

**STRESSORS AND COPING STRATEGIES AMONG HEMODIALYSIS
PATIENTS IN SELECTED COUNTIES DIALYSIS CENTERS IN
KENYA.**

ELIZABETH WAMBUI MUGI

R50/37226/2017

**A thesis submitted in partial fulfillment of the requirements for the award of
the degree of Master of Science in Nursing (Nephrology) in the school of
Nursing, Kenyatta University.**

MAY 2021

DECLARATION

This thesis is my original work and has not been presented for a degree in any other university.

Signature.....

Date.....

Elizabeth Mugi

Registration number: R50/37226/2017

This thesis has been submitted for review with my approval as the University Supervisor.

Signature.....

Date.....

Dr. Grace Githemo, PhD, MscN, BscN

Lecturer Kenyatta University School of Nursing

Signature.....

Date.....

Dr. Jonathan Wala

Consultant Nephrologist and Lecturer in Kenyatta University school of Medicine

DEDICATION

I dedicate this thesis to my dear husband Naftaly Gachau for his overwhelming love, patience and support throughout our life together. To my God given parents Mr. & Mrs. Peter Mugi for their never-ending love, support, prayers and encouragements throughout this study. To my dear siblings; Kimereh, Regina and Maryanne for always cheering me up whenever I felt like giving up. I love you all.

ACKNOWLEDGEMENTS

I am very much grateful to my supervisors Dr. Grace Githemo and Dr. Jonathan Wala for their continuous encouragement, guidance and support from the beginning of this thesis to its final stage. This thesis would not have reached this final stage without their guidance. I will forever remain indebted to them.

TABLE OF CONTENTS

DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENTS	iv
TABLE OF CONTENTS	v
LIST OF FIGURES	x
LIST OF TABLES.....	xi
LIST APPENDICES.....	xii
DEFINITION OF TERMS	xiii
ABBREVIATIONS AND ACRONYMS.....	xiv
ABSTRACT.....	xv
CHAPTER ONE: INTRODUCTION.....	1
1.1. Background	1
1.2. Problem statement.....	3
1.3. Research questions	5
1.4. Broad Objective	6
1.4.1. Specific Objectives.....	6
1.5. Justification	6
1.6. Significance of the study.....	8
1.7. Conceptual framework.....	8
1.7.1. Independent variables.....	9
1.7.2. Moderating variables.....	9
1.7.3. Dependent variables	9
CHAPTER TWO : LITERATURE REVIEW.....	11
2.1. Introduction.....	11
2.2. End stage renal disease and hemodialysis.....	11
2.3. Stressors Among Hemodialysis Patients.....	12
2.3.1. Psychological stressors	12
2.3.1.1. Unemployment.....	12
2.3.1.2. Uncertainty about the future.....	15
2.3.1.3. Dependency	16
2.3.2. Physical Stressors	17

2.3.2.1. Changes in body appearance	18
2.3.3. Physiological stressors in chronic hemodialysis	18
2.3.3.1. Fatigue	18
2.3.3.2. Sexual problems	19
2.3.3.3. Body pains	20
2.3.3.4. Sleep disturbances	21
2.4. Coping strategies among hemodialysis patients	22
2.4.1. Problem focused coping strategies	24
2.4.2. Emotion focused coping strategies	24
2.5. Association between patients demographic characteristics, stressors and coping strategies	25
2.5.1. Gender	25
2.5.2. Marital status	26
2.5.3. Age	26
2.6. Theoretical framework	27
2.7. Summary of the identified gaps	29
CHAPTER THREE: METHODOLOGY	31
3.1. Introduction	31
3.2. Study design	31
3.3. Study area	31
3.4. Study population	33
3.5. Sampling procedure	33
3.5.1. Sample size determination	34
3.5.2. Inclusion and exclusion criteria	34
3.5.2.1. Inclusion criteria	34
3.5.2.2. Exclusion criteria	34
3.6. Study variables	35
3.7. Data collection method	35
3.7.1. Instruments (reliability and validity)	35
3.7.2. Pre-testing	36
3.7.3. Data collection process	36
3.7.4. Data management	37
3.8. Data analysis	37

3.9. Ethical considerations	38
3.10. Delimitations and limitation of the study.....	39
3.10.1. Delimitations of the study	39
3.10.2. Limitation of the study	39
CHAPTER FOUR: RESULTS.....	41
4.1. Introduction.....	41
4.2. Response rate	41
4.3. Demographic characteristics of respondents.....	42
4.4. Hemodialysis stressors.....	43
4.4.1: Physiological and physical stressors	43
4.4.2. Psychological stressors.....	44
4.5. Coping strategies among hemodialysis patients	44
4.5.1. Problem based strategies	44
4.5.2. Emotion based strategies	45
4.6. Association between demographic characteristics and hemodialysis stressors	46
4.6.1. Association between demographics characteristics and physiological stressors.....	46
4.6.2. Association between demographics and physical stressors	48
4.6.3. Association between demographics and psychological stressors.....	49
4.7. Association between patients’ demographic characteristics and coping strategies	50
4.7.1. Association between demographics characteristics and problem based coping strategies	50
4.7.2. Association between demographics and emotion based coping strategies	53
4.8. Perceived health status among hemodialysis patients.....	54
4.8.1. Perceived health status before start of hemodialysis treatment and after start of hemodialysis treatment modality.....	54
4.10. Association between coping strategies and perceived health status of hemodialysis patients	54
4.10.1. Association between problem based strategies and perceived health status.....	54

4.10.2. Association between emotions based strategies and health status ...	56
4.11. Causal association between coping strategies and perceived health status	
.....	57
4.11.1. Problem based strategies causal association with health status	57
4.11.2. Emotion based strategies causal association with health status	58
CHAPTER FIVE : DISCUSSION	59
5.1 Introduction	59
5.2 Demographic characteristics	59
5.3 Stressors among hemodialysis patients.....	60
5.3.1. Physiological and physical stressors	60
5.3.2. Physical stressors.....	61
5.3.3. Psychological stressors.....	62
5.4 Coping strategies among hemodialysis patients	63
5.5 Association between patients demographics and stressors	63
5.5.1. Association between Physiological Stressors and Demographic	
characteristics.	63
5.5.2. Association between Demographic Characteristics and Physical	
Stressors.....	64
5.5.3. Demographic Characteristics and Psychological Stressors.....	65
5.6 Association between respondents demographic factors and coping	
strategies.....	66
5.6.1. Association between demographic characteristics and problem based	
coping strategies	66
5.6.2. Association between demographics characteristics and emotion based	
coping strategies.....	68
5.7. Perceived health status of the respondents.....	68
5.8. Association between coping strategies and respondents perceived health	
status	69
5.9 Causal association between coping strategies and perceived health status	70
5.9.1. Problem Based Strategies causal association with Health Status.....	70
5.9.2. Emotion Based Strategies causal association with Health Status	70
5.10 Conclusion and recommendations	71
5.10.1. Conclusion.....	71

5.10.2 Recommendations	71
5.10 .3. Areas of further research	72
REFERENCES	73
APPENDICES.....	79

LIST OF FIGURES

Figure 1.1: Conceptual framework: Adopted from Issa Dina Tahseen 2015	10
Figure 2.1: Theoretical framework	29
Figure 4.1: Respondent's perceived health status after diagnosis and before start of HD	54

LIST OF TABLES

Table 3.1: Total number of hemodialysis patients per the county hospital	32
Table 4.1: Response rate	41
Table 4.2: Respondent's socio-demographic characteristics	42
Table 4.3: Physiological and physical stressors of the respondents	43
Table 4.4: Psychological stressors respondents rating	44
Table 4.5: Coping strategies	45
Table 4.6: Emotion based strategies respondents rating	46
Table 4.7: Association between demographics characteristics and physiological stressors	47
Table 4.8: Association between demographics characteristics and physical stressors	48
Table 4.9: Association between demographics and psychological stressors	49
Table 4.10: Association between demographics and problem based coping strategies	52
Table 4.11: Association between demographics characteristics and emotion based coping strategies	53
Table 4.16: Association between problems based strategies and health status	55
Table 4.17: Association between emotions based strategies and health status	56
Table 18: Problem based strategies causal association with perceived health status	57
Table 19: Emotion based strategies causal association with health status	58

LIST OF APPENDICES

APPENDIX 1: QUESTIONNAIRE ON STRESSORS AND COPING STRATEGIES AMONG HEMODIALYSIS PATIENT IN THE SELECTED NEW COUNTIES HEMODIALYSIS CENTERS IN KENYA	79
APPENDIX 2: INFORMED CONSENT	86
APPENDIX 3: UTAFUSIRI WA IDHINI KWA LUGHA YA KISWAHILI...	89
APPENDIX 4: CONSENT FORM FOR THE PATIENT (ENGLISH).....	91
APPENDIX 5: FOMU YA IDHINI YA KUSHIRIKI YAWAGONJWA (SWAHILI)... ..	92
APPENDIX 6: KENYATTA UNIVERSITY ETHICS REVIEW COMMITTEE APPROVAL LETTER.....	93
APPENDIX 7: NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION (NACOSTI) APPROVAL LETTER.....	94
APPENDIX 8: NYERI COUNTY REFERRAL HOSPITAL DATA COLLECTION APPROVAL LETTER.	95
APPENDIX 9: MACHAKOS COUNTY REFERRAL HOSPITAL DATA COLLECTION APPROVAL LETTER.	96
APPENDIX 10: MACHAKOS COUNTY REFERRAL HOSPITAL DATA COLLECTION PAYMENT RECEIPT	97
APPENDIX 11: THIKA COUNTY REFERRAL HOSPITAL DATA COLLECTION APPROVAL LETTER.	98
APPENDIX 12: MURANG'A COUNTY REFERRAL HOSPITAL DATA COLLECTION APPROVAL LETTER.....	99

DEFINITION OF TERMS

- Chronic Kidney Disease (CKD):** Defined as abnormalities of kidney structure or function, presenting for >3 months and characterized by the kidneys inability to excrete waste products
- End Stage Renal Disease (ESRD):** Refers to irreversible destruction of the kidneys characterized by complete loss of kidney function. At this point, the patient must depend on dialysis for the removal of waste products from the body.
- Dialysis:** Refers to the process of removing toxins and waste products from the body by use of a machine.
- Hemodialysis:** Refers to the process of removing toxins, waste products and excessive fluid from the body by use of a hemodialysis machine. During hemodialysis process, the blood is drawn intravenously, sent through an artificial kidney called a dialyzer by means of blood lines and back to the body through a vein.
- Stressors:** Stressor is anything that causes tension and a state of anxiety.
- Coping strategies:** Are deliberate, planned and psychological efforts designed to manage stressful demands and situations.

ABBREVIATIONS AND ACRONYMS

BSCN:	Bachelor of Science in Nursing
CKD:	Chronic kidney disease
ESRD:	End Stage Renal Disease
HD:	Hemodialysis
KNH:	Kenyatta National Hospital
MES:	Managed Equipment Services
NHIF:	National Hospital Insurance Fund
USA:	United States of America

ABSTRACT

Patients with chronic kidney disease (CKD) depend on renal replacement modalities that act to substitute the function of the compromised kidney. Hemodialysis remains the most sought form of treatment modality among Patients with CKD. Despite its health benefits, patients receiving hemodialysis services experience multiple physiological, psychological and physical stressors that results into a different level of perceived health status. As a result, the patients develop various individualized and unique coping strategies to help them cope with the disease. Aim: The study aimed at describing the stressors and coping strategies among hemodialysis patients. Methodology: This was a descriptive correlational study among hemodialysis patients in four selected county dialysis centers in Kenya. Sample size was determined through a census method. Data was collected by means of a semi structured questionnaire. Data was analyzed using a Statistical Package for Social Sciences (SPSS) version 25.0 and presented using graphs, frequency tables, and chi-square to test for the significance. Results. The major physiological stressors were decreased sexual drive, feeling tired and difficulties in falling asleep while the major physical stressors were joint pains and being uncomfortable with the physical body changes. Despite government initiative to devolve hemodialysis services, the major psychological stressors were inadequate hemodialysis machines, lack of commodities and difficulties in raising the cost of treatment. Major problem based coping strategies used were sharing with family members, sharing with health care workers and seeing the good side of the problem while the major emotion based strategies used were wishing the problem could go away, blaming others and keeping the problem to one self. There was statistically significant association between sharing with health care worker and perceived health status. There was statistically significant association between problems based strategies and perceived health status. Conclusion and recommendations: Nurse Counsellors should provide counseling to patients prior to start of hemodialysis on the physiological stressors especially issues of decreased sexual drive. Patients should be assessed on the physical stressors by the nurses and doctors to ensure the appropriate remedies are provided. Nurse Counsellors should counsel patients on the use of problem coping strategies as they are significantly associated with better perceived health status. Health workers should also be readily available to listen to the patients' needs as sharing with health care workers was significantly associated with better perceived health status. Recommend the County government to increase the number of HD machines in line with the number of patients so that to reduce on waiting time

CHAPTER ONE: INTRODUCTION

1.1. Background

Chronic kidney disease (CKD) is a complex and a long term chronic condition occurring among all the age groups. By the end of 2013, there were 655,435 people in the United States who were reported to have chronic kidney disease. This was an increase of 68% since 2000 (Ahmed et al., 2014).

In 2010, CKD was classified as the 18th leading cause of death worldwide. Its prevalence was said to have doubled between the year 1990 and 2010 (Tchape, Tchapoga, Atuhaire, Priebe, and Cumber, 2018). In Sub-Saharan Africa, CKD is of global health concern. It is progressive in nature and its very last stage is termed as End Stage Renal Disease (ESRD). It is estimated that over the next decade, more than 70% of patients with ESRD will be residents in the low-income countries (Tchape et al., 2018).

Being diagnosed with ESRD denotes that the kidneys are so permanently damaged that the individual can no longer survive independently without renal replacement therapy. The renal replacement modalities available for such patients are the hemodialysis, peritoneal dialysis and kidney transplant. Of the three renal replacement options available for them, hemodialysis remains the most common sought form of treatment for ESRD patients. That is; kidney transplant accounts for 2.6% and hemodialysis accounts for 97.2% of incidence patient in 2013 in united states (Rojas, 2017).

According to, Muhammad et al, (2012), the management of CKD entails a multi-faceted treatment plan. The treatment plan impacts on many aspects of every days

life including diet, fluid intake ,time available for leisure activities and self-management of multiple therapeutic interventions and medications (Shinde et al. 2014).

CKD patients often also have to deal with some other chronic comorbidities that often precedes CKD. Such co-morbidities include but not limited to diabetes, hypertension and cardiovascular diseases. They also face the challenges and burden of disturbing and irreversible consequences of kidney failure on their physical and mental health including the impact on their family, lifestyle, relationship and employment (Muhammad et al., 2012).

Therefore, the patients who are dependent on hemodialysis are faced with multiple problems and challenges, both physiological and psychological in nature. At the same time they experience personal losses and lifestyle changes. Also, patient dependency on machine for survival conflicts with the independence needed to maintain a normal life. (Shinde et al. 2014)

According to Lok (2006), persons who endure a chronic illness such as CKD, perceive different levels of quality of life from that of the general population. As a result, they exhibit a varying degree of coping strategies in dealing with their life challenges throughout their life. The kind of coping strategies they use depends on their personal experience, social support system, individual beliefs and accessibility of resources (Shinde et al. 2014).

Researchers have categorized the coping strategies as either problem-focused or emotion-focused strategies. The Problem focused coping strategy are geared towards managing and altering a stressful situation and addressing the problem

that causes the distress. Emotion-focused coping strategy entails explaining stress as incapacity to control one's own situations and its purpose is to amend the negative emotions linked with the problem (Gerogianni,2013).

Though both strategies bring about a drop in stress levels, studies have indicated that those persons who employs emotion –focused coping strategies have lower psycho cognitive adaptation which affects their life while problem focused coping strategies is seen amongst those with proper mental health and social adaptation. (Gerogianni, 2013).

The selection of the appropriate coping strategies usually reduces the quantity of pressure the individuals' can tolerate, therefore, the goal of care treatment of the patients with CKD should be to help them adapt with the disease and its outcomes. Health care workers taking care of the patient's awareness concerning the specific hemodialysis stressors, the coping strategies and the stress levels among their hemodialysis patients will help them in proper planning for the care to this patients.

1.2. Problem statement

Chronic and life threatening diseases are amongst the most troublesome factors in the life of a human being. The stress factors associated with chronic illnesses includes the duration of the illness, the period of treatment, hospitalization and treatment cost, mental status and social damage. Consequently, the presence of a chronic diseases influences the family, the personal identity, the psychosocial dimensions, emotional stability, social interactions and inter personal relations(Lok et al 2006).

Like any other chronic illness, long term hemodialysis treatment results into many stresses and limitations. Therefore, patients dependent on hemodialysis, develop various individualized coping strategies to cope with the stressors related to their condition and the treatment procedures (Issa, 2015). The choice of the coping strategy is primarily influenced by personal social or cultural group, individual principles, beliefs and customs (Shahrokhi, Rayyani, Sabzevari, and Haghdoost, 2014).

Patients on maintenance hemodialysis experience many different stressors in different settings and they express the severity of the stressors differently in different settings and rank the severity of the stressors differently from one person to the other and from one region to the other.

In a study done on stressors and coping strategies amongst hemodialysis patients in three dialysis centers in Istanbul, the study respondents ranked fatigue, uncertainty about future and limitation of activities as the most troublesome stressors (Cinar, Barlas, and Alpar, 2009).

In another study done among hemodialysis patients in North of West Bank the study participant ranked limit on time and decreased sexual drive as the most problematic stressors (Issa, 2015). In another study done among hemodialysis patients in a group of hospitals supervised by the University of Jiroft in Iran 2013, the participants ranked limitation of fluids and foods and arterial venous catheter site pain as the most troublesome stressors (Shahrokhi et al., 2014).

In Kenya, according to Nyaga Cecilia (2013), in her unpublished project retrieved from the KNH school of Nursing archives on stressors among hemodialysis

patients in KNH renal unit, she found that the most troublesome stressors among the hemodialysis patient were long travelled distance, long waiting queues and long waiting time.

Since patients on maintenance hemodialysis are variant in the way they perceive and rank the hemodialysis stressors and also they develop individualized coping strategies, this study aimed at describing the stressors and coping strategies among patients on maintenance hemodialysis attending the county level 5 hemodialysis centers in Kiambu, Murang'a, Machakos and Nyeri County.

1.3. Research questions

1. What are the stressors and coping strategies among hemodialysis patients in the county hemodialysis centers in Kenya?
2. What is the perceived health status among hemodialysis patient in the county hemodialysis centers in Kenya?
3. Is there any association between patients' demographic characteristics and hemodialysis stressors among hemodialysis patient in the county hemodialysis centers in Kenya?
4. Is there any association between patients' demographic characteristics and coping strategies among hemodialysis patients in the county hemodialysis centers in Kenya?
5. Is there any association between coping strategies and the perceived health status of the hemodialysis patients among hemodialysis patients in the county hemodialysis centers in Kenya?
6. Is there any causal association between coping strategies and perceived health status?

1.4. Broad Objective

To describe the stressors and coping strategies among hemodialysis patients in the new counties hemodialysis centers in Kenya.

1.4.1. Specific Objectives

1. To identify the stressors among hemodialysis patients in selected county hemodialysis centers in Kenya.
2. To identify the coping strategies used by the hemodialysis patients in selected county hemodialysis centers in Kenya.
3. To establish the association between patients' demographic characteristics and hemodialysis stressors among hemodialysis patient in the county hemodialysis centers in Kenya.
4. To establish the association between patients demographic characteristics and coping strategies among hemodialysis patients in the county hemodialysis centers in Kenya.
5. To determine the association between coping strategies and the perceived health status of hemodialysis patients among hemodialysis patient in the county hemodialysis centers in Kenya
6. To determine the causal association between coping strategies and perceived health status

1.5. Justification

Between 1978 and 2002 Kenya had only one dialysis Centre at (KNH) when other four more were established in Kisumu, Nakuru, Mombasa and Eldoret. Later on, in 2016. Due to the high demand of patient requiring hemodialysis services, the National government made a commitment to have the hemodialysis

services devolved to all county hospital under the Managed Equipment Services Scheme (MES) by the end of June 2016.

The government aim was to decongest KNH dialysis centres and to make the dialysis services easily accessible to all the citizens everywhere in the country (Mutia, D. M., Mukhongo, L., and Chemweno, P., 2018). Coupled with the provision of dialysis services in all the county hospital country wide, the National Hospital Insurance Fund (NHIF), also came up with a new policy to cover two dialysis sessions per week for all the hemodialysis patients' countrywide.

These two great achievements are believed to have reduced the cost on patients as far as management cost is concerned. That is, the availability of dialysis services at county hospitals has reduced the patient transportation cost that the patient had initially to incur on transport to the major referral hospitals. Introduction of NHIF cover has also reduced the treatment cost for hemodialysis.

Since the devolvement of the hemodialysis services to the county hospitals, there are no studies that have been done to evaluate on how the hemodialysis patients are faring on in the now new hemodialysis centers. Also, there are no studies done to evaluate on any other new stressors that they could be facing since hemodialysis patients experience different stressors in different setting and also since the treatment cost and distance challenges were addressed by the government. Therefore, this study aims at describing the stressors and coping strategies among hemodialysis patients attending the county level 5 hemodialysis centers in Kiambu, Murang'a, Machakos and Nyeri County and their coping strategies.

1.6. Significance of the study

The results of this research will add to the body of knowledge on the stressors encountered by the patients dependent on hemodialysis in the new county hemodialysis centers. Enhanced understanding of all the stressors and effective coping strategies employed by hemodialysis patients will help in informing the health care providers in supporting the patient to choose and apply effective coping strategies. The findings will also be important for policy formulation and planning purposes by the persons overseeing the implementation program of hemodialysis services in the county hemodialysis centers.

1.7. Conceptual framework

The conceptual framework for this study was derived from Calister Roy adaptation model. In her theory, she explains how an individual interact with the environment that is composed of stressful stimulus to bring about adaptation (Maria et al ., 2013). According to Roy's adaptation model, a person is seen as a bio-psycho-social being in constant interaction with a changing environment and that he or she uses innate or acquired coping mechanisms to bring about adaptation (Lea et al 2013).

As hemodialysis patient experience different stressors that impact negatively on their quality of life these patients develop individualized coping strategies that mediate between their stressor and their quality of life. Therefore the researcher identified several independent, dependent and moderating variables that were investigated in the entire study.

1.7.1. Independent variables

The study adopted patients' demographic characteristic and hemodialysis stressors as the input dependent variables that impacts on the way the patients on maintenance hemodialysis perceive their health status. The demographic factors included: patients age, gender, marital status and economic status. The hemodialysis stressors were grouped into: physiologic, physical and psychological stressors.

1.7.2. Moderating variables

Since the hemodialysis patient quality of life is mediated by the coping strategies used, the researcher sought to identify the coping strategies that mediates in between the patients' demographic characteristics, hemodialysis stressors and the perceived patients' health status among patients on maintenance hemodialysis.

1.7.3. Dependent variables

Since the researcher was interested on the impact that the hemodialysis stressors have on the patients' life, the researcher focused on patient perceived health status as the outcome variable.

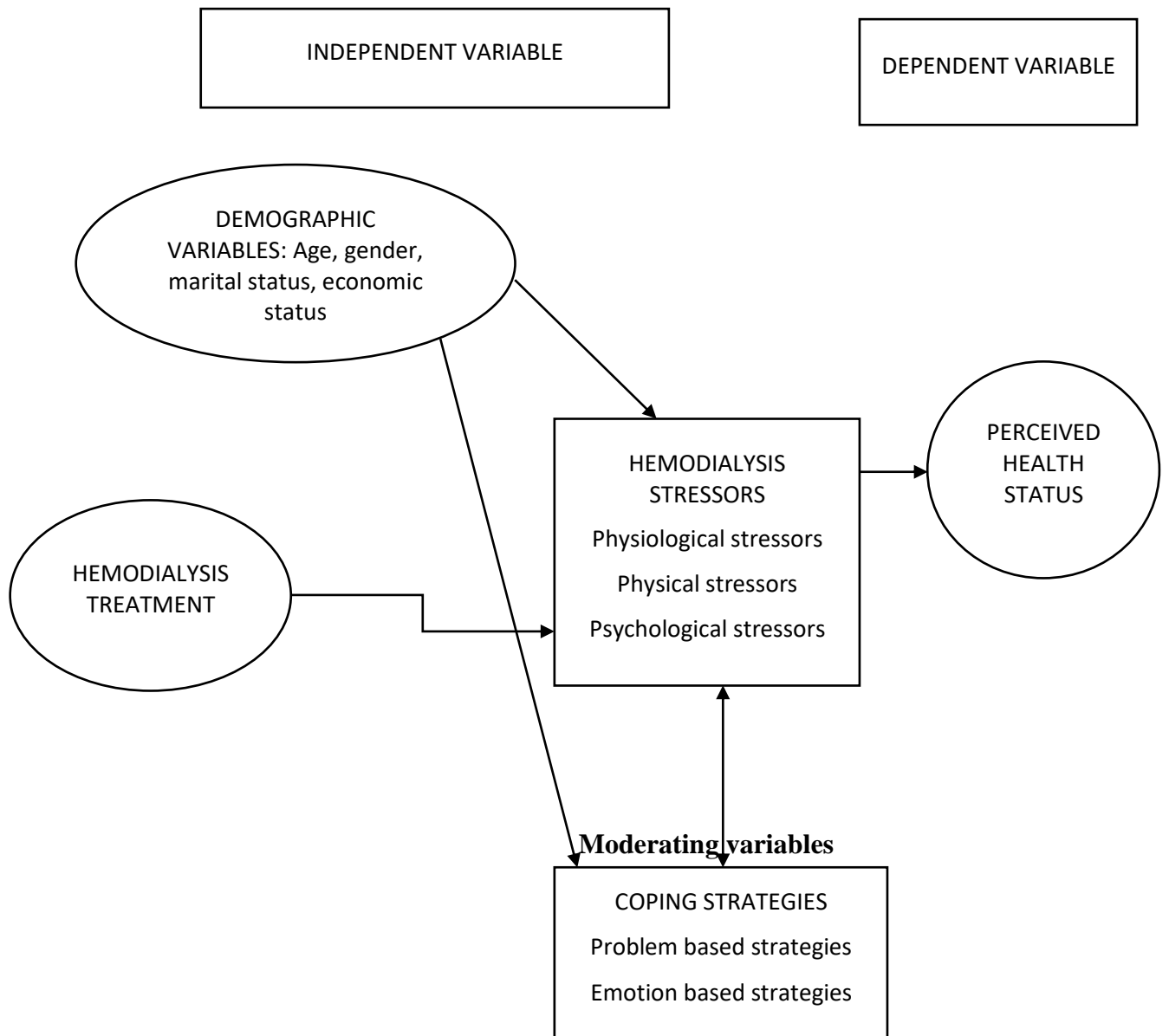


Figure 1.1 Conceptual framework: Adopted from Issa Dina Tahseen 2015

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

Hemodialysis patient experience different stressors in different setting. These stressors usually have an influence on their quality of life. Therefore, they develop individualized coping strategies that enable them deal with the stressors. The literature search in this chapter focused on: stressors and coping strategies among hemodialysis patients and their quality of life.

The source of literature review for this study was Google scholar, Mendeley's catalogue of literature, pub med and clinical key databases .The key words were stressors, stress, hemodialysis, coping strategies, chronic kidney disease and end stage renal disease.

2.2. End stage renal disease and hemodialysis

ESRD refers to the irreversible loss of kidney function characterized by the patients' inability to eliminate waste products and excess fluid from their bodies. Such patient have to depend on dialysis machine to aid in the removal of waste products from their body. Other than dialysis treatment modality, there are other treatment modalities for such patients such as kidney transplantation (Mahadeo and Mane, 2014).

Hemodialysis treatment modality is usually the first line of treatment, however, it is usually associated with many complications and restrictions. Such restrictions includes; fluids and food restrictions and all these acts as stressors to the patient. These stressors are categorized as psychological physiological and physical stressors. As a result, the patients must develop individualized coping strategies

to help him cope with those stressors. The well-known coping strategies are the problem and emotion based strategies (Issa, 2015)

2.3. Stressors Among Hemodialysis Patients

Hemodialysis is a lifelong treatment modality for patient with CKD and ESRD. This treatment modality is associated with many stressors and the patients experience these stressors differently in different settings. Hemodialysis treatment modality significantly and sometimes adversely affects the patients' quality of life. The affected aspect that are affected are the physical, psychological, physiological and mental aspects (Shahrokhi et al., 2014)

The negative experiences during this treatment time appears to influence patients' mood and development of further stressors. The hemodialysis stressors are classified as: psychological stressors, physical stressors, and physiological stressors (Leghari, Amin, Akram, Ali Asadullah, & Leghari MBBS, 2015).

2.3.1. Psychological stressors

Psychological stressors refers to the situations that confronts the hemodialysis patients and subject them to a lot of mental disturbances. These factors leave them in a worrying states. They include lack of employment or loss of employment, being uncertain about the life ahead of them, reduced sexual drive, being dependent on their caregivers and loss of sleep (Hallab and Wish, 2018).

2.3.1.1. Unemployment

In general population, securing employment is always associated with an enhanced sense of physical, psychological, mental and social wellbeing. Likewise, employment among hemodialysis patients is linked with an improved

quality of life in multiple dimensions such as affordability of drugs that they require (Hallab and Wish, 2018).

Even though ESRD patients desire and value longer living, the quality of life that they live is the major crucial prognostic indicator for them .Many factors have been identified to affect their quality of life. One of this factors is the employment status which contributes a lot to their rehabilitation as well as the improvement of their economic status and emotional status by improving their self-worth (Huang et al., 2017).

Unemployment is one of the major challenge faced by patients on hemodialysis treatment modality. Employment rates among hemodialysis patients in the united states(USA) have been reported to be as low as 18.9% and this has also been reported as the world wide problem (Hallab and Wish, 2018).

According to Hallab and Wish (2018),approximately 120,000 persons in USA develop (CKD) and subsequently they develop(ESRD). He further reported that the rate of employment among these hemodialysis population were very low and that it has continued to decrease overtime. Hallab and Wish (2018), also reported that the ESRD network reports indicated that 28% Of working aged persons under the age of 54years who were receiving hemodialysis were employed in 1999 which later decreased to 13% by the year 2013.

Another study conducted among 4026 hemodialysis patients in the USA by Tsutsui, Nomura, Ishiguro, Tsuruta, Kato, Yasuda, Shunya, and Oshida (2017), stated that,41.9% of the patients were employed before the start of hemodialysis

treatment. But this proportion declined to 21.1% after hemodialysis treatment and even further decreased to 6.5% a year later.

In another prospective study conducted in Netherlands among 659 hemodialysis patients, 31% of the patients were employed at the initiation of hemodialysis but that percentage reduced to 25% within the first year after the commencement of dialysis (Tsutsui et al., 2017).

In an Indian study among hemodialysis patients, report showed an employment rate of 29.9% among hemodialysis patients after the initiation of dialysis with rates of loss of employment of 44% and 55% among patients initiating hemodialysis and peritoneal dialysis respectively (Huang et al., 2017).

According to an annual report from Chinese Renal Data System, more than 60% of all prevalent or incidence hemodialysis patients are in the working age bracket 18-60 years in China. However, only a small fraction of ESRD patients are employed at the start of dialysis compared to a general population. For hemodialysis patients, staying on job can be beneficial to the patient in many ways such as improving patient self-esteem (Erickson, Zhao, Ho, and Winkelmayr, 2018).

In Japan, 63% of the hemodialysis patients were employed prior to initiation of dialysis and 22% of them lost their job after the initiation of hemodialysis. The study participants cited possible factors such as increasing age, low level of education, being of female gender, dialysis modality and unavailability of late-shift dialysis services as the independent risk factors for the loss of employment. In-center hemodialysis modality was associated with low employment as a result

of the time consumed travelling from home to dialysis facility as well as the post-dialysis “downtime”(Hallab and Wish, 2018).

2.3.1.2. Uncertainty about the future

Uncertainty involves the patient’s lack of ability to attribute or attach meaning to his life due to the complexity and the nature of the disease that he is suffering from. Poor information provision, the unpredictability and the ambiguity of the disease interferes with the patient’s ability to confer meaning to his life. Thus increasing the degree of uncertainty (Etkind, Bristowe, Bailey, Selman, and Murtagh, 2016).

Once the diagnosis of a chronic illness is discoursed with the patient, the patient core questions are around the prognosis of the disease. How long will they survive with the disease? How well will they be while still living with the disease? What would be the best management of that disease (Parvez, Abdel-Kader, Song, and Unruh, 2015).

Hemodialysis patient experience a lot of concern about their future due to the unpredictability of the illness leading to emotional uncertainty. Other than the common uncertainty about their future, waiting for a kidney transplant is another stressor that increases their worries about their future. Majority of them endure very long duration before they finally have a kidney transplant done on them and they are get worried whether they will get an organ or not. They also get scared of having to return to hemodialysis should they ever have a kidney transplant rejection (Tchapoga et al., 2018).

Uncertainty among hemodialysis patients is not certainly undesirable entity. It's the patients' judgment and response to uncertainty that mediates its impact on the patient. Some patients find prognostic uncertainty protective as it permits them to focus on the brighter side of life while others find not knowing what will transpire quite distressing (Etkind et al., 2016).

Uncertainty causes the patients some anxiety. However, it's the way that the uncertainty is communicated to the patient that is key to the patient satisfaction than the existence of the uncertainty itself. Patients are reported to be able to cope with their diagnosis of chronic illness and the treatment modality when they view their health care providers as epistemic authorities. Indeed, the patients are more satisfied when their healthcare providers express no uncertainty. They are least satisfied when their healthcare providers express uncertainty (Parvez et al., 2015).

When the patients' uncertainty is poorly addressed, it leads to a negative state to the patients' wellbeing and poor psychological states for the patient. This affects health care delivery negatively. Un addressed uncertainty also results to poor patient adaptation to the illness and adverse coping strategies (Etkind et al., 2016).

2.3.1.3. Dependency

According to the WHO reports, the persons who dependent on others to be assisted in carrying out their activities of daily living form 4-5% of the entire world population. WHO defines dependence as the disability in doing the activities of daily living such as maintaining good personal hygiene, proper

nutrition and safety? This is deliberated as a big challenge among hemodialysis patients (Moghadam and Nasiri, 2017).

Health status of the patients on hemodialysis is quite poor. This is the main reason for their increased dependency on other persons for survival. Other than the financial dependency brought about by unemployment, patients usually dependent on the medical staff for monitoring and prevention of any complications while they are on the hemodialysis machine (S. S. Ahmed et al., 2014)

They also depend on family members and by extension on friends and well-wishers in order for them to be assisted in meeting their activities of daily living such as washing clothes, cooking, washing dishes, running errands, lifting and to be accompanied to the hemodialysis center (Tchape et al., 2018).

Many of the hemodialysis patients feel quite powerless due to their inability to sustain their jobs or deal effectively and efficiently with their daily activities of living. More significantly, the more the illness becomes severe, the more they become dependent which creates a feeling of being quite of a burden to others. As a result, most of the patients desire to withdraw from treatment options and die other than them been viewed as a burden to significant others (Moghadam and Nasiri, 2017).

2.3.2. Physical Stressors

Hemodialysis treatment modality is associated with the insertion of subclavian hemodialysis catheter or creation of atriovascular fistula or a graft. All this are

invasive procedures and leaves a mark on the patient skin. The main physical stressor among these patients are the physical changes in body appearance

2.3.2.1. Changes in body appearance

The body appearance of the patients on hemodialysis changes drastically. These changes are linked with the frequent placement of central venous catheters, frequent episodes of generalized body edema associated with non-adherence to fluid restrictions. Loss of body weight, loss of muscle tone, various surgical scars and the changes in skin color due to accumulation of toxins under the skin and the usual enlargement of the arms after the creation of arteriovascular fistula (Shahrokhi et al., 2014).

Adolescents undergoing through hemodialysis treatment modality usually have an abnormally low self-esteem due to limited dressing styles in an attempt to cover and hide the dialysis catheter site. They always associate the site of catheter with stigma (Rostron and Chapman, 2018)

2.3.3. Physiological stressors in chronic hemodialysis

Physiological stressors are the factors that causes the patient body discomfort and pain. They include fatigues, sexual problems, and body pains.

2.3.3.1. Fatigue

Fatigue remains the most important stressor reported among hemodialysis patients. Mostly it goes unrecognized and often goes un treated by the health care provider due to its insidious and invisible nature (Tchape et al., 2018). According to Horigan Anne, Schneider Susan, Docherty Sharron (2013), in their study on

fatigue among hemodialysis patients they reported that that fatigue was one of the most troubling symptoms. Its prevalence ranging from 60-97%.

Among the patients on hemodialysis, physiologic, behavioral, treatment related and individual characteristics have been linked to fatigue. The physiologic causes of fatigue include are anemia, malnutrition, uremia, dialysis inadequacy, existing comorbidities and side effects of the drugs. (Horigan Anne, Schneider Susan, Docherty Sharron, 2013)

Physical inactivity have also been associated with the higher levels of fatigue. Socio-demographic etiological factors to fatigue among hemodialysis patients include age, sex, race, educational level and marital status. For example in a study carried out among hemodialysis patient s in Taiwan, there were higher levels of fatigue among older females and unemployed patients (Horigan et al., 2013).

Due to the magnitude and the impact of fatigue among hemodialysis patients, a multi-disciplinary approach to treatment and management of fatigue should be adopted by all health care workers taking care of the hemodialysis patients. For the appropriate management of fatigue levels among hemodialysis patients, this symptom requires to be recognized and accurately measured by health care providers (Horigan, 2012).

2.3.3.2. Sexual problems

Sexual problems are usually very important concern among hemodialysis patients. Sexual concerns are mainly caused by both physiological and psychological factors. The physiological factors associated with sexual problems

among hemodialysis patients are uremia, fatigue, depression, anxiety and metabolic disturbances (Leghari et al., 2015)

The psychological factors associated with sexual problems are the changes in body image and body appearances such as femoral catheter sites and denial of the disease by the patient (Leghari et al., 2015) Thus, hemodialysis patients not only complain of decline in frequency of sexual activities after the start of hemodialysis but also suffer from sexual impotence and loss of sexual drive. More than 60% of men undergoing hemodialysis have been reported to have complained loss of libido after initiation of hemodialysis (Tchape et al., 2018).

2.3.3.3. Body pains

ESRD patients of all age groups are found to have poor quality of life because of the worsening of the kidney disease from CKD to ESRD. These patients develop numerous complications that are associated with greater risk of developing many comorbidities and high mortality among these patients. (Gerogianni and Babatsikou, 2013).

Therefore, all the health care professionals providing care to the patients on hemodialysis must not only purpose on extending the patient's life pan but also they should aim at improving the patient's quality of life. (Gerogianni and Babatsikou, 2013).

One of the most reliable and most significant qualitative parameters for measuring the patient's quality of life is the bodily pain. Thus, in order to improve the quality of life among these population, it is paramount to early detect and relieve the patients bodily pain (Brkovic, Burilovic, and Puljak, 2016).

According to Brkovic (2016), the prevalence of pain among hemodialysis patient is 50%-60%. Hemodialysis patients reported that pain is often not effectively managed although most of the patients never mention the pain they experience to their doctors during their clinic appointments.

In another similar study, the prevalence of chronic pain ranged from 33-82%. Intra-dialytic prevalence ranged from 21-92% and that analgesics were prescribed to 18% of the patients and the pain management index showed clear under treatment of pain (Xi et al., 2011).

2.3.3.4. Sleep disturbances

Hemodialysis patients usually experience challenges in falling asleep and usually experience frequent nocturnal awakening. Furthermore, these patients also experience disordered breathing patterns during their sleep to include snoring, apneic spells, nocturnal choking episodes, morning headaches and daytime sleepiness (Al-saedi, Jameel, Qais, Kareem, and Mohssen, 2014).

According to Nigam, Camacho, Chang, and Riaz (2018), in their study to evaluate the self-reported quality of sleep among the hemodialysis patient, they found out that there was an increased prevalence of sleep disorders among the hemodialysis patient than in the general population. The sleep disorders were more observed among the older age groups.

Sleep disorders are more associated with inadequate dialysis dose and hypophosphatemia. Therefore having adequate hemodialysis and treatment of hypophosphatemia which is a common occurrence among hemodialysis patient

would alleviate sleep disorders among the hemodialysis patients (Nigam et al., 2018).

The International classification of sleep disorders 3 (ICSD-3)1997, has classified and identified the priority disorders related to sleep disturbance in hemodialysis patient as being insomnia and obstructive sleep apnea. These classification defined insomnia as a frequent difficulty with sleep initiation, duration, consolidation or quality that happens regardless of adequate opportunity to sleep. This causes the patient a lot of daytime impairments. (Sabry, Abo-zenah, Wafa, Mahmoud, El-dahshan, Hassan, Tarek and Abd, 2010).

There are two specific etiology to insomnia among the hemodialysis patient, that is, the elevated level of orexins and hypercalcemia. Orexin has been associated with arousal and wakefulness. Lack of orexin leads to a disorders of reduced wakefulness and narcolepsy. Patients with CKD and ESRD, the body's physiological levels of orexin reaches abnormal levels leading to an increased episodes of wakefulness that is related to insomnia among hemodialysis patients (Nigam et al., 2018).

2.4. Coping strategies among hemodialysis patients

Studies on coping strategies started with Sigmoud Freud who did put forward the concepts of defense mechanisms. He described coping mechanisms as mental operations that keep the painful experiences and feelings out of once consciousness. The subsequent important shifts on the studies on coping strategies was brought forth as a result of cognitive theories. According to the cognitive theories, cognitive coping mediates amid a very stressful events,

psychological and physical responses to stressful events (Parvan, Ahangar, Hosseini, & Abdollahzadeh, 2015).

The coping strategies chosen by the patient might inhibit or override his innate compulsion to act towards a stressful event. Positive coping among patients results to adaptation characterized by positive equilibrium between health and illness, sense of wellbeing and better social functioning. However, if the patient fails to cope positively, then maladaptation occurs that tends to swing the balance towards illness, a diminished self-concept and decline in the social functioning of the patient (Issa et al., 2015).

ESRD is in itself a chronic illness associated with dependence on the renal replacement modalities and these treatment modalities has some requirements, benefits and considerations. Though this treatment modalities helps the patient in the clearance of body waste, they are considered as a source of stress. Therefore the patients must cope with its numerous aspects of their disease but according to Parvan (2015), these patients frequently experience difficulties in coping with the disease's stressful factors.

Among hemodialysis patients, there are different effective ways to cope with stressors. The most frequently used methods among hemodialysis patients are the problem based (active) and emotion based strategies (passive coping). The problem based strategies are associated with less pain, less depression and improved quality of life. Emotion based strategies are associated with much pains, much depression and poor quality of life (Büssing, Ostermann, Neugebauer, and Heusser, 2010).

2.4.1. Problem focused coping strategies

Problem focused coping strategies are also referred to us as active coping strategies. They involve collecting facts and refocusing on the problem. This strategy is linked with minimal pain, reduced depression episodes, minimal functional impairment and higher general self-efficacy (Büssing et al., 2010).

According to Issa (2015), in her study on hemodialysis stressors among patients in North west bank, problem focused strategies are usually focused at defining the problem at hand, generating its possible solutions, considering all its possible alternatives then selecting the best option among the many alternative solutions and acting by implementing the best solution.

2.4.2. Emotion focused coping strategies

Emotion focused coping strategies are also called passive coping strategies. They includes avoidance and escape. They are associated with reports of much depression, a lot of pain, much functional impairment and reduced general self-efficacy (Büssing et al., 2010).

In addition, emotion focused strategies are focused at reducing emotional distress. They includes strategies such as avoidance, distancing oneself from the problem and minimization (Issa et al., 2015) .Other emotion focused coping strategies include: distraction which involves keeping oneself busy to take one's attention off the issue, Praying for direction and strength, drinking excess alcohol in order to detach oneself from the reality and suppressing negative thoughts or emotions (Shahrokhi et al., 2014).

2.5. Association between patients demographic characteristics, stressors and coping strategies

Patients' demographic characteristics have been found to predict the patient's vulnerability to hemodialysis stressors and also they have been used to predict how the patient will cope with the stressors. The commonly identified patients demographic characteristics associated with hemodialysis stressors and coping strategies are patients gender, marital status and patients age (Leghari, Amin, Akram, Ali Asadullah, and Leghari MBBS, 2015).

2.5.1. Gender

In a study done in Taiwan among hemodialysis patients to study if gender differences differ in stressors and coping strategies, it was found out that women had a greater stress response to physical stressors such as changes in body image. That they also had a higher score in the use of emotion focused strategies. While the male gender reported higher stressors as being sexual functioning and that they had a higher score in the use of avoidance as their coping strategies (Issa, 2015).

In another study to investigation of coping styles among hemodialysis patients in Isfahan Iran, participants used emotion focused coping strategies and that there was no significant differences between male and females respondents regarding mean total scores of coping, problem focused strategies and emotion focused strategies (Gerogianni and Babatsikou, 2013).

According to Gemmell, Terhorst, Jhamb, Unruh, Myaskovsky, Kester, and Steel (2016), women with CKD tend to employ self-distraction, positive reframing,

venting and religious coping strategies more frequently than men. However, there were no significant differences in perceived stress or domains of quality of life were witnessed amongst men and women with CKD.

2.5.2. Marital status

According to Mohammad (2015), in his study on physiological and psychosocial stressors among hemodialysis patient in Educational hospital of Northern Iran, stress levels were greater in married young women than in married men. This finding could be attributed towards young women having stressing issues such as bring up the children. In another study focusing on stressors and coping strategies among hemodialysis patients in university of Pittsburgh, there were no significant association amongst coping strategies and marital status (Gemmell et al., 2016).

2.5.3. Age

There was a positive relationship between young patients and the use of emotion based coping strategies. There was also a positive relationship between the use of problem based strategies and older patients (Gemmell et al., 2016). In yet another study done by Niemczyk (2013), on age related differences in the quality of life in ESRD in patients enrolled on hemodialysis in Poland, he found out that younger patients experienced more hemodialysis stressors and they used emotion focused strategies more.

2.6. Theoretical framework

This study adopted Roy's Adaptation Model (RAM) as a theoretical framework to assess stressor and coping strategies among hemodialysis patients in the selected new county hemodialysis centers. Sister Calista Roy the core founder of this model was born in Los Angeles California on 14th October 1939 (Maria et al 2013).

She qualified with a Bachelor of Arts nursing degree in 1963 from Mt. St. Mary's College in Los Angeles and a Master of Science in Nursing from the University of California in Los Angeles in 1966. She began her training in sociology and received both MA in sociology in 1973 and a PhD in sociology in 1977 from the University of California. (Maria et al 2013).

Sister Calister Roy was challenged during a seminar by Dorothy G Johnson while working towards her Masters to develop a conceptual model in nursing. As she was working as a pediatric staff nurse she noticed a great resilience of children to adapt to major physical and psychological changes. This is when she developed Roy's adaptation model as a suitable conceptual framework for nursing. She then began operationalizing her model in 1968 (Maria et al 2013).

According to Roy's adaptation model, an individual is seen as a bio-psycho-social being who is continuously interacting with a changing environment and that he or she uses innate or acquired coping mechanisms to adapt (Lea et al 2013). To her, the environment is made up of three dynamic components that is, focal stimuli, contextual stimuli and residual stimuli. The focal stimuli are those

immediate problems or stressors that are confronting an individual and that they require and immediate attention (Maria et al 2013).

In this study the focal stimuli will be the immediate need for haemodialysis services such as uremia, fluid overload and hyperkalemia (Tchape et al., 2018).The contextual stimuli refers to the other stimuli of the humans internal and external environment that could have a positive or negative effects on the current situation (Maria et al 2013).In this study, the contextual stimuli will include treatment cost, cost of transport, availability of hemodialysis equipment's and drugs, patients social support system, availability of resources(Muhammad et al., 2012).

The third stimuli are the residual stimuli and they include the external factors whose current effect is unclear (Maria et al 2013).In this study, the residual stimuli will be the demographic characteristics of the patient such as age, gender, marital status and education level.If the individual has the available social support system and availability of resources then he successfully copes with the stressor and the stressor stops being a bother to him anymore this leads to a positive adaptation that now improves the patients quality of life but if the patient does not successfully adopt positively due to lack of resources and social support system, this leads to ineffective adaptation that leads to poor quality of life.

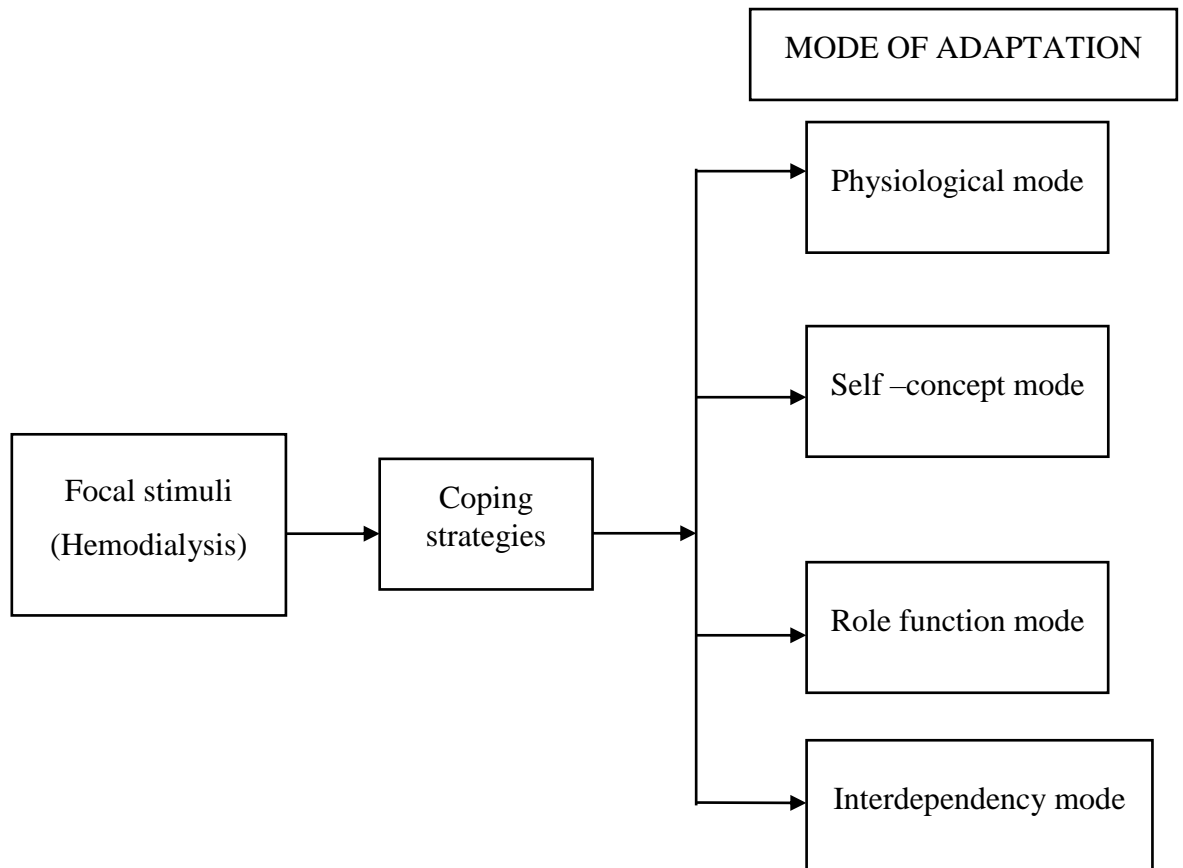


Figure 2.1 Theoretical framework

2.7. Summary of the identified gaps

Hemodialysis patients experience many different stressors differently. The stressors vary from one setting to the other and from one location to the other. There is no one main stressor that can be identified as being the most troublesome as the patients rank them differently in the way that they perceive them. Therefore there is need to be evaluating the patients stressors regularly so as to aid in prompt patients plan of care.

Hemodialysis patients also have developed unique and very individualized coping strategies. Some use problem based strategies while others use emotion based strategies. Majority of the patient have been found to use emotion based strategies which is associated with a poor quality of life. Majority of the female

gender use emotion coping strategies. Young patient are associated with use of emotion based strategies. Thus, there is need for health care providers to train the patients on need to look at their stressors objectively and identify a well thought solution.

The hemodialysis patients usually vary on how they perceive their health status. This could be attributed to the use of emotion based strategies there is a positive association between problem focused strategies and the improved quality of life. If the patients could be helped to cope well with the disease and its associated stressors, then, their quality of life could improve.

CHAPTER THREE: METHODOLOGY

3.1. Introduction

This chapter described the research methodology that was used for the study. It provided the general framework of the study. Research design, target population, sample determination, study instruments, pre testing, data collection procedures, data analysis methods, and ethical considerations was also discussed in this chapter

3.2. Study design

This was a retrospective cross sectional study design that aimed at describing the stressors and coping strategies among hemodialysis patients in the new selected county hemodialysis centers namely Kiambu county, Murang'a county, Nyeri county and Machakos county.

Retrospective cross sectional study design was used as the researcher was interested in identifying the hemodialysis stressors that the patients on maintenance hemodialysis have been experiencing from the initiation of hemodialysis therapy and also to identify the coping strategies that they have been using since then.

3.3. Study area

The study was conducted in four selected new county hemodialysis centers namely Kiambu county, Machakos county, Nyeri county and Murang'a county. The four county hemodialysis centers were selected by the researcher because they were all new level 5 county referral hospitals that were marked as the priority county public hospitals and equipped with hemodialysis equipment's

through the EMS program in order to decongest KNH. They also reported to have a higher patient turn over as per February 2019 as per table 3.1

Table 3.1 : Total number of hemodialysis patients per the county hospital

COUNTY	TARGETTED HEMODIALYSIS HOSPITAL CENTRE	TOTAL NUMBER OF HEMODIALYSIS PATIENTS
Kiambu county	Thika level 5 county hemodialysis centre	15
Murang'a county	Murang'a level 5 county hemodialysis centre	28
Nyeri county	Nyeri level 5 county hemodialysis centre	30
Machakos county	Machakos level 5 county hemodialysis center	28
Total number of hemodialysis patients		101

Ref (Thika, Murang'a, Machakos and Nyeri level 5 hospital February statistics, 2019)

In Kiambu County, data collection took place at Thika level 5 hospital hemodialysis center. It's located in Thika town along general Kago road. It had 15 patients on chronic hemodialysis and doesup to 50dialysis sessions per week. In Machakos County, data collection took place in Machakos level 5 hospital. It's located in Machakos town along Machakos Wote road. It had 28 patients on chronic hemodialysis and does up dial 70 dialysis sessions per week.

In Murang'a County, data collection took place in Murang'a level 5 hospital. It's located in Murang'a town near Gichinga lane. It had 42 patients on chronic hemodialysis and offered up to 102 dialysis sessions per week. In Nyeri County, data collection took place in Nyeri level 5 hospital. It's located in Nyeri town along Kimathi way. It had 28 patients on chronic hemodialysis and offered up to 68 dialysis sessions weekly.

3.4. Study population

The study population for this study were all hemodialysis patients in the selected four county hemodialysis centers in Kenya namely Kiambu county Machakos county, Murang'a county and Nyeri county.

3.5. Sampling procedure

Sample size was achieved by use of census method where all the hemodialysis patients in the selected new hemodialysis centers were approached and requested to participate in the study. Census method was used as the data obtained through this method would be a true representation and a true picture of the real hemodialysis stressors among hemodialysis patient in the new county hemodialysis centre as the hemodialysis stressors and coping strategies are unique and individualized in each hemodialysis patient.

Census method would also provide the researcher with a true measure of the population and no sampling error would be introduced. Census method was also the most preferred method especially due to smaller sample size.

3.5.1. Sample size determination

The researcher used slovin formula to calculate the minimum number required for the thresh-hold of this study. Slovin formula had a confidence interval of 95% and a margin error of 0.05.

$$n = \frac{N}{1 + N(e)^2}$$

n=desired sample size

N=total population

$$n = 101 \div 1 + (.05)^2$$

n=81 hemodialysis patients.

3.5.2. Inclusion and exclusion criteria

3.5.2.1. Inclusion criteria

The inclusion criteria included all the hemodialysis patient who have been diagnosed with CKD and ESRD and who had been on hemodialysis treatment modality in the same hemodialysis center for at least three months and who voluntarily consented to participate in the study

3.5.2.2. Exclusion criteria

Those who were excluded from the study were all hemodialysis patient below the age of 18 as they were not eligible to give an informed consent. Those who were critically ill and were unable to give an informed consent. All the eligible hemodialysis patient who declined to consent were excluded.

3.6. Study variables

The researcher had identified different variables that would guide in the development of the study data collecting tool. The independent variables were the patient's demographic characteristics and the hemodialysis stressors. Moderating variable were the coping strategies and dependent variables was the patient's perceived health status.

3.7. Data collection method

Data was collected using a self-administered questionnaire consisting of four sections as per the appendix 3. Self-administered questionnaire was used for its comparability properties in that the data that was collected would be used to compare and contrast other researches that have been done and could be used to measure a change. The questionnaire consisted both open ended and closed ended questions derived from the previously validated tools of Baldree et al., 1982 hemodialysis stressor scale, jawoiec coping strategy tool and psychological stress tool. The respondents were required to respond to the questions in the questionnaires without any external aid

3.7.1. Instruments (reliability and validity)

Validity: The validity of the tool was tested by matching objectives with the statements on the questionnaire. The researcher applied content validity as she was looking if the tool was measuring all relevant elements identified stressors, coping strategies from previous studies.

Reliability: The questionnaire was pretested with ten patients from Kerugoya level 5 county referral hospital prior to administration to evaluate its level of consistency. By doing so, each of these ten persons responded to it two times

with an interval of two weeks and the results were compared to bring about a correlation equals

3.7.2. Pre-testing

The questionnaire was pretested with ten hemodialysis patients from Kerugoya level 5 county hospital prior to data collection to test for the validity and reliability of the study tool. This was because, kerugoya level 5 hemodialysis center had similar characteristics to the four selected hemodialysis county centre in that, they were all new county hemodialysis centers.

The principal researcher goal while pretesting the tool was to increase the validity and reliability of the research questionnaire. When pretesting the questionnaires, the focus was on how the hemodialysis patients were answering the questions in order to ensure that the respondents interpreted and answered questions in the way in which the study intended. The pre-test results gave the researcher feedback as to whether all the areas required in the study had the same meaning to the respondents as to the researcher.

3.7.3. Data collection process

The principle investigator led the data collection process and was assisted by two BscN nursing interns' assistants who were trained on what the tool intends to measure, how to administer the tool, the kind of data to collected, how to check for data completeness, data coding and data storage. The BscN research assistant recruited demonstrated adequate understanding and knowledge on the basic research process. The principle investigator also recruited the research assistants who was fluent in English, Kiswahili, Kikuyu and Kamba language as they were

required to translate the questionnaire from English to the local vernacular language of the respondents.

The procedure of collecting data involved the principal researcher identifying the eligible hemodialysis patients as per the inclusion criteria as they reported in hemodialysis centre. She then administered the questionnaires to the eligible hemodialysis patients only in the selected county hemodialysis centers. Every participant was required to respond from his or her understanding without any external influence. Then the answered questionnaires were collected by the researcher the same day and kept under lock and key awaiting analysis.

3.7.4. Data management

The data was managed by collecting all the questionnaires and the data obtained was fed into a personal computer which had personal pass ward awaiting analysis.

3.8. Data analysis

Once all the questionnaires had been received, they were checked for completeness before being accepted for data entry and analysis. All the questionnaires that were incomplete were not included in the study. SPSS 25.0 version was used in data analysis.

Descriptive data was analyzed using descriptive statistic; percentage, mean, median, mode, standard deviation and graphical representations to highlight the significance from data. Data obtained from open-ended questions were grouped into major emerging themes during analysis. Association between patients' demographic characteristics, stressors and coping strategies was analyzed by use

of Pearson r correlation and chi-square to measure the degree of association between the variables.

3.9. Ethical considerations

Ethical clearance was sought from Kerugoya Level 5 Hospital for the pre-test study and Kenyatta University Research and Ethics Committee and NACOSTI for the main study. Participation of subjects was on voluntary bases and written informed consent was obtained from all respondents prior to participation in the study. This was done in order to protect the rights and confidentiality of respondents and minimize risk of physical and mental discomfort, harm or dangers from research procedures.

In the Constitution of Kenya, 2010, it was emphasized that every person had an inherent dignity and right to have that dignity respected and protected; had right not to be subjected to any form of harm/violence from either public or private sources; and had the right to privacy, right not to have information relating to their family or private affairs unnecessarily revealed. The researcher and research assistants ensured that the protection of respondent's rights was guaranteed.

All the relevant hospital authorities including the renal centre ward in charges were informed of the research and requested for permission for the research to proceed. Respect for individual respondents was expressed by recognizing that their autonomy and right to self-determination underpin their ability to make judgments and decisions for themselves.

The nature and purpose of the research was clearly explained to the prospective respondents, and then informed written consent was sought from them before been allowed to take part in the study. Respondents were informed that they have the right to withdraw from the research at any time without any prejudice. Subject to legislation, respondents were informed that information obtained during the study was confidential and that it will not be used for any other purpose other than for this study.

Respondents were also assured of confidentiality of the information that they provided and that if, published it would not be identifiable as theirs. Respondents were informed that there were no incentives attached to the study and no physical harm was expected from the study. Also any questions from the respondents on the research was promptly answered by either the principle researcher or the research assistants.

3.10. Delimitations and limitation of the study

3.10.1. Delimitations of the study

The study was only carried out among hemodialysis patients in the new counties level 5 public hospitals hemodialysis centers. Only among those who had at least three months consecutive hemodialysis services in the respective centre.

3.10.2. Limitation of the study

The study was only carried out among hemodialysis patients who had had at least three months consecutive HD sessions in the respective hemodialysis centre. Hence generalization of the findings to all the other centers may not be possible.

This study also used a semi structured questionnaire during the entire data collection period. The questionnaire was developed by the principle researcher in English language. The tool was then translated from English to Kiswahili, Kikuyu and Kamba languages in order to allow the respondent who did not know English language to participate.

It is known that changing something from one language to another could affect the original meaning and could exaggerate or inhibit the real significance of the concept. However, the researcher overcame this limitation by ben the led person in the data collection procedure as she was knowledgeable in both English, Kiswahili and kikuyu and also recruited a researcher who understood Kamba language.

The other limitation was smaller sample size that the researcher used because the smaller the sample size, the bigger the error, however the researcher overcame that limitation by ensuring that she administered the questionnaire to all eligible hemodialysis patients and also ensured that all the questionnaire were as comprehensive as possible in order to gather as much information as possible.

CHAPTER FOUR: RESULTS

4.1. Introduction

This research work was carried out with a broad aim of identifying the stressors and coping strategies among hemodialysis patients in selected counties dialysis centers in Kenya. The data was analyzed based on the research objectives that included the description of respondents' socio-demographic characteristics, assessment of the stressors, coping strategies and evaluation of respondent's health status.

The researcher also sought to determine the association between respondents' demographic characteristics and stressors, association between respondents' demographic characteristics and coping strategies as well as the association between the respondents coping and the perceived health status.

4.2. Response rate

The sample size was 101 hemodialysis patients drawn from Machakos, Murang'a, Nyeri and Thika level 5 county dialysis centers. Out of the 101 study sample, a total of 90 respondents participated in the study which brought about 89% response rate as shown in table 4.1

Table 4.1.: Response rate

	Site					Total (n)	Percent age (%)
	Machakos (n)	Murang'a (n)	Nyeri (n)	Thika (n)			
Male	17	17	15	6	55	62	
Female	8	9	11	7	35	38	
Total respondents	25	26	26	13	90	89	
Target population	28	28	30	15	101	100	

4.3. Demographic characteristics of respondents

On demographic characteristics, the study findings showed that, 40% (n =36) of the respondents were aged 31-60years and while 26.7%% (n=24) were aged below 30years. Majority of the respondents (61%, n=55), were male while 71.1% (n=64), were married. Almost half of the respondents, 48.9% (n= 44) had primary school as the highest attained level of education while only one respondent had university level education.

On the sources of income, 60% (n =54) of the respondents were peasant farmers with majority of the respondents, 77.8% (n =70) earning below ksh.10, 000per month. Majority, 58.9 %(n= 53) of the respondents had dialyzed for a period of less than twelve months. This is shown in table 4.2

Table 4.2: Respondent’s socio-demographic characteristics

Variable		Frequency (n)	Percentage (%)
Gender	Male	55	61.1
	Female	35	38.9
Age	≤30 Years	24	26.7
	31 - 60 Years	36	40.0
	>60 Years	30	33.3
Marital status	Single	17	18.9
	Married	64	71.1
	Separated/widowed	9	10.0
Education level	Primary level	44	48.9
	Secondary level	32	35.6
	Tertiary level	14	15.6
Monthly Income	≤ ksh.10,000	70	77.8
	Ksh.10,001 -20,000	9	10.0
	>ksh.20,000	11	12.2
Duration of Hemodialysis	≤12 Months	53	58.9
	13 -24 Months	17	18.9
	>24 Months	20	22.2

4.4. Hemodialysis stressors.

The hemodialysis stressors that were assessed included physiologic, physical and psychological stressors. The mean average was scored based on the Likert scale rating where; Disagree =1, Neutral = 2 and Agree = 3.

4.4.1: Physiological and physical stressors

On physiologic and physical stressors that were evaluated, majority of the respondents identified decrease in sexual drive as a major stressor with a mean of 2.9 (SD= 0.4), followed by feeling tired with a mean of 2.8 (SD = 0.5), experiencing joint pain with a mean of 2.6 (SD = 0.8), difficulties falling asleep, 2.5 (SD = 0.9) and feeling uncomfortable with body changes with a mean of 2.0 (SD = 1). More than half of the respondents 58.9% (n = 53) disagreed with being stressed because of inability to bear more children with a mean of 1.8 (SD= 1) as shown in Table 4.3.

Table 4.3: Physiological and physical stressors of the respondents

Physiological stressors	Disagree	Neutral	Agree (3)	Mean ±SD
I experience decrease in sexual drive	3(3.3%)	6(6.7%)	81(90%)	2.9±0.4
I feel tired during hemodialysis sessions	8(3.3%)	2(2.2%)	80(90%)	2.8±0.5
I experience Joint pain	18(20%)	-	72(80%)	2.6±0.8
I experience difficulties in falling asleep	23(25.6%)	1(1.1%)	66(73.3%)	2.5±0.9
I am uncomfortable with my physical body changes	46(51.1%)	1(1.1%)	43(47.8%)	2.0±1
I am stressed because of my inability to bear children	53(58.9%)	5(5.6%)	32(35.6%)	1.8±1

4.4.2. Psychological stressors

On psychological stressors, the findings showed that most of the respondents agreed that inadequate number of hemodialysis machines $M= 2.94$ ($SD = 0.8$), uncertainty about future life $M= 2.74$ ($SD = 0.6$), lack of hemodialysis equipments' especially premapor $M=2.69$ ($SD=0.7$) were the top three psychological stressors. This was followed by challenges in raising the cost of treatment to include raising transport to and from the hemodialysis centre 2.64 ($SD 0.8$) among others as shown in Table 4.4.

Table 4.4: Psychological stressors respondents rating

	Disagree	Neutral	Agree	Mean± SD
There are inadequate number of HD machines	2(2.2%)	1(1.1%)	87(96.7%)	2.94 ±0.8
Am not sure about future	10 (11.1%)	3(3.3%)	77(85.6%)	2.74±0.6
We lack HD equipment's	14(15.6%)	0.0	76(84.4%)	2.69±0.7
Difficulties in raising costs of treatment	16(17.8%)	0.0	74(82.2%)	2.64±0.8
HD Machines keep breaking down	19(21.1%)	0.0	71(78.9%)	2.58±0.8
Wait for long to for HD machine	40(44.4%)	0.0	50(55.6%)	2.11±1
Depend on others to get to clinic	70(77.8%)	0.0	206(22.2%)	1.44±0.8
HD machines are never repaired in time	78(86.7%)	4(4.4%)	8(8.9%)	1.22±0.6

4.5. Coping strategies among hemodialysis patients

4.5.1. Problem based strategies

The findings of the study as presented in Table 4.5 showed that most of the respondents ($M = 2.3$, $SD = 0.1$), shared with their family members all the problems that they encountered regarding hemodialysis treatment as coping

strategy while other shared their problems with healthcare workers (M = 2.2, SD = 0.5).

The respondents also sometimes tried to see the good side of the problem (M = 2.13, SD=0.4.) while others distracted themselves by doing things that they love the most in order to forget the problem they were experiencing (M = 2.1, SD= 0.8).The participants also asserted that they sometimes share their problems with others who have had been in the same situation (M = 1.69, SD=0.6).

Table 4.5: Coping strategies

Problem based strategies	Rating			Mean±SD
	Never (1)	Sometimes (2)	Always (3)	
Share with family members all the problems	3(3.3%)	57(63.3%)	30(33.3%)	2.3±0.1
Share problems with HCWs	2(2.2%)	68(75.6%)	20(22.2%)	2.2±0.5
See good side of the problem	9(10)	60(66.7%)	21(23.3%)	2.13±0.4
Try to distract myself by doing what I love most	7(7.8%)	67(74.4%)	16(17.8%)	2.1±0.8
Talk with someone in similar situation	34(37.8%)	50(55.6%)	6(6.7%)	1.69±0.6

4.5.2. Emotion based strategies

Emotional based strategies were also assessed as key coping strategies in dealing with stressors of hemodialysis among patients. The results showed all of the respondents did not take alcohol nor take drugs of addiction to keep their problems away (M=3).Majority also did not blame others for the problems that they experienced (M=2.84 SD = 0.4). However, most of the respondents always

wished that the problem could go away with (M= 1.02, SD =0.15) as shown in Table 4.6.

Table 4.6: Emotion based strategies respondents rating

Emotion based strategies	Rating			Mean±SD
	Always	Sometimes	Never	
I drink alcohol and take drugs of addiction			90(100%)	3.0
Wished the problem could go away	88(97.8%)	2(2.2%)		2.9±0.1
I blame others for the problem that I experience	2(2.2%)	10(11.1%)	78(86.7%)	2.84±0.4
Keep problems to myself	2(2.2%)	56(62.2%)	32(35.6%)	2.33±0.5
Accept the situation as it is	10(11.1%)	78(86.7%)	2(2.2%)	1.91±0.4

4.6. Association between demographic characteristics and hemodialysis stressors

Association between patient’s demographic characteristics and stressors was also conducted. The stressors included physiological, physical and psychological factors.

4.6.1. Association between demographics characteristics and physiological stressors

In assessing the association between demographic and physiological stressors, the findings showed that there was significant association $\chi^2(4) =16.7$ $p=0.002$ between marital status and feeling stressed due to decrease in sexual drive.

Married respondents were more likely to be stressed by decreased sexual drive compared to the single and separated/widowed respondents

There was also significant association $\chi^2(12) = 0.043$ ($p=0.000$) between respondents source of income and decreased sexual drive. Low level income earners were more likely to express decreased sexual drive as a stressor.

Further, the results showed that there was a significant association between stress in bearing children and age, $\chi^2(4) = 24.85$, ($p=0.000$), marital status, $\chi^2(4) = 11.19$, ($p=0.024$), and level of education, $\chi^2(4) = 11.91$, ($p=0.018$), as presented in Table 4.7. Younger respondents were more likely to regard inability to bear more children as a stressor.

Table 4.7: Association between demographics characteristics and physiological stressors

Physiologic stressors		Demographic factors					
		Age	Gender	Marital status	Education level	Source of income	Monthly income
Feel tired during hemodialysis	df	4	2	4	4	4	4
	X^2	1.197	1.689	2.328	4.365	2.791	5.012
	P-value	0.879	0.43	0.676	0.359	0.593	0.286
Experience decrease in sexual drive	df	4	2	4	4	4	4
	X^2	3.028	3.247	16.7	7.57	9.86	5.206
	P-value	0.553	0.197	0.002	0.108	0.043	0.267
Stressed because of inability to bear children	df	4	2	4	4	4	4
	X^2	24.85	0.041	11.193	11.913	0.042	1.789
	P-value	0.000	0.98	0.024	0.018	0.09	0.775
Experience difficulties in falling asleep	df	4	2	4	4	4	4
	X^2	1.979	1.952	5.623	4.568	1.48	5.08
	P-value	0.74	0.377	0.229	0.355	0.83	0.277

4.6.2. Association between demographics and physical stressors

Physical stressors were analyzed as shown in Table 4.8. The findings showed that age ($\chi^2(4) = 27.34, p=0.00, p<0.05$), marital status, $\chi^2(4) = 11.20, p=0.024, p<0.05$) and education level ($\chi^2(4) = 12.82, p=0.012, p<0.05$) were significantly associated with feeling uncomfortable with physical body changes among the respondents.

Younger respondents were more likely to be uncomfortable with their physical body changes while individuals who had primary and high school level as their highest level of education were more likely to be uncomfortable with their physical body changes. Marital status ($\chi^2(2) = 9.63, p=0.008, p<0.05$) was also associated with feeling joint pain.

Table 4.8: Association between demographics characteristics and physical stressors

Physical stressors		Socio demographic factors					
		Age	Gender	Marital status	Education level	Source of income	Monthly income
Uncomfortable with my physical body changes	df	4	2	4	4	4	4
	X^2	27.34	2.45	11.20	12.82	6.75	3.84
	P-value	<0.001	0.29	0.024	0.012	0.15	0.43
Experience joint pain	df	2	1	2	2	2	2
	X^2	3.25	1.17	9.63	0.77	2.77	0.481
	P-value	0.197	0.21	0.008	0.68	0.25	0.79

4.6.3. Association between demographics and psychological stressors

The analysis of psychological stressors and socio demographic factors as presented in figure 4.9 showed that, there was significant association ($\chi^2(1) = 5.613, p=0.016, p<0.05$) between waiting for long for HD session and gender. Male respondents were more likely to be impatient with delays in allocating them to HD machines.

Depend on others to get to clinic was significantly associated $\chi^2(2) = 6.44, p=0.04, p<0.05$) with marital status. Married respondents were less likely to be stressed by depending on others as a stressor as their spouses were voluntary willing to bring them to the HD centre. Lack of erythropoietin injection $\chi^2(4) = 8.693, p=0.042, p<0.05$) from pharmacy was associated with age of the respondents. Older respondents were more likely to regard lack of erythropoietin as a stressor.

Table 4.9: Association between demographics and psychological stressors

Psychological factors		Socio-demographic factors					
		Age	Gender	Marital status	Education level	Source of income	Monthly income
Wait for long to be allocated HD machine	df	2	1	2	2	2	2
	X^2	0.034	5.613	2.317	0.474	2.616	0.337
	P-value	0.983	0.016	0.314	0.789	0.27	0.845
Depend on others to get to clinic	df	2	1	2	2	2	2
	X^2	4.821	0.164	6.438	1.383	2.56	1.270
	P-value	0.091	0.447	0.04	0.501	0.278	0.530
Not sure about the future	df	4	2	4	4	4	4
	X^2	8.036	1.975	2.957	3.886	6.69	2.662
	P-value	0.09	0.372	0.57	0.422	0.153	0.616
Difficulties in raising hospital costs	df	2	1	2	2	2	2
	X^2	0.152	0.016	2.277	0.589	0.878	9.185
	P-value	0.927	0.568	0.328	0.745	0.638	0.01

	value						
Inadequate HD machines	df	4	2	4	4	4	4
	X^2	3.453	1.975	1.778	9.153	6.375	0.857
	P-	0.485	0.373	0.778	0.057	0.173	0.926
	value						
HD machines keep breaking down	df	2	1	2	2	2	2
	X^2	2.052	3.661	2.102	1.473	0.589	0.916
	P-	0.359	0.051	0.350	0.479	0.745	0.633
	value						
HD machines are never repaired in time	df	4	2	4	4	4	4
	X^2	0.686	2.297	5.785	3.926	1.614	3.120
	P-	0.953	0.317	0.216	0.416	0.806	0.538
	value						
Never lack HD equipments	df	2	1	2	2	2	2
	X^2	0.233	0.743	0.451	1.205	2.014	1.371
	P-value	0.89	0.291	0.798	0.547	0.365	0.504
	value						
Never lack erythropoietin injection pharmacy	df	4	2	4	4	4	4
	X^2	8.693	3.218	4.842	3.316	5.091	5.227
	P-value	0.042	0.146	0.304	0.506	0.278	0.265

4.7. Association between patients' demographic characteristics and coping strategies

The study also sought to investigate the association between patient's demographic factors and coping strategies among respondents. The coping strategies considered include problem based and emotion based coping strategies.

4.7.1. Association between demographics characteristics and problem based coping strategies

The findings showed significant association between respondents education level ($\chi^2(4) = 44.61, p=0.000, p<0.05$), source of income ($\chi^2(4) = 10.78, p=0.029, p<0.05$) and monthly income ($\chi^2(4) = 16.82, p=0.032, p<0.05$) and reading more about the problem among the respondents. Many of primary level education respondents were less likely to read about the problems that they were experiencing. Majority of respondents who identified farming and business as

their source of income were also less likely read about the problem that they were experiencing.

The results further showed that marital status ($\chi^2(4) = 14.06, p = 0.029, p < 0.05$), and education level ($\chi^2(4) = 20.71, p = 0.002, p < 0.05$) were significantly associated with respondents talking to someone who has had similar problem in the past. Majority of married respondents highlighted that sometimes they talk to someone who has had similar problem in the past. Most of primary level education respondents talked to someone who had similar problem.

Age ($\chi^2(4) = 20.69, p = 0.008, p < 0.05$) and education level ($\chi^2(4) = 14.91, p = 0.021, p < 0.05$) were associated with seeing the good side of the problem. Most of older individuals focused on seeing the good side of the problem while more educated respondents were more likely to see the good side of the problem that they were experiencing. Education level ($\chi^2(4) = 19.37, p = 0.004, p < 0.05$) was also associated with trying to distract themselves by doing what they love most as presented in Table 4.10.

Table 4.10: Association between demographics and problem based coping strategies

Problem based coping strategies		Socio-demographic factors					
		Age	Gender	Marital status	Education level	Source of income	Monthly income
Share with family members all the problems	df	4	2	4	4	4	4
	X ²	6.42	0.153	5.40	7.19	5.87	8.54
	P-value	0.601	0.927	0.495	0.304	0.209	0.382
Share with HCWs all the problems I experience	df	4	2	2	2	4	4
	X ²	10.51	1.55	5.10	8.21	9.25	10.23
	P-value	0.231	0.461	0.531	0.203	0.055	0.25
Read more about the problem that I experience	df	4	2	4	4	4	4
	X ²	14.56	2.01	7.87	44.61	10.78	16.82
	P-value	0.068	0.366	0.248	0.000	0.029	0.032
Talk with someone with similar problem as mine	df	4	2	4	4	4	4
	X ²	6.43	0.645	14.06	20.71	5.63	2.812
	P-value	0.599	0.724	0.029	0.002	0.228	0.946
I see the good side of the problem that I am experiencing	df	4	2	4	2	4	4
	X ²	20.69	4.14	5.26	14.91	7.55	7.46
	P-value	0.008	0.126	0.511	0.021	0.11	0.488
I try to distract myself by doing what I love most in order to forget the problem that am going through	df	4	2	4	4	4	4
	X ²	7.91	2.61	7.63	19.37	3.12	6.33
	P-value	0.442	0.271	0.266	0.004	0.538	0.611

4.7.2. Association between demographics and emotion based coping strategies

On the association between demographic characteristics and emotion based strategies the findings showed that, age was associated with keeping problems to self, ($\chi^2(4) = 18.02, p=0.021, p<0.05$). Majority of younger respondents kept their problems to themselves more than their older counterparts.

Age, ($\chi^2(4) = 48.99, p=0.031, p<0.05$) and source of income, ($\chi^2(4) = 10.33, p=0.035, p<0.05$) were associated with blaming others for their problems. Older respondents were more likely to blame others for the problems that they experienced. Respondents whose source of income was Salary were less likely to blame others for their problems. The results also showed that age ($\chi^2(4) = 28.18, p=0.000, p<0.05$) was a significantly associated with accepting the situation as it is. Majority of older respondents often accepted the situation as it is in relation to their medical situation as illustrated in Table 4.11

Table 4.11: Association between demographics characteristics and emotion based coping strategies

		Socio-demographic factors					
		Age	Gender	Marital status	Education level	Source of income	Monthly income
I keep problems to myself	df	4	2	2		4	4
	X^2	18.02	0.49	4.72	7.9	3.63	10.25
	P-value	0.021	0.783	0.58	0.246	0.459	0.248
I blame others for the problems that I experience	df	4	2	6	6	4	8
	X^2	16.93	0.115	6.86	1.12	10.33	7.51
	P-value	0.031	0.944	0.334	0.981	0.035	0.483
I wish that these problems could go away	df	4	1	3	3	2	4
	X^2	3.89	0.106	0.831	45.42	3.21	3.979
	P-value	0.42	0.629	0.842	0.000	0.20	0.56
I accept the situation as it is	df	4	2	2	2	4	4
	X^2	28.18	5.64	10.73	10.06	5.35	6.79
	P-value	0.000	0.06	0.097	0.122	0.254	0.560

4.8. Perceived health status among hemodialysis patients

4.8.1. Perceived health status before start of hemodialysis treatment and after start of hemodialysis treatment modality

Analysis as shown in figure 4.1 shows that before hemodialysis, 93% (n = 84) of the respondents had poor perceived health status. After start of hemodialysis 69% of the respondent's reported good health status.

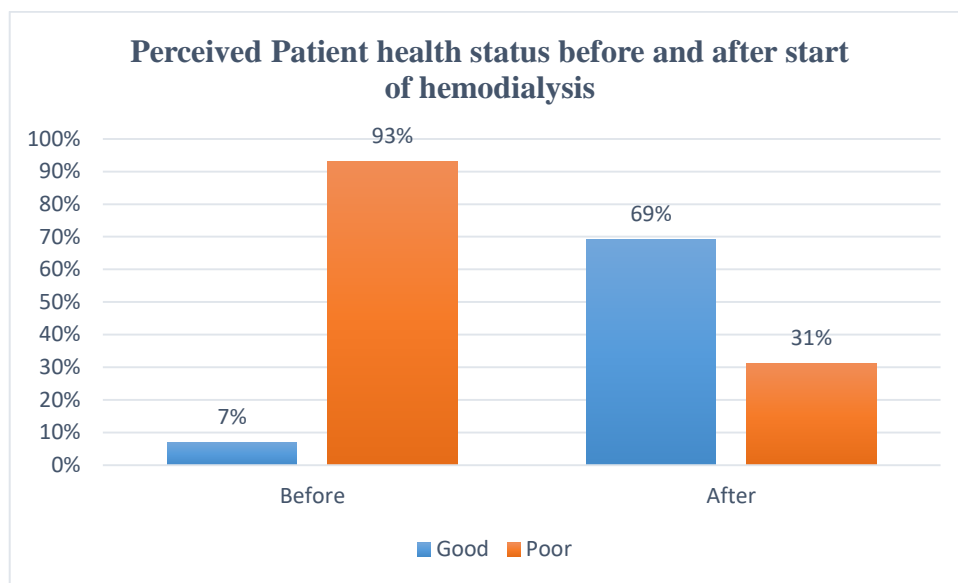


Figure 4.1: Respondent's perceived health status after diagnosis and before start of HD

4.10. Association between coping strategies and perceived health status of hemodialysis patients

4.10.1. Association between problem based strategies and perceived health status

The problem based strategies were assessed based on chi-square test for association as shown in Table 4.16. The findings showed that there was statistically significant association between sharing their problems with healthcare providers and perceived health status after start of hemodialysis ($\chi^2(2) = 12.79, p=0.042, p<0.05$).

There was also significant association between reading more about their condition in books and internet and respondents perceived health status, ($\chi^2(2) = 13.073$, $p=0.042$, $p<0.05$). The results also found a significant association between seeing the good side of the problem and the respondents perceived health status ($\chi^2(2) = 12.93$, $p=0.044$, $p<0.05$). Self-distracting through doing good things they love the most was significantly associated to respondents perceived health status after start of hemodialysis, ($\chi^2(2) = 13.21$, $p=0.004$, $p<0.05$). However, there was no significant association between sharing with family and perceived health status after start of hemodialysis. The findings also revealed that there was no association between sharing problem with others having similar problem and perceived health status.

Table 4.16: Association between problems based strategies and health status

		Health status after start of Hemodialysis		
		Poor	Good	Chi square
Share with family	Never	1(3.6%)	2(3.2%)	$df=2$, $\chi^2 = 4.035$, $p=0.672$
	Sometimes	21(75%)	36(58.1%)	
	Always	6(21.4%)	24(38.7%)	
Share HCWs	Never	0	2(3.2%)	$df=2$, $\chi^2 = 4.035$, $p=0.046$
	Sometimes	24(85.7%)	44(71%)	
	Always	4(14.3%)	16(25.8%)	
Read more on the problem	Never	20(71.4%)	48(77.4%)	$df=2$, $\chi^2 = 13.073$, $p=0.042$
	Sometimes	7(25%)	12(19.4%)	
	Always	1(3.6%)	2(3.2%)	
Share with others my problem	Never	15(53.6%)	19(30.6%)	DF=2. $\chi^2 = 9.513$, $p=0.147$
	Sometimes	11(39.3%)	39(62.9%)	
	Always	2(7.1%)	4(6.5%)	
See the good side of the problem	Never	4(14.3%)	5(8.1%)	$df=2$, $\chi^2 = 12.93$, $p=0.044$
	Sometimes	17(60.7%)	43(69.4%)	
	Always	7(25%)	14(22.6%)	
Distract myself	Never	2(7.1%)	5(8.1%)	$df=2$, $\chi^2 = 13.21$, $p=0.04$
	Sometimes	21(75%)	46(74.2%)	
	Always	5(17.9%)	11(17.7%)	

4.10.2. Association between emotions based strategies and health status

The association of emotion based strategies was performed, the results showed that there was no statistically significant association between all of the emotion based strategies that were being investigated and the health status of the respondents after the start of hemodialysis. The strategies that were evaluated included keeping the problem to themselves ($p= 0.735$, $p>0.05$), blaming others for the problem that they are experiencing ($p = 0.812$, $p>0.05$), wishing the problem could go away ($p = 0.189$, $p>0.05$) and accepting the situation as it is ($p= 0.257$, $p>0.05$) as indicated in table 4.17.

Table 4.17: Association between emotions based strategies and health status

		Health status		Chi-square
		Poor	Good	
Keep to myself	Always	10(35.7%)	22(35.5%)	df=3, $\chi^2=3.57$, p=0.735
	Sometimes	17(60.7%)	39(62.9%)	
	Never	1(3.6%)	1(1.6%)	
Blame others	Always	22(78.6%)	56(90.3%)	df=3, $\chi^2=2.973$, p=0.812
	Sometimes	5(17.9%)	5(8.1%)	
	Never	1(3.6%)	1(1.6%)	
Wish the problem to go away	Sometimes	2(7.1%)	0	df=3, $\chi^2=4.773$, p=0.189
	Never	26(92.9%)	62(100%)	
Accept the situation as it is	Always	1(3.6%)	1(1.6%)	df=3, $\chi^2=7.7$, p=0.257
	Sometimes	21(75%)	57(91.9%)	
	Never	6(21.4%)	4(6.5%)	

4.11. Causal association between coping strategies and perceived health status

4.11.1. Problem based strategies causal association with health status

The analysis shows that the variables considered predicted patient health status. Based on the odds ratio assessment, the results showed that sharing with family members was associated with 1.8 times likely to lead to good health status. Sharing with someone with similar problem was associated with double chance of having a good health status. Sharing with health workers (OR = 0.99), reading from books (OR = 0.58) and distracting self (OR =0.84) were associated with reduced chance of good health status rating as illustrated in Table 18.

Table 18: problem based strategies causal association with perceived health status

Logistic regression		Number of obs=90			
Log likelihood =-52.985959		LR chi2(5)			
		Prob chi2 =0.34444			
		Pseudo R2=0.0504			
Perceived health status	Odds ratio conf.interval)	std err.	S	p/n/	(95%
Share with family	1.827589 5.232328	.9808166	1.12	0.0261	.638355
Share with HCW	.9931393 3.30542	.6092976	-0.01	0.991	.2983956
Read from books	.5782539 1.454194	.2720776	-1.16	0.244	.2299402
Share with someone	2.063248 4.9777397	.9270318	1.16	0.107	.855265
Distract my self	.8402433 2.191906	.411056	-0.36	0.722	.322098
cons	.508756 12.47363	.8304825	-0.41	0.679	.0207504

4.11.2. Emotion based strategies causal association with health status

Emotion based strategies were also assessed to determine predictors of health status as shown in Table. 19. The results show that keeping problems encountered to self (OR = 0.8), blaming others for problems encountered (OR =0.53) and accepting the situation as it is (OR = 0.36) were associated with reduced chance of having a good health status among the respondents.

Table 19: Emotion based strategies causal association with health status

Logistic regression					Number of obs=88	
Log likelihood = -51.837536					LR chi2(5)=3.15	
					Prob chi2 =0.3690	
					Pseudo R2=0.0295	
Perceived health status	Odds ratio	std err.	S	p/n/	(95% conf.interval)	
Keeping to self	.7976692	.3804575	-0.47	0.636	.3132077	2.031483
Drink alcohol	1	omitted				
Blame others	.5321214	.3253531	-1.03	0.302	.1605327	1.763835
Wish the problem could go	1	omitted				
Accept the situation	.3682908	.2496703	-1.47	0.141	.0975321	1.390702
Cons	.58.72393	110.3719	2.17	0.030	1.475629	2336.969

CHAPTER FIVE: DISCUSSION

5.1 Introduction

This study was carried out with an aim of describing the stressors and coping strategies among hemodialysis patients in the new county hemodialysis centers in Kenya. The discussion was based on the demographic characteristics of the hemodialysis patients, identified stressors and coping strategies used by the hemodialysis patients and on how the hemodialysis patients perceived their health status after the start of hemodialysis therapy. The discussion also focused on the association between patient's demographic characteristics with hemodialysis stressors, coping strategies and on patients perceived health status.

5.2 Demographic characteristics

The study findings demonstrated that majority of the hemodialysis patients in the new county HD centers 40% (n=36) were aged between 31-60 years while only 26.7 % (n=24) of them were aged below 30 years of age.

These findings disagree with other studies which found CKD to be higher in patients above 60 years (Chartier et al., 2018) Olim, Mota, Fragoso, & Ribeiro(2016). The findings indicate that CKD is also becoming more prevalent locally among the younger population.

Majority of the hemodialysis patients in the current study were male who accounted for 61% of the total number of respondents. These findings are consistent with those of a study in south Sudan by T. Ahmed, Elsheikh, Abdel, Nurein, & Mansour(2019).

These is so because majority of the women attend routine screening and therefore the predisposing risk factors are identified as early as possible and managed

much early but men hardly do attend early screening services and only report to the health facility when the problem has already developed. However, these findings are inconsistent with Chartier et al.,(2018), as he reported higher rates of CKD in women.However,they contradict the findings by Chartier et al.,(2018).

On economic status, the current study found out t that majority of the respondents 54(60%) were farmers with majority of them been educated up to primary school level 48.9% and earned a monthly income of less than ksh.10,000.This was so because the study was based in a rural setting where majority are usually peasant farmers.

5.3 Stressors among hemodialysis patients

5.3.1. Physiological and physical stressors

This study revealed decreased sexual drive as a major physiological stressors. These findings are consistent with other studies by K.,Georgia,P.,fotoula and Batatsikou(2013).According to Gerogianni et al.,(2013), sexual problems are typically caused by both physiological and psychological factors such as uremia, fatigue, metabolic disturbances, depression, anxiety and denial of the disease causes these individuals not only experience decreased sexual drive and decreased frequency of sexual intimacy after initiation of treatment but also suffer from impotence and loss of libido.

Fatigue and joints pains were also ranked highly as among physiological and physical stressors followed by difficulty in falling asleep and inability to bear more children respectively. Similar pattern of results were obtained in previous studies .((Ali et al., 2013).According to Ali et al.,(2013) when blood phosphorous levels goes up, too much parathyroid hormone is produced, high

parathyroid hormone causes calcium to move from bones to blood leading to joints pains and weakness. Respondents attributed feeling fatigue to joints pains and muscle pain a finding that compares with previous studies that described fatigue to be strongly associated with chronic anemia, bone and muscle pains, repeated dialysis treatments, sleep disturbance, depression and frustrations. (Gerogianni & Babatsikou, 2013).

Majority of the young female respondents stated that they were stressed due to inability to bear more children which is comparable with other studies. S., Sobhodhini, L., Jean and L., Holley (2007) stated that spontaneous abortions are common and occur in 21% of the pregnancies reaching second trimester among hemodialysis patients and that there is increased risk of maternal hypertension and pre eclampsia complications. They also stated that anemia worsens in pregnancy because the plasma volume increases by 3-4l during pregnancy without concomitant increase in red blood cell mass. (Reddy & Holley, 2007).

5.3.2. Physical stressors

Respondents ranked joints pains as a major physical stressor followed by feeling uncomfortable with the physical body changes. This agrees with previous study among HD patients that ranked joints pains and feeling uncomfortable with the body changes as the major physical stressor (Naeem-Ullah Leghari¹, Dr. Rizwana Amin², Bushra Akram³, 2015).

This findings are also consistent with Tchape et al., (2018). Their findings concluded that changes in metabolism of minerals and bone structure are seen in all the chronic renal patients and thus involvement of all parts of the musculoskeletal system to include bones, joints, muscles and tendons.

5.3.3. Psychological stressors

Despite the Government initiative to devolve HD services, the findings of this study showed that inadequate hemodialysis machines remains a major psychological stressor among HD patients. This findings are consistent with previous studies. According to Ndambuki J. (2013), inadequate hemodialysis machine was one of the factors leading to dissatisfaction with nursing services among hemodialysis patients. (Ndambuki, 2013).(Meremo et al., 2017).Therefore a conclusion can be drawn that the prevalence of the patient requiring hemodialysis services is on the rise.

Difficulties in raising the cost of treatment, waiting for long before being allocated hemodialysis machine and some delays in the repair of hemodialysis machines when they break were also major stressors report. This is consistent with previous studies. According to Meremo et al.,(2017),unavailability of hemodialysis machines and high cost of treatment is the major challenge among hemodialysis patients.(Meremo et al., 2017).The findings points out that the previous stressors in KNH have not been addressed fully and thus the Government needs to re-strategize again to address the raising need of hemodialysis services.

Inadequate hemodialysis machines in the county dialysis centers despite the government initiative to equip county level 5 dialysis centers indicated that CKD is becoming more prevalent locally. According to Soje (2014), black race is at a higher risk of progressing from ckd to esrd and that this should call for more active interventions to reduce the increasing incidences and prevalence of CKD among black population as it is higher than in the whites' population.

5.4 Coping strategies among hemodialysis patients

The results of the current study revealed that the hemodialysis patients used problem based coping strategies more than emotion based strategies. The findings agreed with other studies which found hemodialysis patients use problem based strategies than emotion based strategies.(Subramanian et al., 2017) However, this findings contradict with Rojas(2017) that found out that the patients used emotion based coping strategies more than problem based strategies. According to Subramanian et al., (2017),use of problem based strategies has a long term benefits while use of emotion based strategies has short term benefits.

In regard to the use of problem based strategies, majority of the respondents choose to share their problems with their family members and to see the good side of the problem.

According to Subramanian et al., (2017), relying on family and friends and seeing the good side of the problem lead to better and effective coping.

In regards to those who used emotion coping strategies, all of the respondents did not engage in alcoholism strategies. This findings are consistent with Tahseen (2015), study that alcoholism is the least used emotion based strategies among hemodialysis patients as it's associated with short term benefits.

5.5 Association between patients demographics and stressors

5.5.1. Association between Physiological Stressors and Demographic characteristics.

Study findings demonstrated a statistically significant association between respondents' marital status ($p\text{-value}\leq 0.05$) and decreased sexual drive. Married

respondents were more likely to experience decreased sexual drive as compared to the single respondents. Similar findings were reported by Ali Reza Makarem and Mohammad Yasin(2011), and Reza, Mohammad, & Karami,(2011),that prevalence and severity of erectile dysfunction increase as age in HD patients especially in those with diabetes comorbidities

There was a statistically significant association between respondent's source of income ($p\text{-value}\leq 0.05$) and decreased sexual drive. Respondents with lower level of education were more likely to experience decreased sexual drive as compared to those who has secondary and tertiary level of education. This findings are consistent with previous studies .(Edey, 2017).According to Mathew Edey (2017), the risk of erectile dysfunction among hemodialysis patients are high and are usually associated with depression, low educational level and unemployment.

There was also a statistically significant association between respondent's age, ($p\text{-value}\leq 0.05$) marital status ($p\text{-value}\leq 0.05$), level of education ($p\text{-value}\leq 0.05$) and inability to bear more children ($p\text{-value}\leq 0.05$). This is in consistent with other studies. Ali Reza Makarem and Mohammad Yasin (2011), and Georgia and Gerogianni (2013), explained that erectile dysfunction increases as age increases and thus inability to bear more children.

5.5.2. Association between Demographic Characteristics and Physical Stressors

There was a statistically significant association between respondents age and feeling uncomfortable with the physical body changes ($p < 0.05$).The younger respondents were more likely to be uncomfortable with the physical body changes such as the presence of a hemodialysis dialysis catheter on the neck

region. This findings agrees with previous studies among hemodialysis patients. Young HD patients are more bothered by physical changes due to limitation on dressing styles.(Gerogianni & Babatsikou, 2013)

The findings also revealed statistically significant association between respondents' marital status (($p < 0.05$)) and feeling a comfortable with the physical body changes. Married respondents were more likely to experience trouble with physical body changes than single respondents. This is consistent with previous studies. According to Gueita (2019), the presence of a dialysis catheter or fistula triggers a changes in the way the women dress in an attempt to hide catheter port sites.

There was also a statistically significant association between respondents' level of education and feeling uncomfortable with the physical body changes. The respondents who had primary and high school level as their highest level of education were more likely to be uncomfortable with their physical body changes. This is consistent Edey (2017) study where he explained that depression in hemodialysis patients is more associated with lower level of education and unemployment among hemodialysis patients and thus low self-esteem.

5.5.3. Demographic Characteristics and Psychological Stressors

Respondent's gender was significantly associated with waiting for so long to be allocated a hemodialysis machine with a $p < 0.05$. Male respondents were likely to be bothered by having to wait for so long to be allocated a dialysis machine more than female respondents. This is consistent with previous studies. According to Lu (2015), male patients relate their suffering to loss of freedom.

Marital status was significantly associated with depending on others to get to the dialysis centre with a p value of 0.04. Married respondents were less likely to be bothered by depending on others to bring them to the dialysis centre than the single respondents. This is consistent with previous studies. According to Theodoritsi et al.,(2016), married HD patients experience social support from significant others and their families compared to single patients.

5.6 Association between respondents demographic factors and coping strategies.

5.6.1. Association between demographic characteristics and problem based coping strategies

Respondents level of education was statistically associated with reading more on the problem that they experienced with a p value <0.05 . Respondents with primary level education were less likely to read more on the problems that they were experiencing with an attempt to understand it more while respondents with tertiary level of education were more likely to read more on the problem that they were experiencing. This is consistent with Wallston et al.,(2015), study that reported low health literacy levels among patients receiving dialysis care thus not able to read. Similarly, according to Rojas (2017), problem based coping strategies are more difficult to respond to due to lack of knowledge among hemodialysis patients.

There was also a statistically significant association between respondents source of income with reading more on the problem that they experience with a p value of <0.05 . Respondents with low source of income are less likely to read more on the problem that they were experiencing while respondents with a higher source

of income were more likely to read more on the problem that they were experiencing in an attempt to understand the problem better. This finding is in agreement with previous studies. This is so due to lack of knowledge among hemodialysis patients.(Rojas, 2017).Cavanaugh et al., (2015) reported that having a lower income was significantly associated with having lower health literacy.

Monthly source of income was significantly associated with reading more on the problem that they were experiencing with a p value of <0.05 . Respondents that were employed were more likely to read more on the problems that they were experiencing while respondents who were farmers were less likely to read more on the problems that they were experiencing. This was in agreement with Cavanaugh et al., (2015), that having a lower income was significantly associated with having lower health literacy.

Marital status was also significantly associated with talking more with someone who had such similar problem that they were experiencing. Married respondents were more likely to share with others who were experiencing the same situation more than single respondents. This finding is inconsistent with previous studies. According to Dayana Shakya, Jyoti Tuladhar¹ and Sabitra Poudel (2017), he explained that depression levels increases with decreasing social support and thus the single respondents are more depressed and not able to share with others the problems that they are experiencing.

Respondents' age was significantly associated with seeing the good side of the problem. Older respondents were more likely to see the good side of the problem that they were experiencing while younger respondents were less likely to see the good side of the problem that they were experiencing. The findings agrees with

previous findings. According to L., Krzysztof et al., (2013), younger and elderly hemodialysis patients are usually faced with quite different problems. They stated that younger patients perceive renal failure as a loss and a challenge and that they more frequently used distractive and emotional preoccupational coping strategies.

5.6.2. Association between demographics characteristics and emotion based coping strategies

There was a statistically significance association between respondents age, keeping the problem to self and blaming others. The younger respondents were more likely to keep the problem they were sharing to themselves and blame others more than their older counterparts. This findings are consistent with previous studies. According to L.,Krzysztof et al.,(2013), younger patients assess renal failure as a loss and a challenge in life and so they end up blaming others and never share with anyone their problems.(Niemczyk, 2013).

5.7. Perceived health status of the respondents

Despite the numerous hemodialysis stressor, the respondents were asked how they perceived their health status from the time they were diagnosed with CKD and from the time they were started on hemodialysis therapy to date. It was worth noting that majority (93%) perceived their health status as poor from the time they were diagnosed with CKD and before they were started on hemodialysis. This findings are consistent with previous studies. According to Susanne & Naomi (2003),patients with CKD experience intense loss of peace due to the disease complications thus they do not enjoy their life fully.

Our results casts a new light that despite the numerous hemodialysis stressor, (69%) of the respondents still perceived their health status as good after the start

of hemodialysis. All of the respondents, alluded that hemodialysis was of much benefits to them.

Almost all of the respondents reported that they had not had any illness or any hospital admission for the last one month prior to the study. A further novel findings is that many of the respondents said they were proud of themselves and the achievements they have made in life since they were started on hemodialysis.

They also reported that they were able to perform their activities of daily living with ease as compared to before they were started on hemodialysis when they could hardly do anything for themselves and had to depend on their dependents.

When comparing our results to those of older studies, our results agrees with A. Chandrashekar, S. Ramakrishnan¹, D. Rangarajan¹(2014), study that hemodialysis prolongs the life among uremic patient and withdrawal from hemodialysis was recognized as an important cause of mortality and morbidity rates among hemodialysis patients. They also stated that withdrawal from dialysis accounted for 5.3% of deaths in USA.(Chandrashekar, Ramakrishnan, & Rangarajan, 2014).

5.8. Association between coping strategies and respondents perceived

health status

Problems based strategies were associated with good perceived health status but there was no statistically significant association between emotions based coping strategies and perceived health status. This findings are consistent with previous studies. According to Cavanaugh et al.,(2015) and Subramanian et al., (2017),use of problem coping strategies had long term benefits thus good perceived health status while emotion based strategies had short term benefits.

5.9 Causal association between coping strategies and perceived health status

5.9.1. Problem Based Strategies causal association with Health Status

The analysis shows that the variables considered did predict patient health status. Based on the odds ratio assessment, the results showed that sharing with family members was associated with 1.8 times likely to lead to good health status. Sharing with someone with similar problem was associated with double chance of having a good health status. Sharing with health workers (OR = 0.99), reading from books (OR = 0.58) and distracting self (OR = 0.84) were associated with reduced chance of good health status. This findings are in agreement with Georgia K. Gerogianni¹, Fotoula P. Babatsikou²(2013), that use of problem based strategies predicts a good health status among hemodialysis patients.(Gerogianni & Babatsikou, 2013).

5.9.2. Emotion Based Strategies causal association with Health Status

Emotion based strategies were also assessed to determine predictors of health status as shown in Table. 19. The results show that keeping problems encountered to self (OR = 0.8), blaming others for problems encountered (OR = 0.53) and accepting the situation as it is (OR = 0.36) were associated with reduced chance of having a good health status among the respondents. This findings are consistent with Gerogianni & Babatsikou, (2013)report that use of emotion based strategies predicts poor health status among hemodialysis patients.

5.10 Conclusion and recommendations

5.10.1. Conclusion

1. The study concluded that: The major physiological stressors among hemodialysis patients in the county HD centers were decreased sexual drive, feeling tired and difficulties in falling asleep.
2. The major physical stressors were: joints pains and being uncomfortable with the physical body changes
3. Despite the Devolution of HD services, the major psychological stressors were inadequate HD machines, lack of HD commodities and difficulties in raising the cost of treatment
4. The major problem based strategies used were sharing with family members, sharing with health care workers and seeing the good side of the problem.
5. The major emotion based strategies used were wishing the problem could go away, blaming others and keeping the problem to one self.
6. 6. There was statistically significant association between sharing with health care worker and perceived health status
7. 7. There was statistically significant association between problem based strategies and perceived health status

5.10.2 Recommendations

The study recommends that

1. Nurse counsellors should provide counseling to patients prior to start of hemodialysis on the physiological stressors especially issues of decreased sexual drive

2. Patients should be assessed on the physical stressors by the nurses and doctors to ensure the appropriate remedies are provided
3. Nurse counsellors should counsel patients on the use of problem coping strategies as they are significantly associated with better perceived health status
4. Health workers should also be readily available to listen to the patients' needs as sharing with health care workers was significantly associated with better perceived health status
5. Recommend the County government to increase the number of HD machines in line with the number of patients so that to reduce on waiting time

5.10 .3. Areas of further research

The study identified the type and the intensity of the stressors experienced by the hemodialysis patients and the coping strategies that they use, however the study did not measure the predisposing factors that cause the hemodialysis patients to be variant in the intensity and severity of stressors that they feel or coping they use. So future researches should be directed towards determining the predisposing factors that lead the hemodialysis patients to be variant in experiencing the intensity of stressors and coping strategies used.

REFERENCES

- Ahmed, S. S., Khan, A. H., & Laila, T. R. (2014). *Treatment and Prevention of Common Complications of Chronic Kidney Disease*. 4(1), 45–55.
- Ahmed, T., Elsheikh, E., Abdel, M., Nurein, S., & Mansour, M. O. (2019). *Socio-demographic Characteristic of Sudanese Patients on Hemodialysis at Gezira Hospital for Renal Diseases and Surgery , Gezira State , Sudan ; 2018*. 5(6), 256–260. <https://doi.org/10.11648/j.cajph.20190506.15>
- Al-saedi, A. J. H., Jameel, N. S., Qais, A., Kareem, A. H. A., & Mohssen, T. S. (2014). *of Kidney Diseases and Transplantation Renal Data from the Arab World Frequency of Abdominal Aortic Calcification in a Group of Iraqi Hemodialysis Patients*. 25(5), 1098–1104.
- Ali, M., Gorji, H., Mahdavi, A., Janati, Y., Illayi, E., Yazdani, J., ... Gorji, H. (2013). *Physiological and Psychosocial Stressors Among Hemodialysis patients in Educational Hospitals of Northern Iran*. (3), 166–169. <https://doi.org/10.4103/0973-1075.121533>
- Brkovic, T., Burilovic, E., & Puljak, L. (2016). *Prevalence and severity of pain in adult end-stage renal disease patients on chronic intermittent hemodialysis : a systematic review*. 1131–1150.
- Büssing, A., Ostermann, T., Neugebauer, E. A. M., & Heusser, P. (2010). *Adaptive coping strategies in patients with chronic pain conditions and their interpretation of disease*.
- Chandrashekar, A., Ramakrishnan, S., & Rangarajan, D. (2014). *Survival analysis of patients on maintenance hemodialysis*. 24(4). <https://doi.org/10.4103/0971-4065.132985>
- Chapman, L., Chapman, L., & Rostron, S. S. (2018). The impact of stress on learning. *Integrated Experiential Coaching*, 219–248. <https://doi.org/10.4324/9780429476006-7>

- Chartier, M. J., Tangri, N., Komenda, P., Walld, R., Koseva, I., Burchill, C., ... Dart, A. (2018). *characteristics , and comorbid health conditions in pre-dialysis chronic kidney disease : results from the Manitoba chronic kidney disease cohort.* 1–12.
- Cinar, S., Barlas, G. U., & Alpar, S. E. (2009). Stressors and coping strategies in hemodialysis patients. *Pakistan Journal of Medical Sciences*, 25(3), 447–452.
- Dr. Naeem-Ullah Leghari¹, Dr. Rizwana Amin², Bushra Akram³, D. M. A. A. (n.d.). *Hemodialysis; 1.*
- Edey, M. M. (2017). *Male Sexual Dysfunction and Chronic Kidney Disease.* 4(March), 1–10. <https://doi.org/10.3389/fmed.2017.00032>
- Erickson, K. F., Zhao, B., Ho, V., & Winkelmayr, W. C. (2018). Employment among patients starting dialysis in the United States. *Clinical Journal of the American Society of Nephrology*, 13(2), 265–273. <https://doi.org/10.2215/CJN.06470617>
- Etkind, S. N., Bristowe, K., Bailey, K., Selman, L. E., & Murtagh, F. E. M. (2016). *How does uncertainty shape patient experience in advanced illness ? A secondary analysis of qualitative data.* <https://doi.org/10.1177/0269216316647610>
- Gerogianni, G. K., & Babatsikou, F. P. (2013). *Identification of stress in chronic haemodialysis.* 7.
- Hallab, A., & Wish, J. B. (2018). Employment among patients on dialysis: An unfulfilled promise. *Clinical Journal of the American Society of Nephrology*, 13(2), 203–204. <https://doi.org/10.2215/CJN.13491217>
- Horigan, A. E. (2012). Fatigue in hemodialysis patients: A review of current knowledge. *Journal of Pain and Symptom Management*, 44(5), 715–724. <https://doi.org/10.1016/j.jpainsymman.2011.10.015>

- Horigan Anne, Schneider Susan, Docherty Sharron, B. J. (2013). The experience and self management of fatigue in hemodialysis patients. *Horigan AE Schneider SM Docherty S Barroso J.*, 257(5), 2432–2437.
<https://doi.org/10.1016/j.immuni.2010.12.017>.Two-stage
- Huang, B., Lai, B., Xu, L., Wang, Y., Cao, Y., Yan, P., & Chen, J. (2017). Low employment and low willingness of being reemployed in chinese working-age maintained hemodialysis patients. *Renal Failure*, 39(1), 607–612.
<https://doi.org/10.1080/0886022X.2017.1361834>
- Learning, B., Roy, C., & Lea, B. (n.d.). *National Association of Long Term Care Administrator Boards*.
- Leghari, N.-U., Amin, R., Akram, B., Ali Asadullah, M., & Leghari MBBS, N.-U. (2015). Hemodialysis: Psychosocial stressors in patients undergoing. *Professional Med J*, 22(6), 762–766. Retrieved from www.theprofesional.com
- Lok, P., & Mhp, B. (2006). *Stressors , coping mechanisms and quality of life among dialysis patients in Australia*. (1988), 873–881.
- Lu, K. (2001). *The haemodialysis machine as a lifeline : experiences of suffering from end-stage renal disease*.
- Mahadeo, S., & Supuriya Patil Mane. (2014). stressors and the Coping Strategies among Patients Undergoing Hemodialysis. *International Journal of Science and Research*, 3(2), 266–276.
- Malombe Mutia, D. (2019). Review in Maintenance Strategies for Haemodialysis Machine in Healthcare Facilities. *Industrial Engineering*, 2(1), 34.
<https://doi.org/10.11648/j.ie.20180201.15>
- Maria, F., Maria, I., & Luisa, A. (2013). *Components of a roy’s adaptation model in patients undergoing hemodialysis*. 34(4), 45–52.
- Meremo, A. J., Ngilangwa, D. P., Mwashambwa, M. Y., Masalu, M. B., Kapinga, J., Tagalile, R., & Sabi, I. (2017). *Challenges and outcomes of haemodialysis among patients presenting with kidney diseases in Dodoma , Tanzania*. 4–9. <https://doi.org/10.1186/s12882-017-0634-2>

- Moghadam, M. P., & Nasiri, A. (2017). *The Effect Of Self-Care Program On The Dependence Of Hemodialysis Patients Based On Orem ' S Self-Care Theory International Journal Of Current Life Sciences*. (March 2015).
- Muhammad, S., Noble, H., Banks, P., Carson, A., & Martin, C. R. (2012). *How Young People Cope With Chronic Kidney Disease* : 182–190.
- Ndambuki, J. (2013). *The level of patients ' satisfaction and perception on quality of nursing services in the Renal unit , Kenyatta National Hospital Nairobi , Kenya. 2013(June)*, 186–194.
- Niemczyk, S. (2013). Age-related differences in the quality of life in end-stage renal disease in patients enrolled in hemodialysis or continuous peritoneal dialysis. *Medical Science Monitor*, 19, 378–385.
<https://doi.org/10.12659/msm.883916>
- Nigam, G., Camacho, M., Chang, E. T., & Riaz, M. (2018). Nature and Science of Sleep Dovepress exploring sleep disorders in patients with chronic kidney disease. *Nature and Science of Sleep*, 10–35.
<https://doi.org/10.2147/NSS.S125839>
- Olim, M. F., Mota, F., Fragoso, P., & Ribeiro, S. (n.d.). *Sociographic Profile of Hemodialysis Patients in Portugal*. 9–20.
- Parvan, K., Ahangar, R., Hosseini, F. A., & Abdollahzadeh, F. (2015). *of Kidney Diseases and Transplantation Original Article Coping Methods to Stress Among Patients on Hemodialysis and Peritoneal Dialysis*. 26(2), 255–262.
- Parvez, S., & Song, A. M. (2015). *Conveying Uncertainty in Prognosis to Patients with ESRD*. 58–64. <https://doi.org/10.1159/000368954>
- Rayyani, M., Shahrokhi, Z., Sabzevari, S., & Haghdoost, A. A. (2014). *Stressors and Coping strategies in dialysis patients*. 6(4), 184–193.
- Reddy, S. S., & Holley, J. L. (2007). *Dialysis Patient*. 14(2), 146–155.
<https://doi.org/10.1053/j.ackd.2007.01.005>
- Reza, A., Mohammad, M., & Karami, Y. (2011). *Erectile dysfunction among hemodialysis patients*. 117–123. <https://doi.org/10.1007/s11255-010-9780-1>

- Rojas, J. N. (2017). Stress and Coping Mechanisms among Hemodialysis Patients in the Gulf and Neighboring Countries: A Systematic Review. *International Journal of Advancements in Research & Technology*, 6(4), 36–40.
- Rutering, J., Imer, M., Recio, A., Coleman, M., Vykoukal, J., Alt, E., & Orleans, N. (2016). 乳鼠心肌提取 HHS Public Access. *Nature Rev Drug Discovery*, 5(6), 1–8. <https://doi.org/10.4172/2157-7633.1000305>.Improved
- Sabry, A. A., Abo-zenah, H., Wafa, E., Mahmoud, K., & El-dahshan, K. (2010). *Brief Communication*. 21(2), 300–305.
- Subramanian, L., Quinn, M., Zhao, J., Lachance, L., Zee, J., & Tentori, F. (2017). *Coping with kidney disease – qualitative findings from the Empowering Patients on Choices for Renal Replacement Therapy (EPOCH-RRT) study*. 1–10. <https://doi.org/10.1186/s12882-017-0542-5>
- Susanne, H., & Naomi, C. (2003). *Living with chronic renal failure : patients ’ experiences of their physical and functional capacity*. 8(4), 167–177.
- Tahseen, I. D. (2015). *Stressors and Coping Strategies amongst Hemodialysis Patients in North of West Bank*.
- Tchape, O. D. M., Tchapoga, Y. B., Atuhaire, C., Priebe, G., & Cumber, S. N. (2018). Physiological and psychosocial stressors among hemodialysis patients in the Buea Regional Hospital, Cameroon. *Pan African Medical Journal*, 30, 1–7. <https://doi.org/10.11604/pamj.2018.30.49.15180>
- Tchape, O., Tchapoga, B., Atuhaire, C., Priebe, G., & Cumber, N. (2018). *Physiological and psychosocial stressors among hemodialysis patients in the Buea Regional Hospital, Cameroon*. 8688, 1–7. <https://doi.org/10.11604/pamj.2018.30.49.15180>
- Theodoritsi, A., Aravantinou, M., Gravani, V., Vasilopoulou, C., Theofilou, P., & Poli-, M. (2016). *Factors Associated with the Social Support of Hemodialysis Patients*. 45(10), 1261–1269.

- Tsutsui, H., Nomura, K., Ishiguro, A., Tsuruta, Y., Kato, S., Yasuda, Y., ... Oshida, Y. (2017). Factors associated with employment in patients undergoing hemodialysis: a mixed methods study. *Renal Replacement Therapy*, 3(1), 1–11. <https://doi.org/10.1186/s41100-017-0105-z>
- Xi, W., Harwood, L., Diamant, M. J., Brown, J. B., Gallo, K., Sontrop, J. M., ... Moist, L. M. (2011). *Patient attitudes towards the arteriovenous fistula : a qualitative study on vascular access decision making*. (March), 3302–3308. <https://doi.org/10.1093/ndt/gfr055>

APPENDICES

**APPENDIX 1: STRESSORS AND COPING STRATEGIES AMONG
HEMODIALYSIS PATIENT IN THE SELECTED NEW COUNTIES
HEMODIALYSIS CENTERS IN KENYA.**

INSTRUCTIONS:

1. The information on this questionnaire is confidential. Please fill in each space provided appropriately.
2. Do not write your name on the questionnaire.
3. For question 1-8, tick the appropriate answer in the box provided

SECTION A – DEMOGRAPHIC CHARACTERISTICS

1. How old are you?
18-28years
29-39years
40-50years
51-61years
62 and above
2. What is your gender?
Male
Female
3. What is your marital status?
Single
Married
Divorced
Widow
Widower
4. What is the highest level of education that you have achieved?
Primary school level
High school level
College level
University level
Any other (specify)
5. What is your source of income?
Farming
Business
Salary
Any others
(specify).....
6. What is your total monthly income?
Below Ksh.5000

- Ksh.5000-10,000
- Kshs. 10,001-15,000
- Kshs.15001-20,000
- Kshs. 20,001-25,000O

Others
(specify).....

7. For how long have you been on hemodialysis therapy?
(Specify in terms of number of months or years).....

8. Do you have any other chronic illness?

Yes

No

9. If your answer is yes in question 8, please indicate which chronic illness you do have.

Hypertension

Diabetes

Asthma

Cancer

Tuberculosis

Any other (Please specify).....

SECTION B: HEMODIALYSIS STRESSORS

The following are some of the experiences that patients on hemodialysis go through. Please give the best response that describes your experience

No	Hemodialysis stressor	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
	physiologic stressors					
10.	I usually feel very tired during hemodialysis sessions					
11.	I experience a decrease in sexual drive					
12.	I feel stressed that am not able to bear more children					
13.	I usually experience difficulties in falling asleep					
	Physical stressors					
14.	I am usually uncomfortable with my physical body changes					
15.	I usually experience joints pain					

	psychological stressors					
16.	I have to wait for so long to be allocated a hemodialysis machine.					
17.	I have to depend on others to bring me to the clinic					
18.	Am not sure about my future life					
19.	I experience difficulties in raising the cost of laboratory investigations, erythropoietin and transport cost to and from the centre					
20.	There are inadequate number of hemodialysis machine in our facility					
21.	The hemodialysis machines keep on breaking down					
22.	Hemodialysis machines are never repaired in good time when they break down					
23.	We never lack hemodialysis equipment's such as bicarbonate powder, blood lines and dialyzer from the store					
24.	We never lack erythropoietin injection in the pharmacy					

25. Kindly indicate any other challenge that you experience and indicate to what extent they it affect you.....

SECTION C: COPING STRATEGIES

The following are the coping mechanisms uses by hemodialysis patients. Kindly indicate how often you have used each of them.

	COPING METHOD	Never	sometimes	Always
	Problem based strategies			
22.	I always share with my family members all the problems that I encounter regarding my dialysis treatment.			
26.	I always share the problems that I encounter regarding my dialysis treatment with health care providers such as my doctors, nurses, counsellors and nutritionists for solutions.			
27.	I always try to read more on the problem that I am experiencing from books and internet in order to get a solution on how to handle that problem.			
28.	I always talk about the problem that I am experiencing with someone who had been in the similar situation like mine.			
29.	I always try to see the good side of the problem that I am experiencing.			
30.	I always try to distract myself by doing the things that I love most in order to forget the problem that I am experiencing			
	Emotion based strategies			
31.	I always keep the problems that I encounter to myself.			
32.	I always drunk alcohol and other drugs of addictions to keep my problems away from my mind.			
33.	I always blame others for the problems that I am experiencing.			
34.	I always wish that the problem could go away			
35.	I always accept the situation as it is since I know that very little could be done so solve my problem			

36. Please indicate any other coping strategies that you have been using other than what is indicate above.....

SECTION D: HEALTH STATUS AMONG HEMODIALYSIS PATIENTS

37. How would you regard your health status between your diagnosis with kidney disease and before the start of hemodialysis

- a) Excellent
- b) Very good
- c) Good
- d) Fair
- e) Poor

38. How would you regard your health from the time you were started on hemodialysis therapy to date?

- a) Excellent
- b) Very good
- c) Good
- d) Fair
- e) Poor

39. (a) In your own opinion, has the hemodialysis therapy been of any health benefit to you?

- a) Yes
- b) No

40.(b) If yes, how.....
.....
.....

40. (A). For the last 30 days, were you ever admitted in the hospital?

- a) Yes
- b) No

41.(b). If yes, what was the problem?.....
.....
.....

41. (a). In the last 30 days, were you ever sick that you sought attention of a medical person?

- a) Yes
- b) No

42.(b)If yes, what was the problem?.....
.....

42. (a)In the last 3months, did you miss any scheduled hemodialysis session?

- a) Yes
- b) No

43.(b).If yes, how many times did you miss.....
.....

43. (c) What was the cause of you missing the scheduled session?

.....
.....

(a).Has hemodialysis affected performance of your daily activities?

- a) Yes
- b) No

44.(b)If yes, how?.....
.....

43. (a)Has hemodialysis affected your sleep patterns?

- a) Yes
- b) No

45. (b).If yes, how.....
.....

44. (a).Has hemodialysis affected your sexual relationship with your partner?

- a) Yes
- b) No

45. (b).If yes,how?.....
.....

46. Has hemodialysis affected you socially?

- a) Yes
- b) No

47. (b) If yes,
how?.....
.....

48. (a) Has hemodialysis affected your mental health?

a) Yes

b) No

49.(b) If yes,
how?.....
.....

50. (A) has hemodialysis affected your spiritual life?

a) Yes

b) No

50.(b).If
yes,how?.....
.....

51. (a)...Do you feel that you have much to be proud of now?

a) Yes

b) No

51.(b).if
yes,why.....
.....

51.(c).If
no,why.....
.....

52.How else has hemodialysis affected your health
status.....

APPENDIX 2: INFORMED CONSENT

My Name is Elizabeth Wambui Mugi. I am a Master's student from Kenyatta University. I am conducting a study on Stressors and coping strategies among hemodialysis patients in selected counties dialysis centers in Kenya. The information will be used by the Ministry of Medical Services and Ministry of Public Health and Sanitation to improve access and quality for screening of hemodialysis patients in the hospital as well as in other regions of Kenya.

Procedures to be followed

Participation in this study will require that I ask you some questions and I will record the information from you in a questionnaire.

You have the right to refuse participation in this study. You will get the same care and medical treatment whether you agree to join the study or not and your decision will not change the care you will receive from the clinic today or that you will get from any other clinic at any other time

Please remember that participation in the study is voluntary. You may ask questions related to the study at any time.

You may refuse to respond to any questions and you may stop an interview at any time. You may also stop being in the study at any time without any consequences to the services you receive from this clinic or any other organizations now or in the future.

Discomforts and risks

Some of the questions you will be asked are on intimate subject and may be embarrassing or make you uncomfortable. If this happens, you may refuse to

answer these questions if you choose so. You may also stop the interview at any time. The interview may add approximately half an hour to the time you wait before you receive your routine services

Benefits

If you participate in this study you will help us to learn how to provide effective screening services that can improve the health of hemodialysis patients. You will also benefit from being screened for hemodialysis stressors and if you are found to have a problem you will be advised accordingly.

Reward

There are no rewards attached to this study.

Confidentiality

The interviews will be conducted in a private setting within the clinic. Your name will not be recorded on the questionnaire. The questionnaire will be kept in a locked cabinet for safe keeping at Kenyatta University. Everything will be kept private.

Contact information

If you have any questions you may contact Dr. Grace Githemo my Supervisor number 1. On 0722787862 or Dr.Jonathan Wala my Supervisor number 2. On 0722821514 or the Kenyatta University Ethical Review Committee Secretariat on chairman.kuerc@ku.ac.ke

Participant's statement

The above information regarding my participants in the study is clear to me. I have been given a chance to ask questions and my questions have been answered

to my satisfaction. My participation in this study is entirely voluntary. I understand that I will still get the same care and medical treatment whether I decide to leave the study or not and my decision will not change the care I will receive from the clinic today or that I will get from any other clinic at any other time.

Code of participant.....

Signature or thumb print.....

Date.....

Investigator`s statement

I, the undersigned, I have explained to the volunteer in a language she/he understands, the procedures to be followed in the study and the risks and benefits involved.

Name of interviewer.....

Interviewer signature.....

Date

APPENDIX 3: UTAFUSIRI WA IDHINI KWA LUGHA YA KISWAHILI

Jina langu Ni Elizabeth Wambui Mugi mwanafunzi kutoka chuo kikuu cha Kenyatta University na muuguzi katika hospitali kuu ya Kenyatta National Hospital.

Utafiti

Ninafanya utafiti kuhusu “CHANGAMOTO AMBAZO WAGONJWA WA UGONJWA WA FIGO WANAOSHWA DAMU KUPITIA MACHINI WANAZOPATANA NAZO NA PIA NJIA AMBAZO WAO HUTUMIA KUKABILIANA NA CHANGAMOTO HIZO KATIKA HOSPITALINI MPYA ZA KOUNTI ZA KENYA.

Utafiti pia utaangalia kama kunazo changamoto zozote zinazo wakabidhi hawa wagonjwa wanapoendelea na huduma zao za kila siku.

Kuhusishwa Kwako

Ushirikiano wako katika utafiti huu utakua kwa hiari yako na una uhuru wa kujiiondoa bila kuadhibiwa kwa njia yeyote. Utafiti huu ni wa maelezo tuu na hauna gharama yeyote kamwe.

Hakuna malipo yoyote utapewa kwa kushiriki utafiti huu.

Idhini ya Utafiti

Utafiti huu unaendelezwa kwa idhini ya kamati kuu ya Sheria na Utafiti wa Kenyatta University na NACOSTI.

Utaratibu Ya Utafiti

Mimi nikiwa Mtafiti mkuu pamoja na watafiti mwenzangu tutakupa maelezo ya utaratibu wa jinsi ya kusiriki katika utafiti huu.

Siri

Utambulisho wako utahifadhiwa kwa siri kwenye harakati ya utafiti huu na awali zako pekee na nambari ya kadi ya hospitali ita nakiliwa kwa ajili ya kufuatilia utafiti huu

Nambari ya mawasiliano

Kwa maelezo yoyote wasiliana nami katika nambari hii, 0720381130/0737676787.au barua pepe elizabeth.mugi@yahoo.com ama Kenyatta University research and ethics committee.

Asante sana

APPENDIX 4: CONSENT FORM FOR THE PATIENT (ENGLISH)

I..... (Initials only) have understood the explanation of this study, “Stressors and coping strategies among hemodialysis patient in the new selected county hemodialysis centers ”.

It has been explained to me by Ms. Elizabeth Wambui Mugi the Principal investigator. I have freely chosen to participate in this study and understand that there is no monetary gain. I also understand that I may choose to withdraw from the study at any stage without any penalty.

I hereby give my informed consent to participate in the study.

Signed..... (Patient)

Signed.....(The Investigator)

Date/...../2019.

**APPENDIX 5: FOMU YA IDHINI YA KUSHIRIKI YAWAGONJWA
(SWAHILI)**

Ninatoa kibali kuhusishwa kwenye utafiti uitwao “Stressors and coping strategies among hemodialysis patient in the new selected county hemodialysis centers”.

Nathibitisha kwamba nimeelewa maelezo yote kutoka kwa Elizabeth Wambui Mugi kuhusu utafiti huu. Nimetoa kibali hii cha kushiriki kwa huu utafiti kwa hiari yangu binafsi.

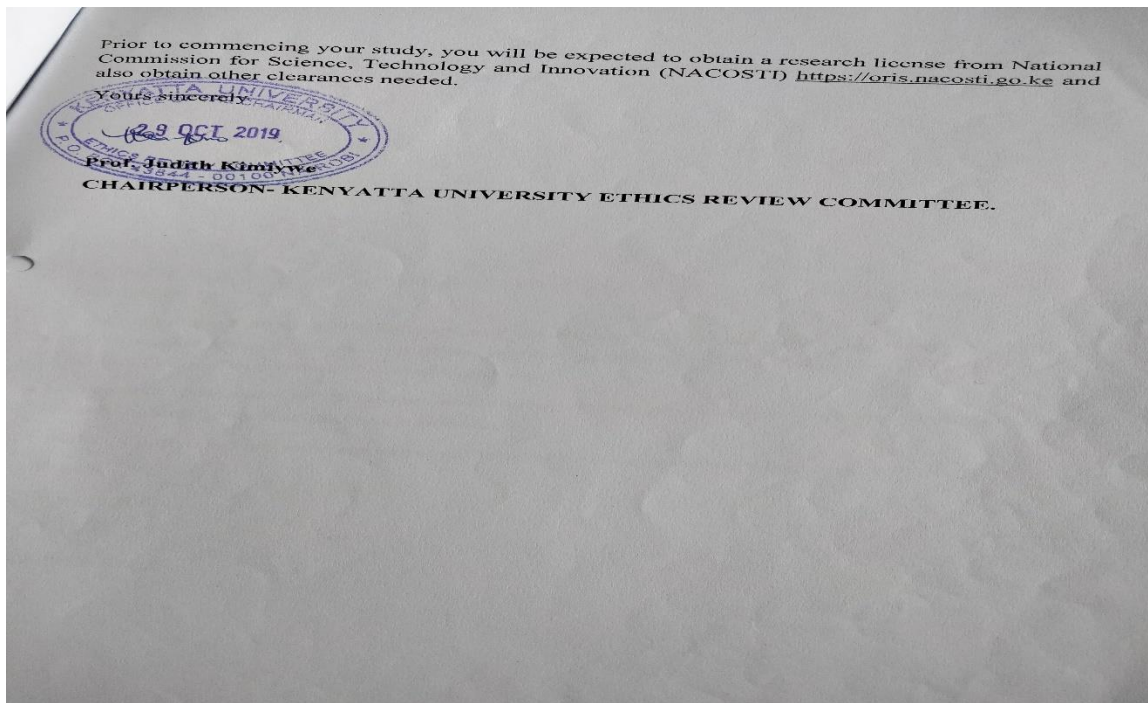
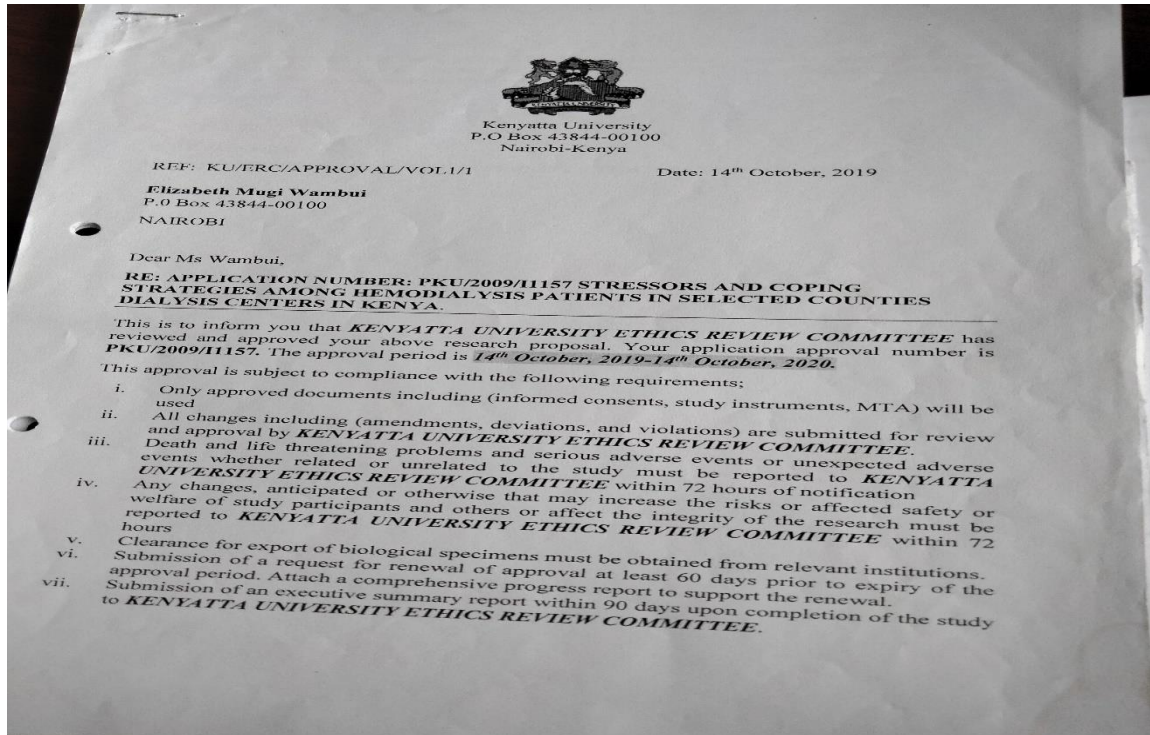
Nimeelewa kwamba ninaweza kujiondoa kutoka huu utafiti wakati wowote bila masharti yoyote.

Pia nimeelewa ya kwamba habari yoyote nitakayoitoa itahifadhiwa kwa siri.


Sahihi ya Mhusika..... Tarehe


Sahihi ya Mtafiti..... Tarehe.....

APPENDIX 6: KENYATTA UNIVERSITY ETHICS REVIEW COMMITTEE APPROVAL LETTER




**APPENDIX 7: NATIONAL COMMISSION FOR SCIENCE,
TECHNOLOGY & INNOVATION (NACOSTI) APPROVAL LETTER.**


REPUBLIC OF KENYA


**NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY & INNOVATION**

Ref No: **747047** Date of Issue: **20/November/2019**

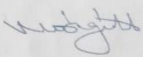
RESEARCH LICENSE




This is to Certify that Ms.. ELIZABETH MUGI of Kenyatta University, has been licensed to conduct research in Embu, Kiambu, Machakos, Muranga, Nyeri on the topic: STRESSORS AND COPING STRATEGIES AMONG HEMODIALYSIS PATIENTS IN SELECTED COUNTIES DIALYSIS CENTERS IN KENYA for the period ending : 20/November/2020.

License No: **NACOSTI/P/19/2851**

747047
Applicant Identification Number


Director General
**NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY &
INNOVATION**

Verification QR Code



**NOTE: This is a computer generated License. To verify the authenticity of this document,
Scan the QR Code using QR scanner application.**

**APPENDIX 8: NYERI COUNTY REFERRAL HOSPITAL DATA
COLLECTION APPROVAL LETTER.**

REPUBLIC OF KENYA



COUNTY GOVERNMENT OF NYERI
DEPARTMENT OF HEALTH SERVICES
OFFICE OF THE DIRECTOR

Email: nyericountyhealth@yahoo.com

COUNTY COMMISSIONER'S HQ
BLOCK 'A'
P.O. Box 110 - 10100

REF: CGN/HEALTH/HRM/5/VOL.II

Date: 9th December 2019

TO

Medical Superintendent
NYERI COUNTY REFERRAL HOSPITAL

RE: RESEARCH AUTHORIZATION

The bearer of this letter **Elizabeth Mugi** is a Postgraduate student at Kenyatta University. She is registered for M.Sc degree programme in the Department of Nursing.

She is hence introduced to carry out a research on "**Stressors and Coping Strategies among Hemodialysis patients in selected counties dialysis centers in Kenya**".

Kindly accord her the necessary assistance.

The student **must** deposit a copy of the final report with the department following completion of the study.

Dr. Nelson Muriu
County Director of Health Services
NYERI

**APPENDIX 9: MACHAKOS COUNTY REFERRAL HOSPITAL DATA
COLLECTION APPROVAL LETTER.**

TO THE ADMINISTRATIVE OFFICER,
MACHAKOS COUNTY LEVEL 5 HOSPITAL.

DATE: 17TH DEC 2019.

ELIZABETH MUGI

TEL:0720381130/0737676787

Email:elizabeth.mugi@yahoo.com

Dear Sir/madam.


**RE: REQUEST TO COLLECT DATA AMONG HEMODIALYSIS PATIENTS IN
RENAL UNIT.**

I Elizabeth Mugi a nursing officer by profession and currently a renal nurse student in Kenyatta University do hereby request for your permission to collect data among hemodialysis patients as part of my school research project.

My research topic reads as "**Stressors and coping strategies among hemodialysis patients in selected county level five dialysis hospitals.**"

Attached kindly find my research approval letters from Kenyatta University and NACOSTI.

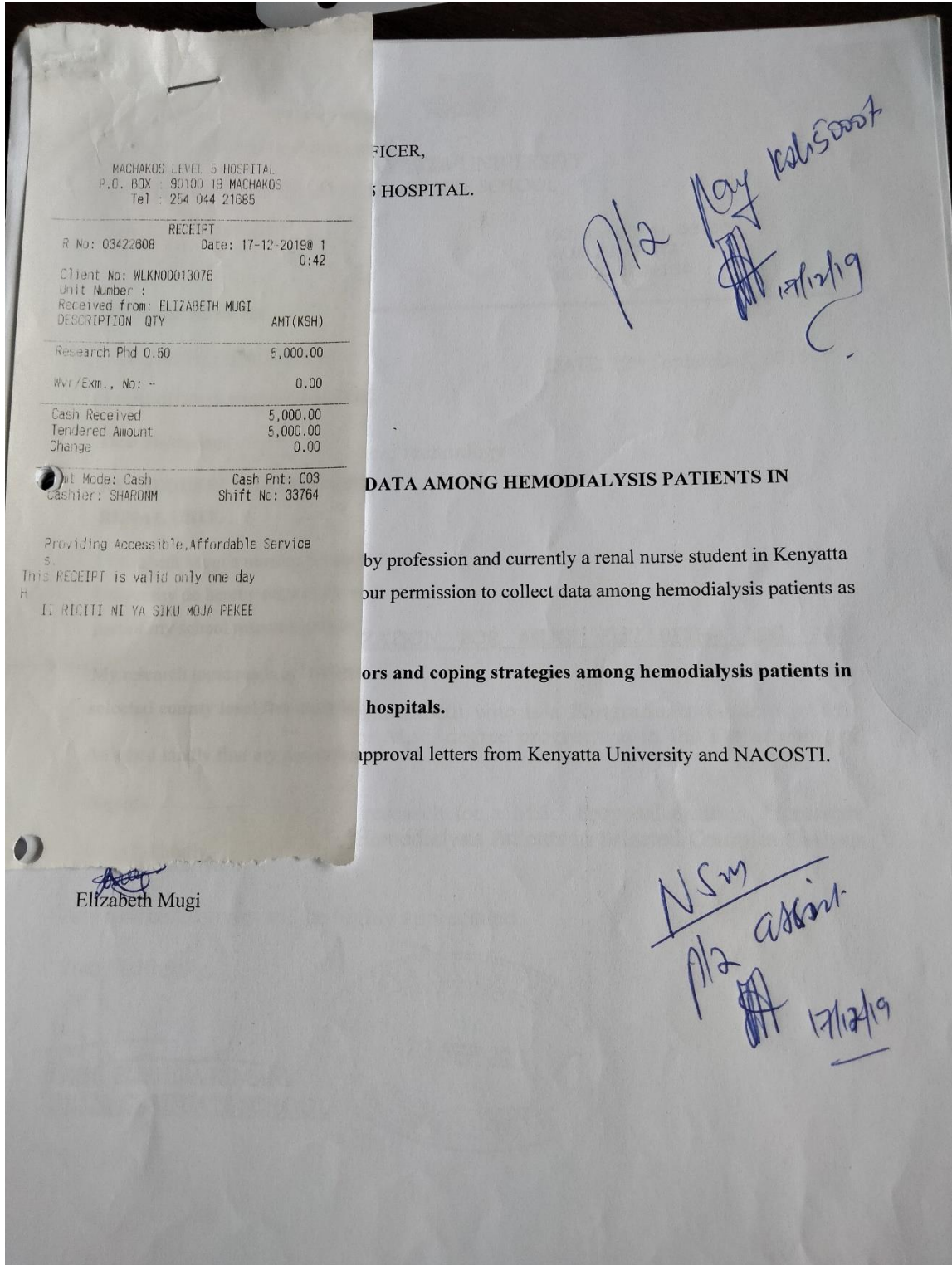
Regards.

Yours faithfully,

Elizabeth Mugi

Plz May 17/12/19


*NSM
Plz assist
17/12/19*

**APPENDIX 10: MACHAKOS COUNTY REFERRAL HOSPITAL DATA
COLLECTION PAYMENT RECEIPT**



**APPENDIX 11: THIKA COUNTY REFERRAL HOSPITAL DATA
COLLECTION APPROVAL LETTER.**

APPROVED
DEPOSIT TO ACC.
MURIKI/RICHARD M
DESTINATION ACC: 0514267800000
THIKA LEVEL 5 HOSPITAL
REGISTRATION: CASH-DEPOSIT
AMOUNT: KES2,000.00
BANK_REF: 000710756272
SERVED BY 000000000000
THANK YOU FOR BANKING WITH US
CUSTOMER COPY



Handwritten notes: "Mail copy of Proposal to TREC", "Approved", "D. Nyaga", "07/01/2020"

**NTY GOVERNMENT OF KIAMBU
DEPARTMENT OF HEALTH SERVICES**

P.O BOX 227-01000 THIKA, KIAMBU
TEL:+254722106797 EMAIL: thikahospital@yahoo.com
REF: MOH/TKA/GEN/VOL.IV(399)

DATE: 7th January, 2020

**FORWARDED
MEDICAL SUPERINTENDENT
THIKA LEVEL 5 HOSPITAL**

APPROVAL TO CARRY OUT RESEARCH

Principle Investigator: ELIZABETH MUGI


**RE: STRESSORS AND COPING STRATEGIES AMONG HEMODIALYSIS PATIENTS
IN SELECTED COUNTIES DIALYSIS CENTRES IN KENYA**

Following deliberations by Thika Level 5 Hospital Research Committee, your proposal to carry out the above research at this facility has been approved. However, you will need to provide us with license from NACOSTI or Ethical Clearance from KEMRI before you can commence the data collection.

Take note that you are required to submit a copy of your research findings upon completion of the study to the hospital. It is also expected that ethical consideration and the research subjects' confidentiality will be maintained as you have outlined in your proposal.

Any patient confidential information that you may access during your research should not be used without consent. This letter is valid up to 30th June, 2020.

For any queries feel free to contact the committee chair through the Medical Superintendent's office or training, research and ethics committee office. Thank you and all the best.



DR. PATRICK NYAGA
CHAIR TREC
THIKA LEVEL 5 HOSPITAL

**APPENDIX 12: MURANG'A COUNTY REFERRAL HOSPITAL DATA
COLLECTION APPROVAL LETTER.**

