **3.7 Sampling Technique**

This study applied simple random sampling technique to identify the 91 participants for the study. This offered members of the study population an equal chance of being selected. 'Yes' and 'No' words were written on pieces of paper where Yes were 91 and No were 29. All the hemodialysis patients meeting the inclusion criteria and who offered their consent and picked 'Yes' were allowed to participate in the study. Simple random sampling was the best sampling technique for the study because it was impossible to test every single individual in the population. It also saved time, money and effort while conducting the research (Kothari, 2004).

### **3.8 Data Collection Instrument**

This study used a researcher administered structured questionnaire as the data collection instrument. The study applied closed ended questionnaires because they were easier to

analyze, administer, and were economical in terms of time and money (Creswell & Creswell, 2018). The questionnaire was structured into 5 parts as follows: Section A - Demographic information of the respondents; Section B -COVID-19 pandemic effects on the physical health of the HD patients; Section C - Psychological effects of COVID-19 pandemic on the QoL of the HD patients; Section D - Socio-economic effects of COVID-19 pandemic on the QoL of the HD patients and Section E - HD patients' coping strategies against COVID-19 pandemic effects.

### **3.9 Recruiting and Training of Research Assistants**

The researcher recruited two research assistants from the students in East Africa Kidney Institute Nairobi's Higher National Diploma to help in data collection from the study respondents. The researcher discussed the research objectives with the research assistants before taking them through the questionnaires and explaining to them the kind of information being sought and training them on how to go about administering the tool to the study respondents. The researcher adequately facilitated the research assistants for them to be able to assist in the data collection exercise.

### **3.10 Recruitment and Consenting Procedure for Study Participants**

Following ethical approval, the researcher first sought permission to conduct research in the renal unit from the KNH administration. Then the researcher proceeded to the renal unit with the letter authorizing the study to be conducted. To recruit the study participants, the researcher targeted the hemodialysis patients during their weekly hemodialysis clinics at KNH's Renal Unit. The researcher approached them during waiting times where she provided them with brief information about the study before their individual HD sessions began. The briefing did not last for more than 5 minutes. During these brief encounters, the researcher offered important points about the study; emphasized on the selection criteria and disclosed where she could be found for further details within the renal unit. Those hemodialysis patients who met the inclusion criteria were requested to see/meet the researcher at Renal Unit's Confidential Reception Office at their convenience for in-depth information and procedure of participation.

As part of the participation procedure, the hemodialysis patients were required to give their informed consent prior to participation in the study. This entailed signing the study's Informed Consent document. This was however after they were adequately briefed by the researcher about the study. The considerations of the consenting environment included voluntary participation, respect for the dignity and autonomy of the participants, ensuring confidentiality of any information provided and ensuring that the study participants felt at ease during the data collection exercise.

### **3.11 Data Collection Procedures**

After study approval by KNH-UoN ERC, the principal researcher sought authorization from KNH's administration to collect information from the study participants at the hospital's renal unit. Prior to administration of the questionnaires, the study participants underwent recruitment and consenting procedures as outlined in Section 3.10 above. Following a participant's consent, the data collection exercise involved the investigator asking the participants the questions as contained in the research tool and documenting their responses. The filling in of the questionnaires was held in a confidential reception office located within the renal unit.

Once the study participants responded to the research instruments, the researcher scrutinized them for completeness. To ensure confidentiality, the filled-in questionnaires were stored safely under lock and key in readiness for data entry and analysis. The data collection exercise took four weeks, obtaining data on average from 23 patients per week.

### **3.12 Pretesting of Study Tools**

Pretesting of the study tool was carried out among ESKD hemodialysis patients at the Moi Teaching and Referral Hospital in Eldoret. Nine (9) questionnaires representing 10% of the study sample were used. Mugenda and Mugenda (2003) asserted that 10% of the sample size was adequate for purposes of pre-testing the research tools. Upon completion of pretesting, items on the physical effects and psychological experiences sections of the study tool were modified to achieve clarity and remove noted ambiguities and redundancies hence leading to formulation of the final version of the study tool.



### **3.13 Validity and Reliability of the Research Instrument**

Validity refers to the degree to which an instrument measures what it is supposed to measure (Kothari, 2004) or whether the findings obtained from the analysis of the data represent the phenomena under study (Denscombe, 2014). The study tool was availed to the supervising lecturers and peers who helped establish its content and construct validity to ensure that the items were adequately representative of the study subject.

Reliability is the ability of a research instrument to produce consistent findings after repeated trials (Nsubuga, 2006). Using data from the pretesting tool, the reliability of the study tool was estimated using the Cronbach's Alpha Coefficient; findings of at least 0.70 were accepted (Creswell & Creswell, 2018). The established overall Cronbach Alpha Coefficient following the study tool's pretesting was 0.874 indicating that the study tool was reliable.

### **3.14 Data Analysis**

This study utilized the Statistical Package for Social Science (SPSS, version 26) as the data analysis software. Coding of the data and data entry preceded the analysis of the data. The quantitative data obtained from the closed-ended questions was analyzed using descriptive statistics that include means, median, percentages and frequencies using SPSS version 26. Association between the study variables was estimated using Pearson's multivariate correlation analysis at a significance level of 5% with the decision rule being Reject Ho if p-value was less than 0.05. The study findings were presented in form of tables.

### **3.15 Ethical Considerations**

The following ethical considerations were observed: Ethical clearance for the study was sought from KNH-UoN ethics and research committee, Authorization for data collection was sought from the KNH administration, An informed consent was sought from the participants individually before patient participation in the study, Confidentiality of information obtained and privacy of the participants were guaranteed, Participants were not coerced to participate in the study instead they did so out of their own will, there was no harm to the participants as a result of their

participating in the study, and filled questionnaires were safely stored under lock and key.

Due to the prevailing COVID-19 pandemic in the country and to help limit the risk of COVID-19 transmission, the researcher ensured that the Ministry of Health's COVID-19 prevention guidelines/protocols were strictly adhered to during the data collection exercise. These included; putting on a face mask, ensuring adequate hand washing with soap and running water or sanitizing using alcohol-based sanitizer with 70% concentration; avoiding shaking hands with the participants during the interview process; adhering to recommended social distancing of 1.5 meters during the interviews and ensuring that the interview room was well ventilated.

### **3.16 Study Limitations**

The questions asked could trigger emotional disturbance because they touched on different aspects of human life. The researcher exercised patience and understanding when interviewing the participants. Some cases of incomplete or missing data in the filled-in research tools were encountered. To counter this, data cleaning was carried out before the final analysis to ensure completeness of the information availed through questionnaires.

### **3.17 Dissemination Plan**

The final dissertation document shall be shared with University of Nairobi's School of Nursing Sciences Library and the study report would also be uploaded into the University of Nairobi's repository platform. The researcher shall also endeavor to present the findings in appropriate academic and scientific conferences and also publish in the relevant journals.

## **CHAPTER FOUR: RESULTS**

### **4.1 Introduction**

This chapter reports on the study results as guided by study objectives. It begins with highlighting the response rate and then provides results on the respondents' demographic characteristics in the first section, while subsequent sections provide findings regarding the physical, psychological and socio-economic effects of COVID-19 pandemic on the respondents' QoL as well as their coping strategies against the effects of COVID-19 pandemic on their QoL.

#### **4.1.1 Response Rate**

The study targeted 91 hemodialysis patients at KNH's renal unit as respondents. From the interviews conducted, the researcher was able to obtain adequate responses from 76 of the respondents translating into a response rate of 83.5%. The remaining 15 respondents were excluded from the final analysis on account of failing to provide their consent for participation or for being too ill to provide data. This response rate was, however, considered sufficient and representative and conforms to Mugenda and Mugenda (2003) stipulation that a response rate of 50% is adequate for analysis and reporting, a rate of 60% is good while a response rate of 70% and over is excellent.

### **4.2 Demographic Characteristics of the Respondents**

The demographic attributes considered were gender, age, education level, occupation, marital status, family income, place of residence, duration under hemodialysis therapy, COVID-19 test status and uptake of COVID-19 vaccine. The findings in Table 4.1 are elaborated as follows;

#### **4.2.1 Gender Distribution of the Respondents**

Table 4.1 indicates that slightly over half (52.6%, n = 40) of the respondents were male while 47.4% (n = 36) were female, which shows that the study participants were both male and female hemodialysis patients at the renal unit of KNH, although male HD patients were slightly more than the female HD patients.

#### **4.2.2 Age Distribution of the Respondents**

Results on the respondents' ages were collected as continuous variables and then grouped as categorical variables, analyzed by using descriptive analysis then reported by use of measures of central tendency. Table 4.1 indicates that 36.8% (n = 28) of the respondents were aged 50 years and above; 26.3% (n = 20) were aged 30 - 39 years; 22.4% (n = 17) were aged 40 - 49 years and 14.5% (n = 11) were aged 18 - 29 years. The respondents mean age was 47.31 ( $\pm$  7.25) years. The largest proportion of the respondents was in the 50 years and above age category while the least proportion was in the 18 - 29 years age bracket. This implied that the study participants were all adults and hence mature and able to respond to the study items.

#### **4.2.3 The Respondents' Education Level**

Table 4.1 shows that 43.4% (n = 33) of the respondents had Tertiary education, 36.8% (n = 28) had Secondary education while 19.7% (n = 15) had Primary education, this implied that the largest number of respondents were those with Tertiary education while the least number of respondents were those with Primary education. Therefore, this shows that most of the study participants had a good education background and were capable of responding to the study items.

#### **4.2.4 The Respondents' Occupation**

Table 4.1 shows that 26.3% (n = 20) of the respondents were in business while 25% (n = 19) were formally employed and an equal number of 25% (n = 19) were unemployed. In addition, 14.5% (n = 11) were casual labourers while 9.2% (n = 7) were retired. This showed that the largest proportion of the respondents was in business with the least proportion of the respondents being in the retired category. The findings also implied that the study participants came from diverse occupations.

#### **4.2.5 The Respondents' Marital Status**

Table 4.1 indicates that most (68.4%, n = 52) of the respondents were married, 18.4% (n = 14) were single while 7.9% (n = 6) were widowed. The remaining were either separated (3.9%, n = 3) or divorced (1.3%, n = 1). This reflects that the largest proportion of the respondents was married while only one hemodialysis patient was divorced.

#### **4.2.6 Respondents' Household Income Level**

Table 4.1 indicates that slightly over half (52.6%, n = 40) of the respondents had a monthly household income of Kshs. 10,001 - Kshs. 30,000 while 27.6% (n = 21) had a monthly household income of above Kshs. 30,000. In addition, 17.1% (n = 13) had a monthly household income of below Kshs. 10,000 while 2.6% (n = 2) had no income. The mean monthly income for the respondents' households was Kshs. 19,486 ( $\pm$  Kshs. 5,010). This shows that majority of the respondents had a monthly household income between Kshs. 10,001 - Kshs. 30,000 while only two patients on hemodialysis had no income. This shows that most of the respondents came from low income households.

#### **4.2.7 The Respondents' Place of Residence**

Table 4.1 illustrates that 55.3% (n = 42) of the respondents lived within Nairobi while 44.7% (n = 34) resided outside Nairobi, an implication that KNH's renal unit receives patients from different regions of the county as the largest teaching and referral hospital in Kenya.

#### **4.2.8 Respondents' Duration under Hemodialysis Therapy**

Close to half (48.7%, n = 37) of the respondents had been under hemodialysis therapy for less than 1 year with an equal number (48.7%, n = 37) having been under hemodialysis therapy for 1 - 5 years. Only 2.6% (n = 2) of the respondents had been under hemodialysis therapy for 6 - 10 years. This is shown in Table 4.1. The respondents' mean duration under hemodialysis therapy was 2.11 ( $\pm$  1.08) years, with majority of the respondents having been under hemodialysis therapy for 5 or fewer years and only 2 respondents had hemodialysis for more than 6 years. This showed that the respondents had been under hemodialysis therapy for considerably enough period to be able to respond on how COVID-19 pandemic had affected their QoL.

#### **4.2.9 Uptake of COVID-19 Test by Respondents**

Most of the respondents (73.7%, n = 56) indicated that they had been tested for COVID-19 with all (100%, n = 56) indicating that the test result was negative. However, 26.3% (n = 20) of the respondents indicated that they had not taken the COVID-19 test which they attributed to fear of the test turning positive and hence being forced into quarantine

and that would cause disruption in their daily lives. This however reflected that more than 2/3 of the respondents had taken the COVID-19 test as shown in Table 4.1.

#### **4.2.10 Uptake of COVID-19 Vaccine by Respondents**

Table 4.1 shows that most of the respondents (68.4%, n = 52) had not taken the COVID-19 vaccine while 31.6% (n = 24) had taken the COVID-19 vaccine. This indicated that majority of the respondents had not taken COVID-19 vaccine with most of them stating fear of unknown and fear of reported side effects.

**Table 4.1: Respondents' demographic characteristics**

		Frequency	Percent
Gender	Male	40	52.6
	Female	36	47.4
	<b>Total</b>	<b>76</b>	<b>100.0</b>
Age	18 - 29 years	11	14.5
	30 - 39 years	20	26.3
	40 - 49 years	17	22.4
	50 years & above	28	36.8
	<b>Total</b>	<b>76</b>	<b>100.0</b>
	<b>Mean age in years</b>	<b>47.31 (<math>\pm</math> 7.25)</b>	
Education level	Primary	15	19.7
	Secondary	28	36.8
	Tertiary	33	43.4
	<b>Total</b>	<b>76</b>	<b>100.0</b>
Occupation	Unemployed	19	25.0
	Casual labour	11	14.5
	Formally employed	19	25.0
	In business	20	26.3
	Retired	7	9.2
	<b>Total</b>	<b>76</b>	<b>100.0</b>
Marital status	Single	14	18.4
	Married	52	68.4
	Separated	3	3.9
	Divorced	1	1.3
	Widowed	6	7.9
	<b>Total</b>	<b>76</b>	<b>100.0</b>
Household income level	No income	2	2.6
	Below Kshs. 10,000	13	17.1
	Kshs. 10,001 - Kshs. 30,000	40	52.6
	Above Kshs. 30,000	21	27.6
	<b>Total</b>	<b>76</b>	<b>100.0</b>
	<b>Mean monthly income</b>	<b>Kshs. 19,486 (<math>\pm</math> Kshs. 5,010)</b>	
Place of residence	Within Nairobi	42	55.3
	Outside Nairobi	34	44.7
	<b>Total</b>	<b>76</b>	<b>100.0</b>
Duration under hemodialysis therapy	Less than 1 year	37	48.7
	1 - 5 years	37	48.7
	6 - 10 years	2	2.6
	<b>Total</b>	<b>76</b>	<b>100.0</b>
	<b>Mean duration under HD</b>	<b>2.11 (<math>\pm</math> 1.08) years</b>	
Tested for coronavirus	Yes	56	73.7
	No	20	26.3
	<b>Total</b>	<b>76</b>	<b>100.0</b>
Taken COVID-19 vaccine	Yes	24	31.6
	No	52	68.4
	<b>Total</b>	<b>76</b>	<b>100.0</b>

### 4.3 Physical Effects of COVID-19 Pandemic on the Quality of Life of Patients on Hemodialysis

Firstly in this objective, the study explored the respondents' perception regarding the extent to which COVID-19 pandemic had affected their physical health (that is, their ability to perform normal living physical activities).

Table 4.2 shows that most (63.2%, n = 48) of the respondents shared the view that COVID-19 pandemic had affected their physical health greatly in terms of their ability to perform normal living physical activities while 22.4% (n = 17) said they were moderately affected. The remainder of the respondents indicated that COVID-19 pandemic had affected their physical health slightly (7.9%, n = 6) and (3.9%, n = 3) reported as being extremely affected while only 2.6% (n = 2) shared the view that the pandemic had not affected their physical health at all. This showed that most of the study participants' ability to perform normal living physical activities was mostly moderately or greatly affected.

**Table 4.2: Respondents' perception regarding extent to which COVID-19 Pandemic had affected their physical health**

Level of extent	Frequency	Percent
Not at all	2	2.6
Slightly	6	7.9
Moderately	17	22.4
Greatly	48	63.2
Extremely	3	3.9
<b>Total</b>	<b>76</b>	<b>100.0</b>

Secondly, the study also sought the respondents' perception regarding their physical health status during COVID-19 pandemic compared to pre-COVID-19 pandemic period. The physical health indicators considered included the respondents' performance of activities of daily living, their ability to engage in leisure activities, their energy and fatigue status, their mobility [ability to move from one location to another], their pain and discomfort experiences, their ability to sleep and rest, their capacity to work as well as their use of medication.



Their responses were evaluated using a scale of 1 - 5 where 1 - no difference [same as before]; 2 - slightly worse [a little poorer than before]; 3 - moderately worse [notably poorer than before]; 4 - much worse [significantly/far much poorer than before] and 5 - fairly better [physically healthier than during the pre COVID-19 pandemic period]. Mean values of the respondents' responses for each of the physical health indicators were computed. The interpretation of the mean values was as follows: mean values of 0 to 1 - no difference; mean values of 1 to 2 - slightly worse; mean values of 2 to 3 - moderately worse; mean values of 3 to 4 - much worse and mean values of 4 to 5 - fairly better.

From the findings shown in Table 4.3, it was evident that the respondents' physical health status was poorer during the COVID-19 pandemic period compared to the pre COVID-19 pandemic period. This was given that:

The study participants' performance of activities of daily living as well as their ability to engage in leisure activities was much worse during COVID-19 pandemic compared to pre-COVID-19 pandemic period as indicated by mean values of 3.33 and 3.07, respectively. Further, the respondents' energy and fatigue status, their mobility [ability to move from one location to another], their pain and discomfort experiences, their ability to sleep and rest as well as their capacity to work were all moderately worse during COVID-19 pandemic compared to pre-COVID-19 pandemic period as shown by the respective mean values ranging between 2 and 3.

In addition, the respondents' use of medication was slightly worse during COVID-19 pandemic compared to pre-COVID-19 pandemic period as also shown by a mean value of 1.86. With respect to these cited physical health indicators, none of the respondents was of the view that there were fairly better, in their performance, during the COVID-19 pandemic period compared to the pre COVID-19 pandemic period therefore, reflecting that the physical health status of the patients on HD had been adversely affected by the prevailing COVID-19 pandemic.

**Table 4.3: Respondents' perception on their physical health status during the COVID-19 pandemic compared to the pre COVID-19 pandemic period**

Physical health indicators	N	Mean	Std. Dev.
Performing activities of daily living	76	3.33	0.870
Use of medication	76	1.86	0.795
Energy and fatigue	76	2.53	0.887
Mobility	76	2.93	0.971
Pain and discomfort	76	2.37	0.862
Sleep and rest	76	2.36	1.080
Work capacity	76	2.93	1.100
Leisure activities	76	3.07	1.063

Thirdly, the study participants were also queried on how they perceived their physical capacity during the COVID-19 pandemic period relative to the pre COVID-19 pandemic period. The respondents' responses were rated using a scale of 1 - 4 where 1 - extremely inadequate, 2 - moderately inadequate, 3 - fairly adequate and 4 - extremely adequate. The mean value of their response was computed with a mean value of  $< 3$  denoting inadequate physical capacity status while a mean of  $\geq 3$  denoted an adequate physical capacity status. Most of the respondents (67.1%,  $n = 51$ ) perceived their current physical capacity status during the prevailing COVID-19 pandemic, as being moderately inadequate. This was affirmed by the mean value of 2.22 which implied that the respondents perceived their physical capacity status during the COVID-19 pandemic period as being inadequate relative to the pre COVID-19 pandemic period.

**Table 4.4: The respondents' perception of their physical capacity during the COVID-19 pandemic era relative to the pre COVID-19 pandemic period**

	Frequency	Percent
Extremely inadequate	6	7.9
Moderately inadequate	51	67.1
Fairly adequate	15	19.7
Extremely adequate	4	5.3
<b>Total</b>	<b>76</b>	<b>100.0</b>
<b>Mean</b>		<b>2.22</b>
<b>Standard deviation</b>		<b>0.665</b>

#### **4.4 Psychological Experiences of Patients on Hemodialysis during the Prevailing COVID-19 Pandemic Period**

Study participants were queried as to how often they experienced a set of identified psychological effects during the prevailing COVID-19 pandemic and their responses were evaluated using a scale of 1-5 where 1 - at no time; 2 - some of the time; 3 - about half of the time; 4 - most of the time and 5 - all of the time. Mean values of the respondents' responses for each of the cited psychological effects were computed. The interpretation of the mean values was as follows: mean values of 0 to 1 - at no time; mean values of 1 to 2 -some of the time; mean values of 2 to 3 - about half of the time; mean values of 3 to 4 - most of the time and mean values of 4 to 5 - all of the time. Table 4.5 highlights these findings.

The findings revealed three major themes which are described as follows;

One of the emerging themes was fear. The respondents indicated that during the prevailing COVID-19 pandemic, they did experience, most of the time, fear of health deterioration, fear of contracting COVID-19 and fear of the effects of COVID-19 on their health condition as reflected by their mean values of 3.54, 3.93 and 3.75, respectively. This implied that fear was one of the leading psychological experiences among the respondents during the ongoing COVID-19 pandemic.

The second theme was troubling feelings. The study participants acknowledged that they did experience, most of the time, feeling of being overwhelmed with life's demands as shown by a mean value of 3.18. They also indicated that about half of the time during the prevailing COVID-19 pandemic, they did experience feeling mentally distressed and/or anxious (mean = 2.59), feelings of social isolation (mean = 2.38), feeling of excessive irritability (mean = 2.22) and feelings of being not adequately supported (mean = 2.21). In addition, the respondents did also experience, feelings of low self-esteem and feelings of hopelessness and/or helplessness, some of the time during the prevailing COVID-19 pandemic, as shown by mean values of 1.30 and 1.41 respectively. This implied that troubling feelings were a common psychological experience among the respondents during the ongoing COVID-19 pandemic.

The third theme was concerns and difficulties. The patients on HD shared the view that, about half of the time during the prevailing COVID-19 pandemic, they did experience poor feeding, difficulties interacting socially and were unable to sleep properly as shown by mean values of 2.17, 2.16 and 2.03 respectively. Further, some of the time during the current pandemic, the respondents did experience concerns over inability to follow treatments consistently and concerns about self-image as shown by mean values of 1.96 and 1.30 respectively. This implied that concerns and difficulties formed part of the respondents' psychological experiences during the ongoing COVID-19 pandemic. These findings, therefore, reflected that patients on hemodialysis undergoing treatment at the renal unit of KNH did experience various psychological effects of COVID-19 pandemic which adversely affected their QoL.

**Table 4.5: The respondents' psychological experiences during the prevailing Covid-19 pandemic period**

	<b>N</b>	<b>Mean</b>	<b>Std. Dev.</b>
Fear of health deterioration	76	3.54	1.227
Feeling mentally distressed and/or anxious	76	2.59	1.061
Fear of contracting COVID-19	76	3.93	1.011
Fear of the effects of COVID-19 on your health condition	76	3.75	0.911
Excessive moodiness/irritability	76	2.22	0.873
Concerns about self-image	76	1.30	0.490
Feelings of low self-esteem	76	1.30	0.490
Feelings of hopelessness and/or helplessness	76	1.41	0.546
Difficulties interacting socially	76	2.16	0.865
Unable to sleep properly	76	2.03	0.832
Concerns over inability to follow treatments consistently	76	1.96	0.972
Feelings of social isolation	76	2.38	0.923
Feeling overwhelmed with life's demands	76	3.18	0.828
Poor feeding	76	2.17	0.823
Feelings of being not adequately supported	76	2.21	0.970

#### **4.5 Socio-Economic Effects of COVID-19 Pandemic on the Quality of Life of Patients on Hemodialysis**

The respondents were asked to indicate their level of agreement with given statements relating to socio-economic effects of COVID-19 pandemic to them individually and/or to their households. The responses were evaluated using a scale of 1 - 5 where 1 - strongly disagree; 2 - disagree; 3 - neither agree nor disagree (neutral); 4 - agree and 5 - strongly agree. Mean values of the respondents' responses for each of the cited socio-economic effects of COVID-19 pandemic were computed. The interpretation of the mean values was as follows: mean values of 1 to 2.5 - disagree; mean values of 2.6 to 3.5 - neutral and mean values of 3.6 to 5 - agree. Table 4.6 depicts the findings.

Two major themes emerged from the responses given by the study participants. These are as described herein; the leading theme was that COVID-19 occasioned financial strain among the study participants at individual and household level. This was evidenced by the respondents agreement with the statements that they were struggling to meet the costs of treatment due to resource related disruptions occasioned by COVID-19 pandemic (mean = 3.64); as a family, they had experienced greater financial difficulties due to COVID-19 pandemic's effects on their jobs/occupation (mean = 4.24) and that it had been a challenge meeting their own needs (and/or those of the family) during the COVID-19 pandemic (mean = 4.12).

Further, they also agreed with the statements that as a family, they had to adjust their budget/spending to make ends meet during the COVID-19 pandemic (mean = 4.28); they felt their financial standing/position was worse off during this COVID-19 pandemic compared to the pre COVID-19 pandemic period (mean = 4.25) and that COVID-19 pandemic had made life increasingly difficult due to rising costs of living (mean = 4.20). This implied that financial strain was one of the leading adverse socio-economic effects of COVID-19 pandemic experienced by the study participants.

The second theme was disruption of their livelihoods by the COVID-19 pandemic. This was evidenced by the respondents agreement with the assertions that COVID-19 pandemic had significantly disrupted their source of livelihood (mean = 4.18), it had

been increasingly difficult to secure employment during the COVID-19 pandemic (mean = 3.72) and that COVID-19 pandemic had reduced their earnings from their occupation (mean = 3.70). In addition, a few of the respondents also noted that they had to change their occupation due to the COVID-19 pandemic (mean=2.50) and that COVID-19 pandemic had made them lose their livelihoods/jobs (mean=2.63). From the findings, it was evident that the ongoing COVID-19 pandemic had occasioned various socio-economic effects which adversely impacted the respondents' QoL.

**Table 4.6: Socio-economic effects of COVID-19 pandemic experienced by the respondents**

<b>Statements on socio-economic effects of COVID-19 pandemic</b>	<b>N</b>	<b>Mean</b>	<b>Std. Dev.</b>
COVID-19 pandemic made me lose my livelihood/job	76	2.63	1.031
COVID-19 pandemic has reduced my earnings from my occupation	76	3.70	1.007
I had to change my occupation due to the COVID-19 pandemic	76	2.50	0.931
I am struggling to meet the costs of treatment due to resource related disruptions occasioned by COVID-19 pandemic	76	3.64	1.055
As a family, we have experienced greater financial difficulties due to COVID-19 pandemic's effects on our jobs/occupation	76	4.24	0.630
It has been a challenge meeting my own needs (and/or those of the family) during the COVID-19 pandemic	76	4.12	0.730
As a family, we have had to adjust our budget/spending to make ends meet during the COVID-19 pandemic	76	4.28	0.665
I feel my financial standing/position is worse off during this COVID-19 pandemic compared to before the pandemic	76	4.25	0.785
COVID-19 pandemic has made life increasingly difficult due to rising costs of living	76	4.20	0.674
It has been increasingly difficult to secure employment during the current pandemic	76	3.72	1.066
My social relations have worsened during the COVID-19 pandemic	76	3.13	1.193

#### 4.6 Coping Strategies Employed by Patients on Hemodialysis against the Effects of COVID-19 Pandemic on their QoL during COVID-19 Period

From the findings shown in Table 4.7, the various strategies employed by the study participants to cope against effects of COVID-19 pandemic on their QoL were: avoiding of news on COVID-19 pandemic as indicated by 10.5% of the respondents; seeking social and emotional support from family and friends as indicated by 84.2% of the respondents; engaging in religious activities like prayers and meditation as reflected by 53.9% of the respondents; adhering to issued COVID-19 pandemic prevention guidelines as indicated by 100% of the respondents; engaging in leisure activities as indicated by 59.2% of the respondents; seeking new streams of income to safeguard livelihood as indicated by 50% of the respondents; working closely with the HCPs to learn how better to safeguard one's health during the pandemic as shown by 80.3% of the respondents and engaging in substance use to make themselves feel better as shown by 13.2% of the respondents.

This therefore implied that patients on hemodialysis at the renal unit of Kenyatta National Hospital adopted various strategies to cope against effects of COVID-19 pandemic on their QoL, most of which were positive, although a few of the patients adopted negative coping strategies such as substance use to make themselves feel better and avoidance of news on COVID-19 pandemic.

**Table 4.7: Respondents' coping strategies against effects of COVID-19 pandemic**

<b>Cited coping strategies</b>	<b>Frequency</b>	<b>Percent</b>
Avoided news on COVID-19 pandemic	8	10.5
Sought social and emotional support from family and friends	64	84.2
Engaged in religious activities like prayers and meditation	41	53.9
Adhered to issued COVID-19 pandemic prevention guidelines	76	100.0
Worked closely with the HCPs to learn how better to safeguard one's health during the pandemic	61	80.3
Engaged in leisure activities	45	59.2
Sought new streams of income to safeguard livelihood	38	50
Engaged in substance use to make myself feel better	10	13.2

#### 4.7 Results on Study Hypotheses Testing

The study tested two null hypotheses which were that;

- H<sub>o1</sub> COVID-19 pandemic did not affect the QoL of patients on hemodialysis at the renal unit of Kenyatta National Hospital.
- H<sub>o2</sub> Hemodialysis patients in Kenyatta National Hospital had no coping strategies against effects of COVID-19 pandemic on their QoL.

These two hypotheses were assessed using Pearson's multivariate correlation analysis at 95% confidence level. A p value of  $< 0.05$  was considered as being statistically significant and thus the decision criterion was reject the null hypothesis for p-values of  $< 0.05$  and fail to reject (or accept) the null hypothesis for p-values of  $\geq 0.05$ .

From the findings shown in Table 4.8, the negative Pearson's multivariate correlation coefficient ( $r$ ) values of the three predictor variables (physical effects, psychological effects and socio-economic effects), taken individually and on aggregate, showed that the physical, psychological and socio-economic effects of COVID-19 pandemic had a negative impact on the QoL of patients on hemodialysis at the renal unit of Kenyatta National Hospital.

However, the positive Pearson's correlation coefficient ( $r$ ) value of 0.665 for the coping strategies variable showed that the coping strategies against the effects of COVID-19 pandemic adopted by the respondents had a positive impact on their QoL. Further, the study established that, at 95% confidence level, the two null hypotheses (H<sub>o1</sub> and H<sub>o2</sub>) yielded Pearson's correlation coefficient p-values of  $< 0.05$ , and hence they were both rejected. Consequently, their alternate hypotheses (H<sub>11</sub> and H<sub>12</sub>) were accepted that, (1) COVID-19 pandemic affected the QoL of patients on hemodialysis at the renal unit of Kenyatta National Hospital, and (2) hemodialysis patients in Kenyatta National Hospital had coping strategies against effects of COVID-19 pandemic on their QoL.

This implied that ongoing efforts to fight the prevailing COVID-19 pandemic were instrumental to safeguard the wellbeing and QoL of patients on hemodialysis attending KNH's renal unit.



**Table 4.8: Effects of COVID-19 pandemic on the QoL of hemodialysis patients**

		Pearson's correlation analysis			
COVID-19 pandemic effects		correlation coefficient	p value	Set level	Decision
		( <i>r</i> )			
	Physical effects [x1]	-0.469	0.029*	0.05	Reject
	Psychological effects [x2]	-0.612	0.018*	0.05	H <sub>01</sub> as
	Socio-economic effects [x3]	-0.671	0.000*	0.05	respective &
H <sub>01</sub>	<b>Aggregate effect [x1 + x2 + x3]</b>	<b>-0.548</b>	<b>0.012*</b>	<b>0.05</b>	aggregate p values were < 0.05
Coping strategies against effects of COVID-19 pandemic on QoL					
					Reject
H <sub>02</sub>	Coping strategies evident	0.665	0.000*	0.05	H <sub>02</sub> as it yielded a p value < 0.05

Dependent variable: QoL of HD patients

\* Statistically significant at 0.05 significance level

## **CHAPTER FIVE: DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Discussion**

#### **5.1.1 Introduction**

This section presents discussion of the study's findings and relates them with the previous empirical studies' findings. The first section presents a discussion on the demographic characteristics of the respondents. The subsequent sections provide discussions of this study's findings as guided by the study questions.

#### **5.1.2 Demographic Characteristics of the Respondents**

Both male and female patients undergoing hemodialysis at the renal unit of KNH participated, although there were slightly more males that took part in the study than females which was relevant to the existing reality within KNH's renal unit. KNH's renal unit records showed more male patients were on HD than females and this is in agreement with the study findings of Apata et al. (2021) and Algahtani, et al. (2021) in which ESKD patients from both genders constituted the respondents with more male participation than female, an observation also seen in the study by Trivedi (2021). In contrast, more female than male HD patients took part in the study by Goicoechea et al. (2020).

The mean age was 47.31 ( $\pm$  7.25) years with most participants aged 50 years and above, a finding similar to one reported in studies by Kassa et al. (2020) and Rocha et al. (2021), though findings by Novick et al. (2020) and Sousa et al. (2021) showed respondents' mean age of 58.04 ( $\pm$  9.17) years and of 56.41 ( $\pm$  6.39) years respectively. These findings signify that ESKD increase with advance in age.

Most of the study respondents had a good education background implying that they were in good position to respond to the study items. This concurs with the findings of Diao et al. (2020) and Antoun et al. (2021) where the participants were found to be capable of responding to the study tool and commenting on the study subject because of easy understanding of the study tool Ikizler and Kligler (2020) and ability to comprehend the research subject being studied.

The respondents in this study represented diverse occupations with most being either in business, formally employed or unemployed while others were in casual work and the rest were retired. Similar demographic attribute was observed among respondents in studies by Li et al. (2020) and Kocak et al. (2021) in which surveyed HD patients came from diverse occupations. This could be attributed to the fact that CKD, like any other illness, affects different kinds of people irrespective of their occupations and as such is seen among patients.

The respondents in this study were mostly married and this would be attributed to the observations that the study participants were all adults. Similar observations were made in studies by Trivedi et al. (2020) and Rocha et al. (2021) whose respondents were largely married.

The study participants were majorly from low income households and this would be attributed to the observation that hemodialysis costs were relatively lower (or more affordable) at KNH, it being a public healthcare facility compared to other large private hospitals in the country and hence it was likely to attract a higher number of ESKD patients from low income settings. Studies by Kassa et al. (2020) and Singh et al. (2021) also reported most of their respondents as being from lower economic strata of the society.

The mean duration under hemodialysis therapy for the respondents was 2.11 ( $\pm$  1.08) years with most of the respondents having been under hemodialysis therapy for 5 or less years. This could be attributed to a system of referral to other health facilities with dialysis services in the country to ease pressure on KNH's renal unit and hence once ESKD patients stabilize, they no longer needed to travel all the way to KNH leading to the patients' reduced time for HD therapy at KNH. Other studies that reported that HD duration of under 5 years for most of the surveyed ESKD patients were those by Apata et al. (2021) and Diao et al. (2020).

It was established that most of the respondents had been tested for COVID-19 though it was not a pre-requisite before dialysis. However, there was low uptake of COVID-19 vaccine among most of the respondents. Similar findings were reported by Singh et

al. (2021), Kocak et al. (2021) and Trivedi (2021). The low uptake of COVID-19 vaccine among the respondents could be due to the vaccines' unavailability, inaccessibility or reluctance for fear of its side effects on their health.

### **5.1.3 Physical Effects of COVID-19 Pandemic on the Quality of Life of Patients on Hemodialysis**

Most of the respondents acknowledged that their performance of activities of daily living was much worse during COVID-19 pandemic compared to pre-COVID-19 pandemic period. This could be attributed to restrictions imposed to contain the spread of the COVID-19 pandemic beginning March 2020 and extended for the better part of 2020 and 2021 leading to some patients missing on hemodialysis sessions. Studies by Li et al. (2020) and Antoun et al. (2021) also found significant reductions in surveyed ESKD patients' ability to perform normal/routine daily activities during the COVID-19 pandemic period relative to the pre COVID-19 pandemic period.

Similarly, the respondents' ability to engage in leisure activities was much worse during COVID-19 pandemic compared to pre-COVID-19 pandemic period. This would largely be attributed to the COVID-19 related guidelines that had restrictions on social gatherings and outdoor activities. Similar sentiments on people being unable to engage in preferred leisure activities during the COVID-19 pandemic period, due to associated COVID-19 restrictions in various jurisdictions, were highlighted by Sousa et al. (2021), Goicoechea et al. (2020) and Algahtani et al. (2021).

The respondents acknowledged that their energy and fatigue status was moderately worse during COVID-19 pandemic compared to pre-COVID-19 pandemic period. This could be attributed to changes in their daily routines and especially the need to achieve more under the limited working hours imposed during the COVID-19 pandemic period. The findings were in contrast with Kocak et al. (2021) who found no significant changes in HD patients' energy and fatigue status during the COVID-19 pandemic period compared to the pre pandemic period. The findings, however, collaborated with those of Novick et al. (2020) and Lee et al. (2020) who established a decline in respondents' energy and fatigue status during the COVID-19 pandemic period relative to the pre COVID-19 pandemic period.

The respondents also acknowledged that their mobility [that is, ability to move from one location to another], was moderately worse during COVID-19 pandemic compared to pre-COVID-19 pandemic period. This could be due to the movement restrictions and curfews that were imposed in the country in the height of the COVID-19 pandemic. This was also evidenced in studies by Bhattacharjee and Acharya (2020), Rabb (2020) and Antoun et al. (2021) with the patients' mobility challenges attributed to government imposed restrictions on movement to contain the spread of the COVID-19.

The results also revealed that the respondents' capacity to work was moderately worse during COVID-19 pandemic compared to pre-COVID-19 pandemic period. Similar observations were reported in studies by Bruchfeld (2020), Diao et al. (2020) and Hopman et al. (2020). This could be attributed to an observation that Covid-19 pandemic has occasioned wide spread lockdowns and working hours restrictions locally, as has been the case elsewhere across the world, curtailing people's ability to work normally and hence their reduced capacity to work.

The results also showed that the respondents' pain and discomfort experiences were moderately worse during COVID-19 pandemic compared to pre-COVID-19 pandemic period. This conflicted with the findings by Lee et al. (2020) and Kocak et al. (2021) who observed no notable differences in pain and discomfort attributes among surveyed HD patients during the COVID-19 pandemic period relative to the pre COVID-19 pandemic period. However, in studies by Rabb (2020) and Apata et al. (2021), the patients acknowledged that their levels of physical discomfort were significantly elevated during the prevailing COVID-19 pandemic period compared to the pre-COVID-19 pandemic period.

The study results also revealed that the respondents' ability to sleep and rest was moderately worse during COVID-19 pandemic compared to pre-COVID-19 pandemic period; an observation that could be supported by the respondents' concerns and fear over contracting the COVID-19 infection and fear over the potential effects of COVID-19 on their health condition. This could also be caused by socio-economic pressures on their families occasioned by the disruptions of the COVID-19 pandemic on their livelihoods or normal daily routines. Sleep disturbances and poor rest as physical effects

of COVID-19 pandemic on patients on hemodialysis were also reported in studies by Chatterjee et al. (2020) and Lee, Steel, et al. (2020).

In addition, the respondents' use of medication was slightly worse during COVID-19 pandemic compared to pre-COVID-19 pandemic period. This agreed with Li et al. (2020) and Ma et al. (2020) who in reviews of the effects of COVID-19 pandemic in hemodialysis patients found increased difficulties in compliance with medication uptake among surveyed participants during the COVID-19 pandemic period compared to the pre COVID-19 pandemic period. Similar sentiments were also shared by Diao et al. (2020) and Antoun et al. (2021) who also reported that COVID-19 pandemic had adverse effects on ESKD patients' medication adherence. This would largely be attributed to COVID-19 pandemic's disruptions of supply chains and the lockdown and movement restrictions imposed to contain the spread of COVID pandemic, hence increasing inability of HD patients to access treatment centres for medication re-fills.

In the overall, most of the respondents acknowledged that COVID-19 pandemic had adversely affected their physical health status as their physical capacity was notably lower during the COVID-19 pandemic period as compared to their status prior to the emergence of the current pandemic. This was affirmed by the hypothesis tests results which showed that a statistically significant negative relationship existed between COVID-19 pandemic effects and the physical health status of the respondents. Similar sentiments were also echoed by Trivedi et al. (2020), Antoun et al. (2021) and Sousa et al. (2021) who noted that the physical health status/capacity of surveyed ESKD patients was significantly lower during the COVID-19 pandemic period compared to the pre COVID-19 pandemic period which they attributed to COVID-19 related restrictions on outdoor activities and associated general movement restrictions. In contrast, Singh et al. (2021) and Ikizler and Kligler (2020) shared the view that the prevailing COVID-19 pandemic had no significant adverse effects on the surveyed patients' physical health status.

#### **5.1.4 Psychological Experiences of Patients on Hemodialysis during the Prevailing COVID-19 Pandemic Period**

Fear emerged as a leading theme of the respondents' psychological experiences during the ongoing COVID-19 pandemic period. The respondents concurred that during the prevailing COVID-19 pandemic, they did experience, most of the time, fear of health deterioration, fear of contracting COVID-19 and fear of the effects of COVID-19 on their health condition. The fear could be attributable to the reported high mortality across the globe of persons contracting COVID-19 and the issued warning that persons with pre-existing health conditions were at an increased risk of severe COVID-19 disease.

The findings were in agreement with Rabb (2020) who established that fear of contracting the COVID-19 infection and fear of the effects of COVID-19 on one's health as the leading psychological concerns that kidney disease patients had. Similarly, a study by Lee, Steel et al. (2020) showed that the prevailing COVID-19 pandemic resulted to elevated levels of fear among patients on hemodialysis as they understood that they were a high risk group for severe COVID-19 illness with potential adverse health outcomes including risk of death. Similar sentiments were shared by Bhattacharjee and Acharya (2020). In contrast, Singh et al. (2021) and Ikizler and Kliger (2020) shared the view that the prevailing COVID-19 pandemic had no significant adverse effects on the surveyed patients' physical health status. Another psychological experience among the respondents during the prevailing COVID-19 pandemic was troubling feelings. According to the results, the respondents experienced a wide range of troubling feelings which included feeling of being overwhelmed with life's demands - experienced most of the time. In a study by Bonenkamp et al. (2021), surveyed ESKD patients did also point that they felt overwhelmed with the demands of daily living due to the difficulties and disruptions occasioned by the ongoing COVID-19 pandemic, sentiments that are also shared by Ornell et al. (2020).

In addition, about half of the time during the prevailing COVID-19 pandemic, the respondents acknowledged feeling mentally distressed; an observation also made by Trivedi et al. (2020) and McMahon et al. (2020) who noted that COVID-19 pandemic occasioned feelings of mental distress among the surveyed ESKD patients. Similarly,

elevated levels of mental distress were also noted in participants in studies by Goicoechea et al. (2020) and Kocak et al. (2021). This could be due to the significant disruptions on livelihoods and normal daily routines occasioned by the COVID-19 pandemic associated lockdowns and reduced economic activities.

The findings also showed that the respondents did experience feelings of social isolation, feeling of excessive irritability and feelings of being not adequately supported, sentiment also shared by Bonenkamp et al. (2021) who also noted that COVID-19 pandemic had adverse effects on the psychological well-being of patients on dialysis with notable rise in feelings of social isolation and inadequate support observed in surveyed participants. Similarly, in studies by Bhattacharjee and Acharya (2020) and Antoun et al. (2021), most of their participants expressed feelings of irritability, they felt inadequately supported and felt socially isolated. This could be due to the imposed restrictions on social gatherings, social distancing requirements and movement and outdoor activities engagement restrictions imposed in many jurisdictions across the globe in efforts to contain the spread of the COVID-19 pandemic.

In addition, the respondents did also experience feelings of low self-esteem and feelings of hopelessness and/or helplessness in some of the time during the prevailing COVID-19 pandemic. The findings were in collaboration with Ikizler and Kliger (2020) and Apata et al. (2021) whose studies established that majority of the surveyed CKD patients undergoing hemodialysis therapy did experience psychosocial challenges in the form of feelings of helplessness and hopelessness largely due to the rampant disruptive effects of COVID-19 pandemic on their livelihoods and daily routines. Self-esteem challenges and feelings of helplessness due to the ongoing COVID-19 pandemic effects on the QoL of ESKD patients were also observed in studies by Lai et al. (2020) and Bonenkamp et al. (2021).

The third theme was concerns and difficulties. The respondents shared the view that, about half of the time during the prevailing COVID-19 pandemic, they did experience poor feeding, difficulties interacting socially and were unable to sleep properly. Further, the respondents did also experience concerns over inability to follow treatments



consistently and concerns about self-image some of the time during the current COVID-19 pandemic. This showed that concerns and difficulties formed part of the respondents' psychological experiences during the ongoing COVID-19 pandemic.

Similar observations were made in studies by Bonenkamp et al. (2021) and Kocak et al. (2021) who noted that surveyed patients experienced greater difficulties in feeding, sleeping and resting properly during the prevailing COVID-19 pandemic compared to the period before the emergence of the current pandemic. Greater difficulties in social interactions, feeding properly and adhering to treatments among ESKD patients during the prevailing COVID-19 pandemic were also observed by Trivedi et al. (2020) and Singh et al. (2021).

On the overall, the hypothesis tests results showed that a statistically significant negative relationship existed between COVID-19 pandemic effects and the psychological wellbeing of the respondents denoting that COVID-19 pandemic occasioned adverse psychological experiences among hemodialysis patients at KNH, sentiments also echoed by Lee, Steel et al. (2020), Kocak et al. (2021) and Bonenkamp et al. (2021).

#### **5.1.5 Socio-Economic Effects of COVID-19 Pandemic on the Quality of Life of Patients on Hemodialysis**

From the findings, it was evident that the ongoing COVID-19 pandemic had occasioned various socio-economic effects which adversely impacted the respondents' QoL.

Two major themes emerged relating to the socio-economic effects of COVID-19 pandemic on the quality of life of the study participants.

The leading theme was that COVID-19 occasioned financial strain among the study participants at individual and household level. This was evidenced by the respondents acknowledgment with the statements that they were struggling to meet the cost of treatment due to resource related disruptions occasioned by COVID-19 pandemic; as a family, they had experienced greater financial difficulties due to COVID-19 pandemic's effects on their jobs/occupation and that it had been a challenge meeting their own needs (and/or those of the family) during the COVID-19 pandemic. Further,

they also agreed that as a family, they had had to adjust their budget and spending to make ends meet during the COVID-19 pandemic; they felt their financial standing was worse off during this COVID-19 pandemic compared to the pre COVID-19 pandemic period and that COVID-19 pandemic had made life increasingly difficult due to rising costs of living. This showed that financial strain was one of the leading adverse socio-economic effects of COVID-19 pandemic experienced by the study participants.

The findings were in agreement with Rocha et al. (2021) who reported that COVID-19 pandemic had occasioned significant socio-economic vulnerabilities among CKD patients and their families in Brazil adversely impacting their QoL. Lee et al. (2020) and Bhattacharjee and Acharya (2020) shared similar views that the prevailing COVID-19 pandemic had occasioned greater financial strain on CKD patients and their families due to its immense disruptions on national and local economic activities. As a result of the ongoing COVID-19 pandemic, HD patients that participated in studies by Rabb (2020) and Sousa et al. (2021) also acknowledged that their families' financial position had worsened during the pandemic which made them struggle to meet the needs of their families. Findings by Kocak et al. (2021) and Apata et al. (2021) also noted that most of the participants did acknowledge that COVID-19 pandemic had made life increasingly difficult due to rising costs of living and its disruption of livelihoods.

The second theme was disruption of the respondents' livelihoods by the COVID-19 pandemic. This was evidenced by the respondents' agreement with the assertions that COVID-19 pandemic had significantly disrupted their source of livelihood, it had been increasingly difficult to secure employment during the COVID-19 pandemic and that COVID-19 pandemic had reduced their earnings from their occupation. In addition, a few of the respondents also noted that they had to change their occupation due to the COVID-19 pandemic and that COVID-19 pandemic had made them lose their livelihoods/jobs.

This concurred with McMahon et al. (2020) and Ornell et al. (2020) who also observed that COVID-19 pandemic had significant adverse effects on livelihoods as many people had lost their jobs while others had their occupations significantly disrupted by the ongoing COVID-19 pandemic. Studies by Hopman et al. (2020), Goicoechea et al.

(2020) and Kocak et al. (2021) did also establish that COVID-19 pandemic had occasioned adverse effects on the respondents' livelihoods in the form of loss of jobs, reduced earnings from their occupations, inability to secure jobs and disrupting their source of livelihood which in turn put into jeopardy their QoL. Similarly, disruptions of sources of livelihood, loss of jobs and reduced earnings from one's occupations were identified as effects of COVID-19 on HD patients and their families' livelihoods in studies by Diao et al. (2020) and Apata et al. (2021). This is attributed to COVID-19 pandemic disruptions on the economy at the global, national and local levels.

On the overall, the hypothesis tests results showed that a statistically significant negative relationship existed between COVID-19 pandemic effects and the socio-economic status/wellbeing of the respondents denoting that COVID-19 pandemic occasioned adverse socio-economic effects among hemodialysis patients undergoing treatment at KNH and their households. Significant negative effects of COVID-19 pandemic on the financial/economic status as well as on the livelihoods of ESRD patients and their families were also reported in studies by Bhattacharjee and Acharya (2020), Goicoechea et al. (2020), Apata et al. (2021) and Sousa et al. (2021).

#### **5.1.6 Coping Strategies Employed by Patients on Hemodialysis against the Effects of COVID-19 Pandemic on their QoL during COVID-19 Period**

According to this study, the various strategies employed by the study participants to cope against effects of COVID-19 pandemic on their QoL were: avoiding of news on COVID-19 pandemic; seeking social and emotional support from family and friends; engaging in religious activities like prayers and meditation; adhering to issued COVID-19 pandemic prevention guidelines; engaging in leisure activities; seeking new streams of income to safeguard livelihood; working closely with the HCPs to learn how better to safeguard one's health during the pandemic and engaging in substance use to make themselves feel better. This showed that patients on hemodialysis at the renal unit of Kenyatta National Hospital adopted various strategies to cope against effects of COVID-19 pandemic on their QoL, most of which were positive, although a few of the patients adopted negative coping strategies such as engaging in substance use to make themselves feel better which should be discouraged.

The findings agreed with Rabb (2020) and Li et al. (2020) who noted that one of the surest ways for patients on hemodialysis to cope against the adverse effects of COVID-19 pandemic was for them to adhere to stipulated guidelines on prevention of COVID-19. Similar observations were made by Sousa et al. (2021) that it was imperative for CKD patients to strictly observe issued COVID-19 prevention measures given the possible complications on their health status that could be occasioned by contracting COVID-19 infection. Seeking social and emotional support from family and friends, engaging in physical exercises and one's hobbies, getting adequate sleep and/or rest, and collaborating with HCPs to learn more about COVID-19 infection and its potential impact on health outcomes of diverse groups of patients together with complying with issued covid-19 prevention measures constitute plausible mechanisms for coping with the effects of COVID-19 pandemic among chronic kidney disease patients as espoused by Gordon et al. (2020), Algahtani et al.(2021) and Trivedi (2021).

On the overall, the hypothesis tests results showed that a statistically significant positive relationship existed between coping strategies employed by the patients on hemodialysis against the effects of COVID-19 pandemic and their QoL denoting that the various measures adopted by the respondents to protect against contracting COVID-19 infection and the effects of the COVID-19 pandemic helped improve the respondents' quality of life as well as to better cope with the pandemic. Positive implications of adherence to issued COVID-19 prevention guidelines on the QoL and general wellbeing of hemodialysis patients were also evident in other settings as espoused in studies by Gordon et al. (2020), Li et al. (2020), Algahtani et al.(2021) and Rocha et al. (2021).

## **5.2 Conclusions**

Based on the findings of the study, the researcher drew the following conclusions: COVID-19 pandemic adversely affected the physical health status of patients on hemodialysis at KNH's renal unit as it made their performance of activities of daily living, their energy and fatigue status, their pain and discomfort experiences, their mobility, their ability to sleep and rest as well as their capacity to work notably worse during the COVID-19 pandemic period. A statistically significant and moderately

negative association was also established between COVID-19 pandemic effects and the physical health status of the hemodialysis patients at KNH.

COVID-19 pandemic occasioned a wide range of adverse psychological effects on patients on hemodialysis at KNH's renal unit including fear of contracting COVID-19 and fear of the effects of COVID-19 on their health condition, feeling of being overwhelmed with life's demands, feeling mentally distressed, feelings of social isolation, poor feeding, difficulties interacting socially and inability to sleep properly. A statistically significant and strong negative association was also established between COVID-19 pandemic effects and the psychological wellbeing of the hemodialysis patients at KNH.

COVID-19 pandemic occasioned two major adverse socio-economic effects on Hemodialysis patients attending KNH's renal unit which included significant financial strain at individual and household level as well as disruption of their livelihoods. A statistically significant and strong negative association was also established between COVID-19 pandemic effects and the socio-economic status of the hemodialysis patients at KNH.

Patients on hemodialysis at the renal unit of Kenyatta National Hospital adopted various strategies to cope against effects of COVID-19 pandemic on their QoL, most of which were positive such as adhering to issued COVID-19 pandemic prevention guidelines, seeking social and emotional support from family and friends and working closely with the HCPs to learn how better to safeguard one's health during the pandemic, though a few of the patients adopted negative coping strategies such as engaging in substance use to make themselves feel better. A statistically significant and strong positive association was also established between coping strategies employed against COVID-19 pandemic effects and the QoL of hemodialysis patients at KNH.

### **5.3 Recommendations**

#### **5.3.1 Action Recommendations**

Greater emphasis on use of available counselling and social support services, by hemodialysis patients at KNH should be encouraged too and patients scheduled routinely in order to address any psychological difficulties experienced as a result of the prevailing Covid-19 pandemic.

The renal counselor should educate patients on hemodialysis at KNH's renal unit against adopting negative coping strategies against effects of COVID-19 pandemic on their QoL. Instead, adoption of positive coping strategies among these patients should be encouraged and needed support be accorded where necessary. There is need for awareness creation among patients on hemodialysis at KNH's renal unit on the need for continued vigilance against the prevailing COVID-19 pandemic through strict observance of Ministry of Health guidelines on COVID-19 prevention. Therefore, the renal staff should be encouraged to continue with education on the importance of following the COVID-19 prevention guidelines and importance of medication adherence. The national and county governments should make an effort to enhance the social safety nets (or social protection programs) to reduce the socio-economic vulnerabilities occasioned by the prevailing Covid-19 pandemic among patients on hemodialysis at KNH's renal unit.

#### **5.3.2 Recommendations for Further Studies**

Since the current study explored the effects of COVID-19 pandemic on the QoL of patients on hemodialysis at the renal unit of Kenyatta National Hospital and their coping strategies; a wider study involving other Level 5 and Level 4 hospitals in the country is hereby recommended. This will facilitate a broader comparison and generalization of the study findings. Further, an investigation of the effects of COVID-19 infection on treatment outcomes among patients on hemodialysis at KNH's renal unit would equally be illuminating.

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## APPENDICES

### Appendix 1: Participant Information Form

**Title:** Effects of coronavirus disease 2019 pandemic on the quality of life of patients on hemodialysis at the renal unit of Kenyatta National Hospital and their coping strategies.

**Introduction:** My name is Betty Nyamoita Nyakundi, a student at The University of Nairobi pursuing a Master of Science Degree in Renal Nursing at the School of Health Sciences and I am conducting a research study to fulfill the requirements of my course. All the information presented will be entirely for academic and learning purposes and will be treated with utmost confidentiality.

**Purpose of the study:** The study aims to determine the effects of COVID-19 pandemic on the QoL of patients on hemodialysis at the renal unit of Kenyatta National Hospital and their coping strategies. The study findings will help in highlighting the effects that COVID-19 pandemic had caused the HD patients and therefore will help in formulation of strategies that will be used in improving the quality of life of patients especially during pandemics. The research findings will also be used by academicians in adding to the body of knowledge.

**Voluntary participation and withdrawal:** Participation in this study is entirely voluntary and there will be no coercion to participate. You also have a right to accept or refuse participation and in case you want to withdraw, feel free to do so at any time and remember there are no negative consequences for opting out.

**Study Benefits:** There are no monetary benefits expected from participating in the study. However, there will be indirect benefits expected from the study by your participation whereby the findings will be used in policy making and formulation of protocols on hemodialysis patient's coping strategies especially during pandemics.

**Study procedure and duration:** The research assistant will help in reading out the questions from the questionnaire for you and interpret them to your understanding as you continue with hemodialysis for convenience. It will take approximately 15-20

minutes to fill in the questionnaire. The research assistants will be well trained to ensure they understand their role in data collection and the entire study.

**Confidentiality and Anonymity:** In filling the questionnaire, you will not indicate your name or personal details but instead you will be assigned a code number for identification in order to maintain anonymity. The data collected will be kept safe and protected with a password and only accessed by the principle researcher.

**Study potential risks:** There are no potential physical risks involved and the process of data collection is non-invasive. Sometimes you may have emotional vulnerability during the time of filling the questionnaire because of the aspects being highlighted, kindly inform the research assistant if this is affecting how you give your responses. COVID-19 guidelines will be strictly adhered to for example proper wearing of the face mask to minimize the risks of infection.

**Sharing the results:** The study findings will be available at KNH's renal unit and will therefore be useful to KNH renal unit staff and the hospital's management. The results may also be shared and presented in academic forums, scientific conferences and published in academic papers.

**Contact information:** Kindly give your honest experiences during data collection so that the study can have a clear reflection on the effects of COVID-19 pandemic and the coping strategies in order to be able to clearly find out where the gaps are.

Incase you need any clarification regarding the study, you can contact:

Betty Nyamoita Nyakundi

Mobile Number: 0710105689

Email: [benyamtoh@gmail.com](mailto:benyamtoh@gmail.com)

OR

Dr. Eunice Omondi, PhD

Lecturer, Department of Nursing

University of Nairobi

Email: [euomondi@hotmail.com](mailto:euomondi@hotmail.com)

Mobile Number: 0722 728 123

OR

Dr. Irene G. Mageto RN PhD

Clinical Mental Health and Forensic Nursing Specialist

Lecturer, Department of Nursing

University of Nairobi

Email: [igmageto@gmail.com](mailto:igmageto@gmail.com)

Mobile Number: 0724205419

OR

The Chairperson,

KNH-UoN Ethics and Research Committee, (ERC)

P.O. Box 19676-00202 Nairobi,

Email: [uonknh\\_erc@uonbi.ac.ke](mailto:uonknh_erc@uonbi.ac.ke),

Tel: 020-2726300

Extension 44355, 44102

**Appendix 2: Consent Form**

I have been read to and I have been clearly explained to the contents of the participant information form. The researcher in ascertaining my understanding has also asked me certain questions. I have also understood the benefits of the study and that I have the right to withdraw from the study without any negative consequences. I have also understood that any information that I will give will be kept confidential and my identity will remain anonymous. I therefore; voluntarily consent to participate in the study:

Participant thumbprint/Signature.....

Date .....

**Principle Investigator’s statement**

I hereby confirm that I have explained clearly to the research participant the details and content of this study and the participant has freely agreed to participate without any coercion or undue pressure.

Researcher’s signature.....

Date.....



### Appendix 3: Questionnaire

**Study Title:** Effects of coronavirus disease 2019 pandemic on the quality of life of patients on hemodialysis at the renal unit of Kenyatta National Hospital and their coping strategies

**Date:** .....

**Code:** .....

#### Instructions

1. Please tick the appropriate box in the questionnaire where choices are provided.
2. Please write the responses on the provided spaces where there are no choices given.
3. Please do not write your name or any identification on this questionnaire.
4. Respond to ALL questions. DO NOT leave any questions unanswered

#### Section A: Demographic information of the respondents

1. What is your gender?                      Male                      ( )                      Female                      ( )

2. What is your age (in completed years)? .....

3. What is your education level?

No formal education ( )                      Primary education ( )

Secondary education ( )                      Tertiary education ( )

4. What do you do for livelihood?

.....

5. What is your marital status?

Single ( )                      Married ( )                      Separated ( )

Divorced ( )                      Widowed ( )

6. What is the approximate monthly income of your family? .....

7. Where do you live? .....

8. For how long have been under hemodialysis therapy? .....

9.

a. Have you been tested for the corona virus?      Yes    ( )                      No    ( )

b. If yes, what was the result of the test?      Positive    ( )      Negative    ( )

c. If no, why?

.....  
.....  
.....

10. Have you taken the COVID-19 vaccine?      Yes    ( )                      No    ( )

**Section B: Physical effects of COVID-19 pandemic on the QoL of the HD patients**

11. In your view, to what extent has COVID-19 pandemic affected your physical health (that is, your ability to perform normal living physical activities)?

Not at all    ( )                      Slightly    ( )                      Moderately    ( )

Greatly    ( )                      Extremely    ( )

12. How do you rate the following aspects of your physical health during the COVID-19 pandemic compared to the pre COVID-19 pandemic period? Use a scale of 1 - 5 where 1 - no difference [same as before]; 2 - slightly worse [a little poorer than before]; 3 - moderately worse [notably poorer than before]; 4 - much worse [significantly/far much poorer than before]; 5 - fairly better [physically healthier than during the pre COVID-19 pandemic period]. Tick appropriately

<b>Physical health indicators</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Performing activities of daily living					
Use of medication					
Energy and fatigue					
Mobility					

<b>Physical health indicators</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Pain and discomfort					
Sleep and rest					
Work capacity					
Leisure activities					

13. How do you generally perceive your physical capacity during the COVID-19 pandemic era relative to the pre COVID-19 pandemic period?

Extremely inadequate ( )                      Moderately inadequate ( )

Fairly adequate ( )                              Extremely adequate ( )

Any other, elaborate

.....  
 .....

**Section C: Psychological effects of COVID-19 pandemic on the QoL of the HD patients**

14. Please respond to each item by marking one box per row, regarding how you have been feeling during the COVID-19 pandemic period?

Use a scale of 1-5 where 1 – at no time; 2 – some of the time; 3 – about half of the time; 4 – most of the time and 5 – all of the time.

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
fear of health deterioration					
feeling mentally distressed and/or anxious					
fear of contracting COVID-19					
fear of the effects of COVID-19 on your health condition					
excessive moodiness/irritability					
concerns about self-image					
feelings of low self-esteem					

feelings of hopelessness and/or helplessness					
difficulties interacting socially					
unable to sleep properly					
concerns over inability to follow treatments consistently					
feelings of social isolation					
feeling overwhelmed with life's demands					
poor feeding					
feelings of being not adequately supported					

25. What worries and concerns you the most regarding COVID-19 pandemic in light of your health condition?

.....  
.....  
.....

**Section D: Socio-economic effects of COVID-19 pandemic on the QoL of the HD patients**

Rate your level of agreement with the following statements regarding the socio-economic effects of COVID-19 pandemic to you and/or your family.

Use a scale of 1-5 where 1 – strongly disagree; 2 – disagree; 3 – neither agree nor disagree; 4 – agree and 5 – strongly agree.

<b>Statements on socio-economic effects of COVID-19 pandemic</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
COVID-19 pandemic made me lose my livelihood/job					
COVID-19 pandemic has reduced my earnings from my occupation					
I had to change my occupation due to the COVID-19 pandemic					

I am struggling to meet the costs of treatment due to resource related disruptions occasioned by COVID-19 pandemic					
As a family, we have experienced greater financial difficulties due to COVID-19 pandemic's effects on our jobs/occupation					
It has been a challenge meeting my own needs (and/or those of the family) during the COVID-19 pandemic					
As a family, we have had to adjust our budget/spending to make ends meet during the COVID-19 pandemic					
I feel my financial standing/position is worse off during this COVID-19 pandemic compared to before the pandemic					
COVID-19 pandemic has made life increasingly difficult due to rising costs of living					
It has been increasingly difficult to secure employment during the COVID-19 pandemic					
COVID-19 pandemic has significantly disrupted their source of livelihood					

**Section E: Haemodialysis patients' coping strategies against COVID-19 pandemic**

What coping mechanisms have you employed to guard against the effects of COVID-19 pandemic? The following list offers possible suggestions. If they apply in your case, tick appropriately. (Note: You may take more than one option).

Avoided news on COVID-19 pandemic ( )

Sought social and emotional support from family and friends ( )

Engaged in religious activities like prayers and meditation ( )

Adhered to issued COVID-19 pandemic prevention guidelines ( )

Engaged in leisure activities ( )

Sought new streams of income to safeguard livelihood ( )

Engaged in substance use to make myself feel better ( )

Any others (specify)

.....  
.....  
.....

**Section F: Quality of life**

Think about your life in the last 2 weeks. How do you feel about the following aspects of your life?

Use 1 scale of 1-5 where 1 = very poor; 2 = poor; 3 = neither poor nor good; 4 = good; and 5 = very good

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Physical health					
Mental/psychological health					
Social relationships					
Your living environment					

**Thanks for your participation**

#### **Appendix 4: Letter to KNH-UoN Ethics and Research Committee**

Betty Nyamoita Nyakundi,  
Reg. No. H56/35099/2019,  
Department of Nursing Sciences,  
College of Health Sciences,  
University of Nairobi.

The Secretary,  
KNH/UoN - Ethics and Research Committee,  
P.O. Box 20723-00202,  
Nairobi.

Dear Sir/Madam,

#### **RE: Approval To Conduct A Research Study**

My name is Betty Nyamoita Nyakundia student at the University of Nairobi, School of Nursing Sciences undertaking a Masters of Science in Nursing Degree in Renal Nursing. I am hereby requesting for your approval to carry out a research study on “Effects of coronavirus disease 2019 pandemic on the quality of life of patients on hemodialysis at the renal unit of Kenyatta National Hospital and their coping strategies”, as a requirement in partial fulfillment for the award of the said degree.

Thank you in advance.

Yours faithfully,



Betty Nyamoita Nyakundi.

**Appendix 5: Letter to the Head of Department - Renal Unit of KNH**

Betty Nyamoita Nyakundi,  
Reg. No. H56/35099/2019,  
Department of Nursing Sciences,  
College of Health Sciences,  
University of Nairobi.

The Head of Department,  
Renal Unit- KNH,  
Nairobi.

Dear Sir/Madam,

**RE: Authority To Carry Out A Research Study at KNH Renal Unit**

My name is Betty Nyamoita Nyakundi a student at the University of Nairobi, School of Nursing Sciences undertaking a Masters of Science in Nursing Degree in Renal Nursing. I am undertaking a research study on “Effects of coronavirus disease 2019 pandemic on the quality of life of patients on hemodialysis at the renal unit of Kenyatta National Hospital and their coping strategies”, as a requirement in partial fulfillment for the award of the said degree.

I am therefore hereby requesting for your authorization to conduct data collection within the Renal Unit of KNH among hemodialysis patients.




Yours faithfully,



Betty Nyamoita Nyakundi.



## Appendix 6: Approval Letter from KNH-UoN Ethics and Research Committee

	
<b>UNIVERSITY OF NAIROBI</b> FACULTY OF HEALTH SCIENCES P O BOX 19676 Code 00202 Telegrams: varsity Tel: (254-020) 2726300 Ext 44355	<b>KENYATTA NATIONAL HOSPITAL</b> P O BOX 20723 Code 00202 Tel: 726300-9 Fax: 725272 Telegrams: MEDSUP, Nairobi
	<b>KNH-UON ERC</b> Email: <a href="mailto:uonknh_erc@uonbi.ac.ke">uonknh_erc@uonbi.ac.ke</a> Website: <a href="http://www.erc.uonbi.ac.ke">http://www.erc.uonbi.ac.ke</a> Facebook: <a href="https://www.facebook.com/uonknh.erc">https://www.facebook.com/uonknh.erc</a> Twitter: <a href="https://twitter.com/UONKNH_ERC">@UONKNH_ERC</a> <a href="https://twitter.com/UONKNH_ERC">https://twitter.com/UONKNH_ERC</a>
Ref: KNH-ERC/A/364	6 <sup>th</sup> October, 2021
Betty Nyamoita Nyakundi Reg. No.H56/35099/2019 Dept. of Nursing Sciences Faculty of Health Sciences University of Nairobi	
Dear Betty	
<b>RESEARCH PROPOSAL: EVALUATING THE EFFECTS OF CORONAVIRUS DISEASE 2019 PANDEMIC ON THE QUALITY OF LIFE OF PATIENTS ON HEMODIALYSIS AT KENYATTA NATIONAL HOSPITAL'S RENAL UNIT AND THEIR COPING STRATEGIES</b> (P537/07/2021)	
This is to inform you that the KNH- UoN Ethics & Research Committee (KNH-UoN ERC) has reviewed and <b>approved</b> your above research proposal. The approval period is 6 <sup>th</sup> October 2021 – 5 <sup>th</sup> October 2022.	
This approval is subject to compliance with the following requirements:	
<ol style="list-style-type: none"><li>i. Only approved documents (informed consents, study instruments, advertising materials etc) will be used.</li><li>ii. All changes (amendments, deviations, violations etc.) are submitted for review and approval by KNH-UoN ERC before implementation.</li><li>iii. Death and life threatening problems and serious adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH-UoN ERC within 72 hours of notification.</li><li>iv. Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH- UoN ERC within 72 hours.</li><li>v. Clearance for export of biological specimens must be obtained from KNH- UoNERC for each batch of shipment.</li><li>vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (Attach a <u>comprehensive progress report</u> to support the renewal).</li><li>vii. Submission of an <u>executive summary</u> report within 90 days upon completion of the study.</li></ol>	
This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/ or plagiarism.	
Protect to discover	

For more details consult the KNH- UoN ERC website <http://www.erc.uonbi.ac.ke>

Yours sincerely,



**PROF. M.L. CHINDIA**  
**SECRETARY, KNH- UoN ERC**

- c.c.     The Dean-Faculty of Health Sciences, UoN  
          The Senior Director, CS, KNH  
          The Chairperson, KNH- UoN ERC  
          The Assistant Director, Health Information, KNH  
          The Chair, Dept. of Nursing Sciences, UoN  
Supervisors:     Dr. Eunice Omondi, Dept. of Nursing Sciences, UoN  
                    Dr. Irene G. Mageto, Dept. of Nursing Sciences, UoN

## Appendix 7: Approval Letter from Kenyatta National Hospital

KNH/R&P/FORM/01



KENYATTA NATIONAL HOSPITAL  
P.O. Box 20723-00202 Nairobi

Tel.: 2726300/2726450/2726565  
Research & Programs: Ext. 44705  
Fax: 2725272  
Email: [knhresearch@gmail.com](mailto:knhresearch@gmail.com)

### Study Registration Certificate

1. Name of the Principal Investigator/Researcher  
..... BETTY NYAMITA NYAKUNDI .....
2. Email address: benyamtel@gmail.com Tel No. 0710105689
3. Contact person (if different from PI).....
4. Email address: ..... Tel No. ....
5. Study Title  
Evaluating the effects of coronavirus disease 2019 pandemic on the quality of life of patients on hemodialysis at Kenyatta National Hospital renal unit and their coping strategies
6. Department where the study will be conducted RENAL UNIT  
(Please attach copy of Abstract)
7. Endorsed by KNH Head of Department where study will be conducted.  
Prof. Mchigayo S.D *for Dr. B. Hamburgu*  
Name: ..... Signature ..... Date 12/10/21
8. KNH UoN Ethics Research Committee approved study number  
(Please attach copy of ERC approval)
9. I BETTY NYAMITA NYAKUNDI commit to submit a report of my study findings to the Department where the study will be conducted and to the Department of Medical Research.  
Signature Bitch Date 12/10/2021
10. Study Registration number (Dept/Number/Year) Renal Unit 1179/2021  
(To be completed by Medical Research Department)
11. Research and Program Stamp



All studies conducted at Kenyatta National Hospital must be registered with the Department of Medical Research and investigators must commit to share results with the hospital.

### Appendix 8: Budget

Component	Description	Item	Quantity	Unit Cost (Ksh)	Total (Ksh)
Literature Review	Literature search	Airtime Internet	6 Months 6 Months	1,000/Month 4,999/Month	6,000 29,994
	Stationery	Laptop	1	60,000	60,000
		External Hard Disc	1	7,000	7,000
		Pens, Pencils, Eraser, Folders	10	@ 100	1,000
Proposal	Related costs	Plain paper	2 reams	@650	1,300
		Printing	1 Draft	@750	750
		Photocopying	2 Drafts	@250	500
		Binding	3 Drafts	@100	300
Approval	KNH Data ERC		1	@500	500
			1	@ 2,000	2,000
Research Phase	Pretesting of questionnaire	Printing	10	@ 50	500
	Consent Form and Questionnaire	Printing, photocopy	97	@60	5,820
	Data collection	Research Assistants	2	@ 10,000	20,000
	Data Processing and analysis	Statistician	1	@ 35,000	35,000
Report Phase	Final Report	Printing	1 copy	@ 1,000	1,000
		Photocopying	4 copies	@ 500	2,000
		Binding	5 copies	@ 100	500
Publishing					30,000
<b>Sub Total</b>					<b>204,164</b>
Contingencies	10% of sub-totals				<b>20,416.4</b>
<b>Grand Total</b>					<b>224,580.4</b>

### Appendix 9: Work Plan

Activity	2021									
	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Concept development										
Proposal writing and presentation to faculty										
Submission of proposal to Ethics										
Pretesting the instrument										
Data collection										
Data analysis and Report writing										
Presentation of the findings										
Project findings dissemination										

## Appendix 10: Plagiarism Report

EFFECTS OF CORONAVIRUS DISEASE 2019 PANDEMIC ON THE QUALITY OF LIFE OF PATIENTS ON HEMODIALYSIS AT THE RENAL UNIT OF KENYATTA NATIONAL HOSPITAL AND THEIR COPING STRATEGIES

**ORIGINALITY REPORT**

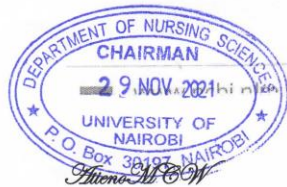
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*Dr Eunice Omundi*  
Supervisor  
DON  
29/11/2021



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Dr Eunice Omondi  
Supervisor

DON

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