

**PREDICTORS OF QUALITY OF LIFE OF KIDNEY DONORS AT
KENYATTA NATIONAL HOSPITAL, NAIROBI CITY COUNTY,
KENYA**

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**A RESEARCH THESIS SUBMITTED IN PARTIAL FULFILMENT OF
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DECLARATION

This proposal is my original work and has not been presented for the award of a degree in any other university.

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Supervisors' Approval

This proposal has been submitted with our full approval as the Supervisors.

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DEDICATION

I dedicate this work to my beloved husband Daniel Nyamora and my children Christine, Solomon and Emmanuel for their overwhelming love and support that made my life easier while carrying out the study. I also dedicate this work to the kidney donors at Kenyatta National Hospital whom i consider as second ‘gods’ to the kidney recipients and without whom i could not have accomplished this study. May God bless them all.

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OPERATIONAL DEFINITIONS

For the purpose of this study the following terms are defined as follows;

Age	is time in completed years.
Chronic Kidney Disease	is a slow, progressive, irreversible loss of kidney Function with a measured eGFR of less than 60ml/min/1.73m ² persisted for more than 3 months.
Deceased Donation	is getting an organ or part of an organ from a person who has been declared cardiac or brain dead for treatment of another person.
Directed Donation	is when the living donor chooses a specific person that they want their organ to be given. They can be living related or living none related. It is the most commonly donation practiced in Kenya.
Kidney Donor	is a living or non-living individual whose kidney is harvested and given to another person with end stage kidney disease.
Living Donor	is a living person who gives an organ or part of an organ to a patient who requires that organ.
Living Donation	is when someone gives one or part of his organ when he/she is still alive.
Non-directed donation	is where the living organ donor does not name a specific person who should receive his/her organ. The organ is usually given to anyone who is in need.

Quality of life

is a person's perception of well-being that stems from satisfaction or dissatisfaction with the areas of life related with health that are important to him/her. The study looked at the economic and health functioning domains of quality of life of the kidney donors.

Renal Replacement Therapies

are modes of treatment for end stage kidney disease which includes dialyses and transplantation.

Renal Transplantation

is a surgical transfer of a healthy kidney from a donor to a recipient as a mode of renal replacement therapy.

ABBREVIATIONS AND ACRONYMS

BMI	Body Mass Index
BP	Blood Pressure
CDC	Center for Disease Control and Prevention
CMV	Cytomegalovirus
CKD	Chronic Kidney Disease
DDKT	Deceased Donor Kidney Transplantation
DDKT	Deceased Donor Kidney Transplantation
ECG	Electrocardiogram
eGFR	Estimated Glomerular Filtration Rate
ESRD	End Stage Renal Disease
GFR	Glomerular Filtration Rate
HAR	Humoral Antigen Rejection
HD	Hemodialysis
HIV	Human immunodeficiency virus
HLA	Human Leukocyte Antigen
HR-QoL	Health Related Quality of Life
KDOQI	Kidney Disease Outcome Quality Initiative
KQIGO	Kidney Disease Improving Global Outcomes
KNH	Kenyatta National Hospital
KU	Kenyatta University
KRA	Kenya Renal Association
LD	Living Donor

LKD	Living Kidney Donor
LDKT	Living Donor Kidney Transplantation
NKF-DOQI	National Kidney Foundation-Dialysis Outcome Quality Initiative
PD	Peritoneal Dialysis
QoL	Quality of Life
RRT	Renal Replacement Therapy
SSA	Sub-Saharan Africa
USRD	United States Renal Data
USRDS	United States Renal Data System
WHO	World Health Organisation

ABSTRACT

Background: There's an increasing prevalence of End Stage Kidney Disease (ESKD) globally and the disease is an important contributor of morbidity and mortality among these patients. Compared to dialysis Kidney transplantation is well established as the best treatment for restoring quality of life to patients with ESKD. The information regarding living donors' QoL has been reported to have a positive influence towards the prospective donor's attitude to kidney donation. The aim of the study was to examine the socio-demographic, socio-economic, and psychological and health factors that impact on the donors' QoL in Kenya. Aim: The study aimed at assessing QoL of kidney donors after kidney donation at Kenyatta National Hospital. Methodology: This was a descriptive cross-sectional study design of Kidney donors at Kenyatta National Hospital Renal department, between January 2010 and December 2017. A convenience sampling method was used with an anticipated sample size of 105 kidney donors. Data was collected through the use of questionnaires administered directly to individual participants. Data was analyzed using descriptive and inferential analysis. Multiple regression analysis was also applied to identify the predictors of QoL of the kidney donors. Qualitative data was analyzed thematically. Ethical approval was sort from KU and KNH ethics committees before data collection. Results: A total of 99 donors were interviewed, 54.5%, (n=54) were male while 45.5% (n =45) were female. The mean age of the respondents at the time of donation was M =38.65 SD \pm 9.04. The QoL of kidney donors in this study was high as represented by 83% of the respondents. The predictors of QoL were, Current monthly income, $\chi^2(1, n = 99) = 24.793$, (p <0.05) (QoL-psychological factors), marital status after kidney donation $\chi^2(1, n = 99) = 10.261$ (p <0.05), Employment status after kidney donation $\chi^2(1, n = 99) = 11.474$ (p <0.05) and BMI $r(0.835)$, p <0.05 in health and functioning. Conclusions: the overall quality of life of kidney donors at Kenyatta National Hospital was high. The study concluded that socio-demographic and economic factors particularly, BMI, marital status after kidney donation, current employment and current monthly income had significant contribution towards quality of life of kidney donors at Kenyatta National Hospital. Current employment had a positive significant predictive association with donor's quality of life

CHAPTER ONE: INTRODUCTION

1.1. Introduction and Background Information

End stage kidney disease (ESKD) is an important contributor of morbidity and mortality among patients with non-communicable diseases globally (Naicker & Ashuntantang, 2017; Abd Elhafeez et al., 2018). It has an annual global growth rate of 8% and reported to be more prevalent in women but the disease is more severe in men (Neugarten & Golestaneh, 2019). The overall prevalence of chronic kidney disease (CKD) in Sub-Saharan Africa (SSA) is estimated to be 13.6% (Chinedum et al., 2011). A report by the Kenya renal association during the world kidney day 2017 celebrations indicated that close to 4 million Kenyans are suffering from chronic kidney disease. A study done in Kenya also reported that the prevalence of chronic kidney disease is estimated at 10% which is in-keeping with the prevalence reported in other parts of the world (Cherono, 2018).

Renal replacement therapies available to patients with (ESKD), are dialysis and kidney transplantation. Studies have reported that Kidney transplantation is the best renal replacement therapy for patients with ESKD, as it improves their overall quality of life (QoL) (Silverstein & Hopper, 2015). Kidney donation can either be from living kidney donors, who can be living-related or living non-related donors or can also be from deceased donors. Studies have shown that living kidney donor transplants have better outcomes than deceased donor transplants.

In most studies living kidney donor grafts are reported to have a longer graft and patient survival than grafts from deceased donors, leading to increased demand of

living kidney donors (Bugeja & Clark, 2017; Sawinski & Locke, 2018, Martínez et al., 2018). Patients with ESKD can also get kidneys from altruistic donors. These are people who anonymously donate a kidney to any patient who may require it and the donor has no say to whom his kidney will be given (Bugeja & Clark, 2017).

Quality of life (QoL) is defined as an individual's perception of his/her own state of health. It determines one's economic independence, guarantee for employment, career planning development and social relationships (Ruzevicius, 2016). Studies indicate that living kidney donors can still live a normal life after kidney donation (Messersmith et al., 2014; Sommerer et al., 2015; Klop et al., 2018). Other studies have reported the act of kidney donation to be satisfying because the donor feels that he has participated in saving a life (Nöhre et al., 2018)

In Kenya, lack of legal structures to authorize deceased organ donation means that the country will continue depending on living kidney donors. It is therefore important to optimize living donor transplantation programs to ensure donor safety.(Muturi, Kotecha, & Kanyi, 2017; Ochwila , 2014).Studies conducted at Kenyatta National Hospital(KNH) that looked at the kidney transplantation procedure and kidney functions of the donors after nephrectomy reported normal renal functions and indicated that the procedure was safe (Ochwila, 2014; Muturi et al., 2017)). However documented data on QoL after kidney donation in Kenya is scarce. KNH renal transplant clinic data base reports that 171 transplant cases were done from year January 2010 to December 2019, but the QoL of these donors was not

documented. This study assessed the QoL of the living kidney donors and the results will inform practice, help formulate policy and inform future researches.

1.2. Problem statement

There's an increasing prevalence of ESKD globally and with it comes continuous demand for kidney donors (Klop et al., 2018). Studies have reported kidney transplantation as the ultimate treatment of choice for patients with ESKD, however the practice is not common globally because of lack of donors (Ríos et al. 2018; Martínez-Alarcón et al., 2018). There is evidence of long waiting lists of patients with ESKD awaiting kidney transplant due to lack of donors which has led to many countries working to promote living kidney donation (Mikla et al., 2015). In Sub-Saharan Africa including Kenya, studies indicate that Living kidney donation is the main source of organs for patients with ESKD requiring kidney transplantation (Naicker & Ashuntantang, 2017), but little is known about QoL of these donors after kidney donation. Guidelines on follow-up of kidney donors after donor nephrectomy in Kenya is still not available.

Researchers have reported that information regarding donors' QoL following donation is of key importance to potential donors and will help increase positive attitude towards kidney donation (Gordon et al., 2015). Although the safety of living kidney donation has been well established, studies examining the physical, psychological and socio-economic aspects of the donor's QoL in Kenya is scarce. Lack of adequate information on QoL of kidney donors in the country makes it difficult to give right information to prospective donors. (Muturi et al., 2017). Further, lack of a structured donor registry and donor follow-up guidelines, has made

it difficult to promote living kidney donation in Kenya. Guidelines for Living donor kidney transplantation by British Transplantation Society ,2018 and KDIGO, 2017 Clinical practice guidelines on evaluation and care of living kidney donors mainly focused on follow-up of donors for risk of developing ESKD post kidney donation. In order to understand the QoL of kidney donors, it is necessary to explore the QoL of living donors after kidney donation in Kenya.

1.3. Research Questions

- i. What is the relationship between socio-demographic characteristics and quality of life of kidney donors at Kenyatta National Hospital?
- ii. What is the relationship between socio-economic factors and QoL of living kidney donors at Kenyatta National Hospital?
- iii. What are the Predictors (psychological factors, Health functioning) of QoL of kidney donors at Kenyatta National Hospital?

1.4. Research Objectives

1.4.1 Broad Objective

To assess QoL of kidney donors after kidney donation at Kenyatta National Hospital.

1.4.2 Specific Objectives

- i. To determine the relationship between the socio-demographic characteristics and the QoL of kidney donors at Kenyatta National Hospital.
- ii. To determine the relationship between socio- economic factors and QoL of kidney donors at Kenyatta National Hospital.

- iii. To determine the components of QoL of kidney donors at Kenyatta National Hospital.

1.5. Study Justification

Kidney donors are individuals who are healthy and willing to donate their kidneys to patients with ESRD. In order to maintain an efficient living donor transplantation program, information on QoL of donors is important. Prospective donors have a legitimate right to information about the existing donors as this will help them make informed decisions towards kidney donation. Data that focuses on the living donor's life mentally, psychologically, socioeconomically and how the donors have interacted with the community after kidney donation in Kenya is scarce. This study endeavours to assess these factors to determine the QoL of the kidney donors at Kenyatta National Hospital. KNH being the largest referral hospital in Kenya manages the largest number of patients with ESRD. The hospital also performs the largest number of kidney transplants in a public hospital per year. An average of 20 transplant cases per year. Reports from the transplant clinic at Kenyatta National Hospital, indicate that an average of three prospective donors drop out of the donor list monthly. Information from this study will add to the existing knowledge and give more information that can help prospective donors make an informed decision towards becoming a kidney donor.

1.6 Implication of research to nursing practice

Patients with ESKD usually require long-term management, even after kidney transplantation they are on constant follow-up. Kidney donors are healthy people

donating their organs to people with ESKD requiring kidney transplantation. Nurses are involved in the process of donor recipient selection, transplantation and subsequent follow-up for both the donor and recipient. The transplant counsellors are nurses and adequate information on how the living kidney donors are doing after kidney donation is very important especially when counselling prospective donors.

This study anticipated to add information to already existing knowledge on QoL of kidney donors. The study findings will help demystify, the fact that donors are able to continue with life after kidney donation. The study findings will also be used for policy formulation which when implemented will go a long way to improve donor outcome and enhance quality of life of kidney donors in Kenya.

1.7 Theoretical Framework

The conceptual framework used in this study is the revised version of Wilson and Cleary's (1995) Model of Health-Related Quality of Life (HRQoL) (Ferrans et al, 2005). The current need is for causal models that clearly indicate the elements of HRQoL and their determinants (Ferrans et al,2005). The Model was developed based on the adoption of an individualistic ideology, which recognizes that QoL depends on the unique experience of life for each person. Individuals are the only proper judge of their QoL, because people differ in what they value. Consistent with this ideology, quality of life was defined in terms of satisfaction with aspects of life that are important to the individual. Factor analysis of donor's individual data was used to cluster related elements into domains of quality of life. That is, socio-economic aspects, health and functioning of quality of life.

Theoretical Framework

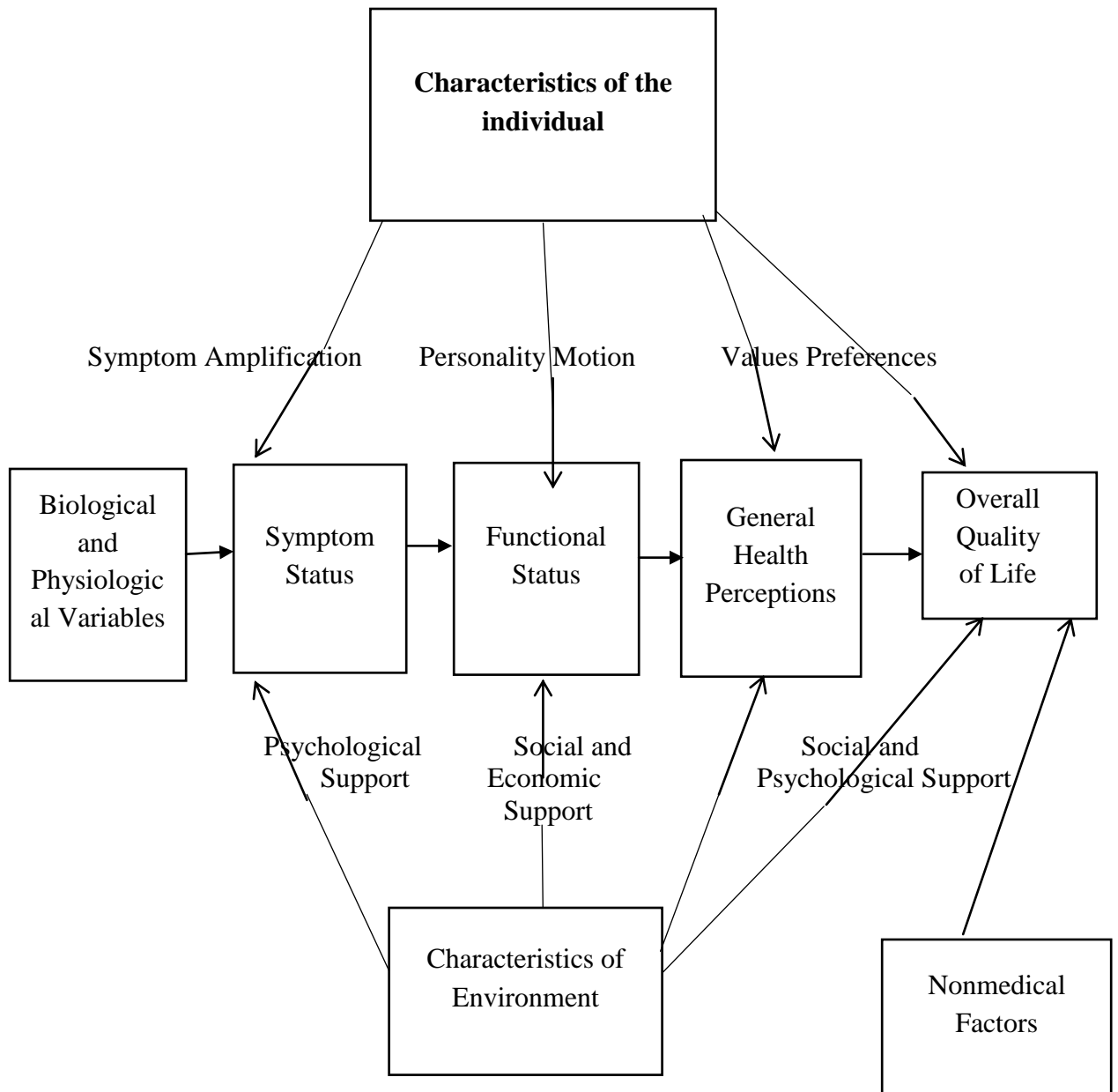


Figure 1.1: Theoretical Framework

Linking clinical variables with health-related quality of life: relationships among measures of patient outcomes in a health-related quality of life conceptual model by Wilson 1B, Cleary PD, JAMA 1995;273:59–65 American Medical Association.1995.

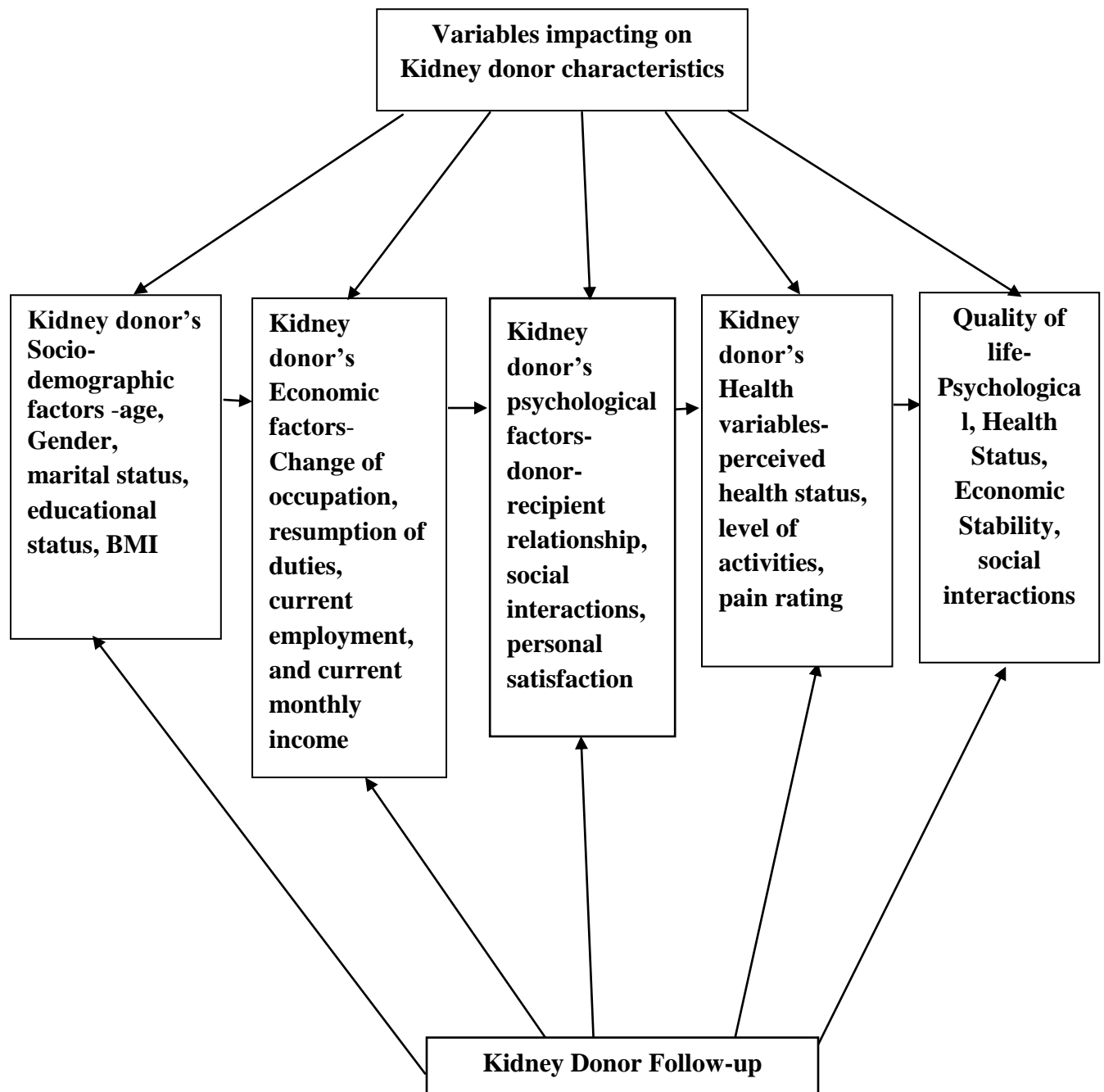


Figure 1.2: Modified QoL Theoretical Framework

1.8 Conceptual Framework

Health-Related Quality of Life Model (HRQoL Ferrans et al, 2005) was used in this study to evaluate personal perception on QoL. The model has domains related to

physical, mental, emotional and social functioning. It focuses on the impact health status has on QoL and can be used to measure population life expectancy and the causes of death (WHO, 2010). The model has a multi-dimensional approach, thus can be used to assess all aspects of health across the lifespan continuum. The model also looks at individual and environmental aspects that can impact on QoL. Clinicians, public health officials and CDC have used HRQoL to measure the effects of chronic illness, treatments and short- and long-term disabilities. This study was assessing the socio-demographic, socio-economic and general well-being of kidney donors and the model is best suited to bring out these aspects.

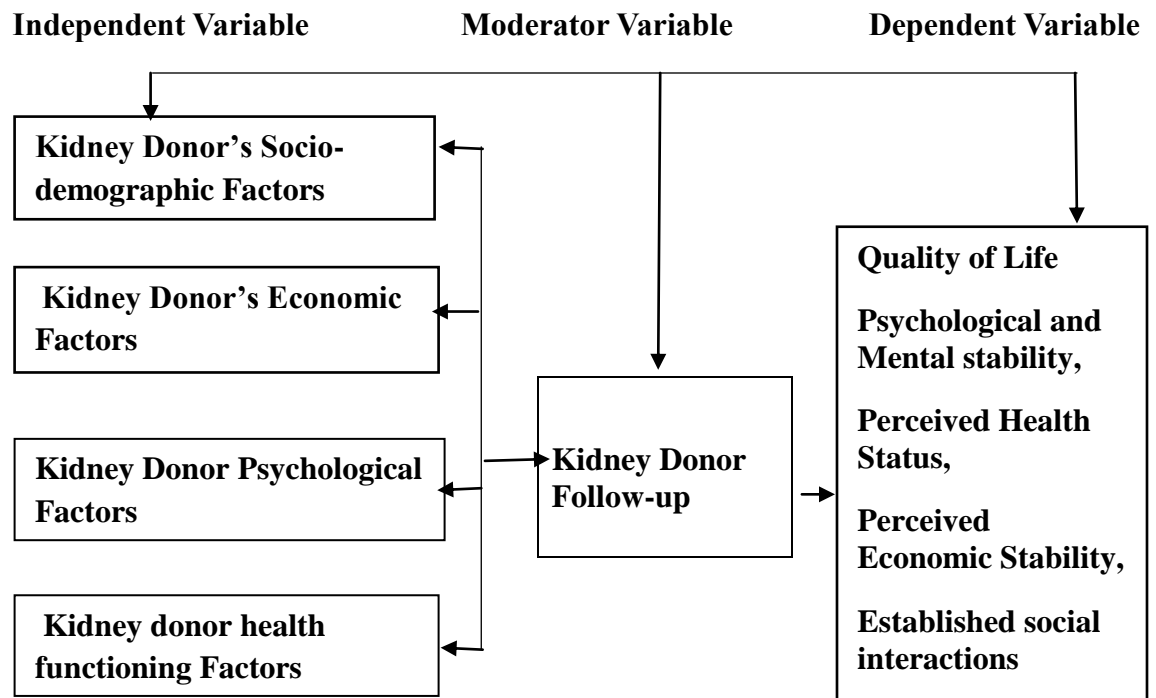


Figure 1.3: Conceptual Framework
 Modified from the Health-Related QoL Model (Ferrans et al., 2005)

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The literature search in this chapter started by giving an overview of kidney transplant, living kidney donation and QoL. This chapter however mainly focused on; socio-demographic variables of kidney donors and assess their impact on QoL, economic factors that impact on QoL of kidney donors, psychological factors that impact on perceived QoL of kidney donors and perceived health status of kidney donors after kidney donation. The search endeavored to look at the researches done on the above areas globally, regionally, locally and narrowed down to related researches done at the Kenyatta National Hospital.

The key words were, Kidney transplantation, Kidney donation, and QoL.

2.1.1 Kidney Transplantation

Kidney transplantation has remained the gold standard renal replacement therapy for ESRD and is believed to improve the overall QoL of the recipients (Klop et al., 2018b). Kidney transplant as a renal treatment modality still accords the lowest costs and the highest QoL to patients with ESRD compared with peritoneal dialysis and hemodialysis (Eckardt et al., 2013). Although kidney transplantation is well established as the best treatment for restoring QoL to patients with ESRD, getting a willing and suitable donor has remained a major drawback in implementing this treatment modality (American Transplantation society Journal ,July 2018).

2.1.2 Living Kidney Donation

Living donation is when someone donates part of his/her organ when he/she is still alive. A living kidney donor is a healthy person who is willing to donate one of his

kidneys to save life of a patient in end stage kidney disease and therefore the QoL of this donor after kidney donation is of particular interest. Kidney donation procedure is invasive, thus general health, physical and psychological well-being of the donor after donation is of paramount importance (Sommerer et al., 2015). The success and survival of any transplant program is dependent on donor safety and therefore, information regarding donors' QoL following donation should be assessed (Gaston et al., 2015). The living donor must be found medically and surgically fit before they are allowed to donate, thus the reason why a donor should be evaluated for physical and psychological preparedness. (United Network for Organ Sharing, 2016).

There is an increased demand of living kidney donors globally because Living donor kidney transplantation (LDKT) is perceived to have better graft survival and overall patient outcomes compared to deceased donation (Martínez-Alarcón et al., 2018). It is also reported to be more cost effective than dialysis and has lower rates of both acute rejection and delayed graft function (Wu et al., 2017). Studies have reported Living Kidney donation to be of low surgical risk and is ethically acceptable (Mikla et al., 2015). It has a more timely access to transplantation and allows better planning than deceased donor kidney transplantation (Mikla et al., 2015). Living donor kidney donation is therefore the most preferred kidney transplant of choice for patients with ESRD. Many countries in Sub-Saharan Africa except South Africa who carry out kidney transplantation activities only perform LDKT (Naicker & Ashuntantang, 2017). In Kenya, there's no law in place as yet that allows deceased donation, therefore only living donor kidney transplantation is performed (Kabinga, 2015). This is why it is important to know the QoL of the existing living kidney donors.

2.1.3 Quality of Life

QoL is an individual perception of state of health, positive or negative (Ruzevicius, 2016). According to the center for disease control (CDC) Health-related quality of life (HRQOL) is an individual's or a group's perceived physical and mental health over time (Okorie et al., 2018). Kidney donation is performed on a healthy person to save life of another person. It is therefore important to ensure that this procedure is safe and that the living donor is not in danger after donation (Muturi et al., 2017). The prospective donors also have a legitimate right to know the quality of life of existing donors (Reese et al., 2015). This study assessed factors that define the QoL of Kidney donors KNH.

2.2 Influence of Socio-demographic characteristics on QoL of kidney donors

Studies have shown that Age, Gender and Body Mass Index (BMI) affect QoL of Kidney Donors (Bugeja & Clark, 2017, Mihçioğur et al., 2019)

2.2.1 Influence of Age on quality of life of kidney donors

Studies have documented that Estimated Glomerular Filtration Rate (eGFR) declines with age, while the serum creatinine is dependent on muscle mass, and therefore lower eGFR after donation is longitudinally associated with older age (Janki et al., 2017). Other studies have reported an increased trend towards using elderly living kidney donors while quickly warning that QoL of these donors needs to be explored (Mihçioğur et al., 2019). For individuals above 50 years, there's an increase in complexity of dependency needs of an aging population and their QoL is seen to

decline. Studies have expressed the importance of documenting the reports on QoL of these elderly donors. In addition laparoscopic donor nephrectomy in elderly donors is associated with less pain score and overall good QoL after kidney donation compared with those who undergo open donor nephrectomy (Sumrani et al., 2006). However, another study done on QoL of elderly living kidney donors, reported that age has very minimal negative effects on post-operative recovery (Klop et al., 2018).

The average donor age for Norwegian transplantation donor pool is 59.8 years and a study done there reports no significant difference in QoL between young and old living kidney donors. In both young and old donors the QoL was reported to be good (Meyer et al., 2016). An American clinical journal of nephrology 2010 reported an average living kidney donor age in United States of America to be 48 years. In Kenya the average donor age is 33 years, which are mainly living related donors. This is an indication that mainly young donors are utilized (Kabinga, 2015). Information on QoL of these donors was however not documented.

2.2.2 Influence of Gender on quality of QoL kidney donor

Researches have reported gender imbalance where 63.5% of the donors are women while the men are the highest percentage of recipients (Peracha J et al, 2016). In a multicentre study that was looking at gender disparity reported that in India more than 50% of living kidney donors are female, 74.7% in Norway and same trend is also reported in Canada and USA (Mihçioğur et al., 2019). The same study also reports female predominance in spousal donations worldwide but reports on QoL after living kidney donation of these donors is still scarce. Another study done in

India reported that wives constitute 87% of all spousal donors (Sakhuja & Kumar, 2014) .

The explanation for the gender disparity in living kidney donor transplantation is associated with economic, attitude or psychosocial factors. In a study done in India, men are seen to be working class citizens and bread winners while women are housewives and likely to be picked as donors. This can affect their QoL after living kidney donation (Sakhuja & Kumar, 2014). Another study done in the same country that looked at female donors reported that living-related female kidney donors' QoL improves and depression scores decline after kidney donation, especially when donating to their children (Guleria et al, 2011). The same study added that the women living donors are happier to see their loved ones healthy and could make any sacrifices for their husbands and children.

Studies document that spouse donors experience a higher partnership satisfaction after living kidney donation (Nöhre et al., 2018). A study done in the USA reported a higher prevalence of gestational hypertension among living kidney donors compared to the general population(Reese et al., 2015).The situation is different in reports from studies done in Kenya where 55% of the living kidney donors are male (Kabinga, 2015). Data on QoL for both male and female living kidney donors in Kenya was scarce.

2.2.3 Influence of Body Mass Index on QoL of kidney donors

Studies done have shown that weight gain diminishes physical Health Related QoL (HRQOL) and that losing weight improves both physical and mental HRQOL. These

studies indicate that the higher the Body Mass Index (BMI) the higher the risk for impaired physical HRQOL(Dey, Gmel, & Mohler-Kuo, 2013 , Lee, Lee, Kim, Lim, & Park, 2017). The same studies reported that obese donors recorded negative effects on bodily pain and mobility, and this affected their QoL negatively. Serum Creatinine is influenced by muscle mass and therefore obesity plays a role in decline of eGFR (Praga M.et al, 2006). High BMI is also associated with surgical complications and therefore most transplant programs include BMI as one of the factors on the donor evaluation list (Muturi et al., 2017).

Recent epidemiological studies have shown that obesity is an independent risk factor of CKD(Lee et al., 2017). In transplant programs where donors with high BMI are allowed close monitoring was recommended to identify those at risk for progressive loss of renal function and decline of QoL (Janki et al., 2017). Most Living Kidney Donor Programs (LKDP) have increased efforts towards pre-donation weight loss counselling and education, and post-donation monitoring to improve quality of life of these donors (Taler, 2015)

2.3 Socio-economic characteristics that impact on QoL of kidney donors

Studies have shown that kidney donation can be costly to donors, given the transportation costs and the lost income from missed work(Reese et al., 2015).The lost income can also have an impact on the family processes ,for example they may not be able to meet their family expenses. Although kidney donation is considered as voluntary((Elcioglu & Dum, 2012), it is difficult to ascertain. Most parents turn to

their children to donate to them, thus sharing financial burden from same household in an effort to avoid added expense for donors outside the family circle.

In countries like Spain and Norway most donors are old people who are well established and may not need financial support and economic stability may not be a factor on QoL after kidney donation (Meyer et al., 2016). In India women are the highest living donor participants. Studies in this country reported that women are regarded as economically disadvantaged since most of them are housewives and remain at home as their husbands go to work and they get financial support from their spouses (Guleria et al., 2011). They volunteer to donor kidneys to their ailing family members.

Studies have reported that the rate of growth of living donation programs is directly related to income and that the financial implications have a greater impact on low income population (Gill & Dong, 2014). In most cases kidney donors are from low income populations while those with high income provide financial support. Studies have shown that lack of both financial support and an insurance cover prevent living kidney donors from seeking medical care (Jacobs et al., 2015) and may affect their QoL negatively. Other Studies have suggested that there is need to reduce financial barriers that can prevent the donor from accessing medical support and this will motivate potential donors (Tushla et al., 2016).

In Sub-Saharan Africa most countries who are practicing living kidney donor transplants prefer young donors and siblings usually contribute the highest percentage of donors (Kabinga, 2015). The KDIGO, 2009 kidney transplant

guidelines discourage monetary exchange for kidney donation but allows disbursement of donor expenses during the transplant preparation and expenses during recovery after nephrectomy. Data on socio-economic factors that can impact on QoL of living kidney donors especially on young donors has not been documented. In Kenya, incentives in exchange for kidney donation is not allowed by law.

2.4 Psychological factors that impact on perceived QoL of kidney donors

Psychological stability of the donor pre and post kidney donation is an area of special concern for living kidney donors (Dew et al., 2013). The donor must be ready both physically and mentally to become a living kidney donor before donation. This is why intensive counselling starts long before the potential donor makes a decision of becoming a living kidney donor (Maple et al., 2017). Psychological evaluation of the donor is done to identify areas that require intervention, to enhance potential donors' well-being and hence their ability and suitability to serve as living kidney donors (Dew et al., 2013). According to KDIGO transplant guidelines 2009, a prospective donor is allowed to drop from the donation list at any time before surgery if they are not psychologically prepared.

Studies have reported that living kidney transplantation significantly improve QoL of recipients and does not affect the lives and psychological aspects of donors (Gordon et al., 2015). A study done in Netherlands that followed living kidney donors up to one year after donation assessed the psychological impact of living kidney donation and reported no change in the mental health status post living kidney donation when compared with general population (Timmerman, Laging, & Westerhof, 2015). Many

studies done have shown that despite the stressful events surrounding kidney donation, donors who are well counseled show high resilience and high levels of QoL after kidney donation (Erim et al., 2015). Other studies done report that donors describe the experience as satisfying as they were able to give their recipients an extension of life (Meyer et al., 2016). In the same studies however donors whose recipients are not doing well are reported to have low self-esteem (Messersmith et al., 2014).

Studies have shown that living female kidney donors who donated to their children have improved mental and psychological QoL and are reported to have reduced depression scores (Guleria et al., 2011). Spousal donation is reported to improve emotional relationship and shared responsibility (Sommerer et al., 2015; Nöhre et al., 2018). However other studies have reported a short term decline in mental health status of donors following living kidney donation (Timmerman et al., 2015).

Although different aspects of mental health of donors appear unchanged after kidney donation little is known about psychological impact of the whole procedure. It was not clear on how donors should be handled in order to enhance positive psychological outcome (Timmerman, L, 2013). Psychological and psychiatric supportive counselling may be an important aspect not only during donor selection and donor evaluation but also in post donation follow-up (Riaz et al., 2016). Information on potential risks is important to help healthcare providers give information that can guide potential donors make informed decision towards kidney donation. (Suwelack et al., 2018). The information also helped prepare the donor for post-transplant outcomes (Frade et al, 2008).

2.5 The effects of kidney donation on self-perceived health status

It is in the interest of the transplant team to ensure that the procedure is safe and that the lives of any prospective donor is not put at risk by this procedure. Pre-transplant donor selection and intensive screening is aimed at identifying any abnormalities that can put donor at risk in the immediate and long-term. Intensifying donor follow-up after kidney donation is important in order to evaluate their QoL (Zheng et al., 2014). Information on QoL of living kidney donors is important both to the healthcare providers in the transplant team and to the prospective donors as it will guide on decision making. Prospective kidney donors have a right to access information on existing kidney donors (Mffm et al., 2013). Living kidney donor's postoperative HRQoL is affected by gender, age, BMI and comorbidities. Studies have documented that female LKD have a lower QoL compared to male donors (Klop et al., 2018).

Researchers have reported kidney donation to have a positive impact on donor's quality of life and that after kidney donation they tend to be more sensitive to their health (Bieniasz et al., 2018). Other studies done have also reported the HRQoL of the donors to be good (Klop et al., 2018). Data from documented researches report that living kidney donors have described the donation as a satisfying experience and that they could donate again given a chance (Glutzer et al., 2013). Other studies have however reported kidney donors to have a long term risk of developing ESRD compared with the general population and close follow-up is recommended (Bryce A Kiberd, 2013). A multicenter study that was done to investigate the physical and psychological outcome after living kidney donation reported mixed results. In this

study, USA and Norway reported reduced life expectancy and QoL with increased prevalence of hypertension and renal insufficiency rates(Suwelack et al., 2018). A research done in KNH reported that kidney donation procedure was safe, donors were able to regain their health status and the study did not report any mortality (Muturi et al., 2017). Another study done in the same facility that looked at the living donor kidney function after kidney donation reported that the donor's renal function normalized after one year (Ochwila , 2014).However the study did not look at the general QoL of the donors post nephrectomy.

2.6 The impact of donor follow-up on QoL of kidney donors

Although studies have reported that short and long-term risk of mortality and morbidity of kidney donors is low, regular donor follow-up has been advised to help prevent, identify and treat inter-current clinical complications that can pose a risk to the donor (Federico Oppenheimer, 2010). Researches have sighted young age at the time of donation and lack of medical insurance cover as some of the factors contributing to poor donor follow-up and poor QoL (Chen et al., 2016). The same study recommended that transplant centers should make provisions for young donors and those who do not have insurance covers attend follow-up clinics.

Studies have shown that kidney donation can reduce life expectancy and can also predispose one to ESRD. The same studies underscore the importance of donor follow-up, to treat risk factors to ESRD and to improve donor survival (Bryce A Kiberd, 2013). Organ Procurement and Transplant Network (OPTN) recommends aggressive donor follow-up for at least two years and the need to main donor registry

to help recognize risks associated with kidney donation. Researches have however reported that most transplant centers describe donor's adherence to follow-up to be difficult to ascertain (Weng Francis L.et al,2013). Poor donor follow-up and lack of transplant registry in Kenya makes it difficult to follow the donors' health status since they are lost to follow-up soon after they recover.

2.7 Gaps Identified

The above literature search has generally indicated that quality of life of kidney donors did not change significantly after kidney donation (Gordon et al., 2015). However, Kidney donors' QoL had not been documented in Kenya and most of the studies still focused on literature review on studies done in other countries to promote living kidney donation. Information on donors' QoL following donation is of key importance to potential donors and will help increase positive attitude towards kidney donation (Gordon et al., 2015). Data from this study was to avail information which would add knowledge to the existing literature.

The kidney donors in Kenya are largely from a young population (Kabinga, 2015). Data on socio-economic factors that could impact on QoL of these donors in Kenya was scarce, since there were no documented data available to show if they are able to progress financially after kidney donation. This study was to assess QoL kidney donors, looking at the socio-demographic factors, socio-economic factors, psychological and mental health status and their general health status.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the techniques that were used to carry out the study. The study design, study area, study population, sampling population and sample size is described. The study instruments and data collection procedure are explained. Data analysis and presentation procedures are presented. Validity, reliability and ethical considerations are addressed.

3.2 Research Design

This was a descriptive cross-sectional research design which was based on observations made at a point in time. Data was collected through the use of questionnaires administered directly to individual participants and raw data was collected from the participants directly.

3.3 Study Area

The study was conducted at KNH Renal Unit. KNH is the largest hospital in Eastern, Central Africa and the largest referral hospital in Kenya, with a bed capacity of 2000. It is situated in Nairobi County, which is also the capital city of Kenya, 3 kms from Nairobi city centre. The Hospital serves as a research, teaching and referral hospital. The KNH renal department is one of the specialized service points in the hospital that serves both in and out patients. The department provides services to patient with renal and renal-related ailments. It runs a fully equipped dialysis and transplant units. Information from Renal records, the department conducts an average of 20 kidney transplants per year which are mainly living related transplants from both internal

and external sources. The number of kidney transplants in KNH improved after the hospital entered a private public partnership (PPP) between, UON and Clinic De Barcelona Hospital in Spain sponsored by Novartis Pharma, popularly known as Inter-life program. This program helped increase number of transplants done from less than 3 cases per year before 2010 to an average of 20 cases per after year 2010.

3.4 Study Population and Sample

The target population was all kidney donors who donated a kidney from 1st January 2010 to 31st December 2017. The aim was to evaluate donors who have at least one and half years lived experience after kidney donation. This helped answer the study questions and was able to study research objectives. The number of transplants is as shown in table 1.

Table 1.3 Number of transplanted patients as per data from Renal Transplant Records, June 2019.

YEAR	NUMBER OF KIDNEY TRANSPLANTS DONE
2010	24
2011	23
2012	16
2013	26
2014	25
2015	15
2016	6
2017	8
Total	143

3.4.1 Inclusion Criteria

All clients who underwent donor nephrectomy for Kidney donation at KNH from 1st January 2010 to 31st December 2017. All kidney donors with one and half years lived experience were included in the study.

3.4.2 Exclusion Criteria

All kidney donors who donated after December 2017 were not included in the study. All those kidney donors with less than one and half years lived experience were also excluded from the study.

3.4.3 Sampling Procedure

A convenience sampling method was used to get the subjects for the study. The donors were recruited through contacts from donor records in the renal unit and through the recipients who already had a regular follow-up clinic.

3.4.4 Sample size determination

All willing kidney donors who participated in kidney donation during the study period were enrolled for the study. Daniel 1999 formula, with finite population correction, was used to calculate the minimum number of participants for statistical significance

$$n' = \frac{NZ^2P(1-P)}{d^2(N-1) + Z^2P(1-P)}$$

where n' = Sample size with finite population correction,

N = Population size,

Z = Z statistic for a level of confidence,

P = Expected proportion (If the prevalence is 20%, $P = 0.2$), and

d = Precision (If the precision is 5%, then $d = 0.05$)

N = Population size = 143

Z = Z statistics for a level of confidence

P = Expected proportion (If the prevalence is 20%, $P = 0.20$ and

d = Precision (If the precision is 5%, then $d = 0.05$)

= 104.54.

A minimum of 105 respondents was anticipated.

3.5 Data Collection Method

3.5.1 Study Variables

3.5.1.1 Independent Variables

Independent variables in this study were, socio-demographic factors, economic factors, psychological factors and Kidney donor's perceived health status.

3.5.1.2 Dependent Variable

Dependent variable was QoL which was expressed through, psychological and mental stability, perceived health status, perceived economic stability and established social interactions.

3.5.2 Study Instruments

A structured self-administered and interviewer administered questionnaires with both open-ended and closed-ended questions were used to collect both quantifiable and qualitative data for the study. The questionnaire was divided into four sections, socio-demographic characteristics, socio-economic factors, QoL psychological factors and QoL Health functioning. The responses on the variables were derived from the Likert scale based on a five-point scale. The participants were to rate the level of agreement with the statements. The range was Strongly Agree (5) to strongly disagree (1). The scores of strongly agree and agree were taken to present a Strong Agreement (S.A) variable which has a mean of 3.5 to 5.0 on a continuous likert scale of $3.5 \leq S.A < 5$. The Moderate Agreement (M.A) scores of 2.5 to 3.4 on the continuous likert scale of $2.5 \leq M.E < 3.4$ and strongly disagree/disagree present Lowest Agreement (L.A) a mean score of $0 \leq L.E < 2.4$ on a continuous likert scale. A standard deviation (SD) of >0.8 indicates a significant difference on the variable effect among the participants.

3.5.3 Pre-testing of Research Instrument

The study tool was pre-tested at Moi Teaching and Referral Hospital (MTRH), in Uasin-Gishu County. MTRH was chosen because it is a level six hospital like KNH and it is the only public hospital that does kidney transplant other than KNH. A test for internal consistency, reliability analysis to determine the degree to which the data collection tool was able to test what it was intended to test. The pilot tested the accuracy and clarity of the questionnaires. The pretest involved 3 study participants. The test was performed using Cronbach Alpha which measures the internal

consistency by establishing if certain items within a scale measure the same construct. Cronbach Alpha was established from all the study objectives. The Cronbach Alpha for the three variables were reported as: Psychological Factors 0.996; Health and Functioning 0.834 and Quality of Life 0.867 as shown in table below. A Cronbach Alpha of more than 0.7 indicates that the construct is reliable (Lin, Liang, & Tsai, 2015, Ercan (2007)).

Sno.	Statement	No. of items	Cronbach Alpha
1.	Psychological Factors	6	0.996
2.	Health and Functioning	5	0.834
3.	Quality of Life	7	0.867

3.5.4 Data collection process

Data collection process started with development of data collection instruments. The questionnaire was administered after the participant was explained and a consent obtained. The researcher conducted interviews for the willing participants who were not be able to read for themselves.

3.5.5 Data analysis and management

The questionnaires were checked for completeness before the participant was released. The raw data was kept under lock and key to avoid loss, only accessible to primary investigators Data collected was cleaned, coded and entered into SPSS Version 25 for analysis.

3.5.5.1 Data Analysis

Data collected was cleaned, coded and entered into SPSS Version 25 for analysis.

The findings and discussions are in line with the study objectives.

Data was analysed using Statistical Package for Social Sciences (SPSS version 25.0).

Descriptive statistics such as frequencies, percentages, means and standard deviations was used to analyse categorical data. Inferential statistics, Pearson correlation model was used to determine the relationship between independent and dependent variables. Further, multiple regression model was used to determine the influence of independent variables on dependent variable. Qualitative data collected was arranged thematically and a likert scale was used to analyse the data in accordance with the study objectives. The critical p value was tested at 0.05 significance level or 95% confidence interval.

3.5.5.2 Data presentation

The findings were presented using tables and graphs for ease of reading and interpretation.

3.6 Study limitations

There was no baseline data to compare QoL of the kidney donors before donation, thus it was assumed that the information given will be accurate. Participants who were eligible for enrollment to the study but declined to participate were not enrolled to the study.

3.7 Study delimitations

The study enrolled donors with lived experience of at least one and half years after kidney donation.

3.8 Ethical considerations

This study was conducted with approvals by Kenyatta University Graduate School and ethical approval from the Kenyatta university ethics review committee, the National Council for Science and Technology through commission of university education and KNH /UoN Research and Ethics Committee. The nature of the study was explained in detail to the participants' before voluntarily signing informed consent to enroll in the study. Participants were interviewed in the hospital clinics. Information obtained in the study was treated with utmost confidentiality and only the authorized persons were allowed to access the data.

CHAPTER FOUR: STUDY FINDINGS

4.0 Introduction

This chapter presents the study findings and analysis as established in the methodology. The study was conducted at KNH renal department in the month of February and March 2020. A total of 105 questionnaires were administered to donors who donated kidneys at KNH during the study period. The response rate was of 94.3% (n=99).

4.1 Socio- Demographic Characteristics of the respondents

Section one of the study instrument was used to collect data concerning socio-demographic characteristics of the respondents. The results are as outlined in table 4.1.

Table 4.1: Socio-demographic Characteristics of the respondents

Attributes	Categories	Mean	SD	N	%
Age (years)	Age at donation	33.22	8.48		
	Age at Survey	38.65	9.04		
Gender	Male			54	54.5
	Female			45	45.5
				At donation	At survey
Highest level of education	University level			6(6.1%)	13(13.1%)
	College level			43(43.4%)	42(42.4%)
	Secondary level			35(35.4%)	29(29.3%)
	Primary level			15(15.2%)	15(15.2%)
Marital Status	Married			61(61.6%)	79(79.8%)
	Single			37(37.4%)	19(19.2%)
	Separated			1(1%)	1(1%)
Number of Children	At donation	2.82	1.37		
	At survey	2.80	1.24		
BMI at donation		25.52	4.58		

The study findings revealed that 54.5%, (n=54) of the respondents were male while 45.5% (n =45) were female. The mean age of the respondents at the time of donation was $M = 33.22$ $SD \pm 8.48$ and at the time of enrolment to the study the mean age was $M = 38.65$ $SD \pm 9.04$.

Regarding level of education, findings revealed that at the point of donation, most of the participants (43.4%) had attained college education. At the point of survey, the number of participants with university education had increased to 13.1% from 6.1% representing a 53.8% change between kidney donation and at point of survey. The results also recorded an increase in marital status where 79.8% of the participants were married at the time of enrolment to the study up from 61.6% at the time of kidney donation. The respondents' average Body Mass Index (BMI) was $M = 25.52$ with $SD = 4.58$.

4.2 Socio-Economic factors

The study sort to look at factors that contribute to economic stability of the donors. The findings are as shown in table 4.2.

Table 4. 2: Economic Factors

		N	%
Change of occupation			
after kidney donation	Yes	11	11.1
	No	88	88.9
Resumption of duties			
after donation	Before 2 months	25	25.3
	Between 2 to 4 months	51	51.5
	Between 4 to 6 months	12	12.1
	After 6 months	11	11.1
		At donation-	At survey
		N (%)	N (%)
Employment status			
	Businessman	35 (35.4%)	39(39.4%)
	Working full time	27(27.3%)	43(43.4%)
	Working part time	24(24.2%)	6(6.1%)
	Unemployed	13(13.1%)	11(11.1%)
Monthly income	Less than 5000	22(22.2%)	17(17.2%)
	5001 to 20000	34 (34.3%)	32(32.3%)
	20001 to 35000	16(16.2%)	18(18.2%)
	35001 to 50000	14(14.1%)	13(13.1%)
	Over 50000	13(13.2%)	19(19.2%)

When asked whether they changed their occupation after kidney donation majority of the respondents, (88.9%) did not change their occupation. However, a few participants changed their occupation after donation with some sighting the reason as change for better pay. The findings also revealed that 51.5% (n=51) of the donors resumed their normal duties between 2 to 4 months, while 25.3% resumed duties before 2 months. However, 11.1% resumed normal duties after six months.

The study findings revealed that, the number of respondents who were on full time employment increased from 27 to 43, representing 59.4% rise, while unemployment reduced by 15.4% between the time of donation and at the time of enrolment to the study. On monthly income rating, 49.5% (n=49) of the respondents were earning less than Ksh 20,000 at the time of enrolment to this study compared with 56.7% (n=56) before kidney donation. The findings also revealed that 19.2% (n=19) of the donors earned over Ksh 50,000 at time of enrolment to this study which was a positive increase from the previous 13.2% (n=13) before kidney donation.

4.3 Components of Quality of Life

In this study Psychological factors and Health functioning components of the quality of life were assessed using a likert scale. The participants were to rate the level of agreement with the statements. The range was Strongly Agree (5) to strongly disagree (1). The scores of strongly agree and agree were taken to present a Strong Agreement (S.A) variable which has a mean of 3.5 to 5.0 on a continuous likert scale of $3.5 \leq S.A < 5$. The Moderate Agreement (M.A) scores of 2.5 to 3.4 on the continuous likert scale of $2.5 \leq M.E < 3.4$ and strongly disagree/disagree present Lowest Agreement (L.A) a mean score of $0 \leq L.E < 2.4$ on a continuous likert scale. A standard deviation (SD) of > 0.8 indicates a significant difference on the variable effect.

4.3.1 Psychological Factors

Table 4.3 reports the results on donors' response to statements that were assessing psychological QoL component.

Table 4.3: QoL Psychological factors

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Mean (SD)
I am in a good relationship with my recipient	2 (2%)	3 (3%)	3 (3%)	25 (25.3%)	66 (66.7%)	4.548 (0.878)
I have enough emotional support from my family members	5 (5.1%)	6 (6.1%)	3 (3.0%)	27 (27.3%)	58 (58.6%)	4.283 (1.116)
I am satisfied with my contribution to society	2 (2%)	3 (3%)	3 (3%)	54 (54.5%)	37 (37.4%)	4.222 (0.815)
With my current job am able to satisfy my financial needs	9 (9.1%)	9 (9.1%)	13 (13.1%)	48 (48.5%)	20 (20.2%)	3.616 (1.175)
I am satisfied with my social interactions within the community	2 (2%)	2 (2%)	3 (3%)	39 (39.4%)	53 (53.5%)	4.404 (0.819)
I feel appreciated by all my family members	4 (4%)	4 (4%)	4 (4%)	-	87 (87.9%)	4.636 (1.025)
Overall						4.284 (0.971)

From the study findings, being appreciated by the family members was rated highest $M=4.636$ $SD \pm 1.025$ in the psychological component of QoL. This was followed by being in a good relationship with the recipient $M=4.548$ $SD \pm 0.878$ and satisfaction with their social interactions within the community $M=4.404$ $SD \pm 0.819$. The overall mean for Psychological Factors was reported as $M=4.284$ with $SD \pm 0.971$, representing 83.9% of the total score.

4.3.2 Health and Functioning

The Health and functioning components of the quality of life were also assessed using a likert scale ranging from strongly agree (5) to strongly disagree (1). The results are as shown in table 4.4.

Table 4.4: QoL Health and Functioning

Statement	Strongly disagree	disagree	Neutral	Agree	Strongly Agree	Mean (SD)
My health is not worse than it was before kidney donation	2 (2%)	3 (3%)	6 (6.1%)	12 (12.1%)	76 (76.8%)	3.614 (0.893)
My health status does keeps me from working a paying job	1 (1%)	4 (4%)	4 (4%)	60 (60.6%)	30 (30.3%)	3.812 (0.761)
I am more concerned about my life now and have a better chance of living longer	3 (3%)	2 (2%)	5 (5.1%)	17 (17.2%)	72 (72.7%)	4.546 (0.918)
I am satisfied with the level of activities am able to perform	2 (2%)	7 (7.1%)	2 (2%)	40 (40.4%)	48 (48.5%)	4.263 (0.954)
Pain from kidney donation does not impact my daily living activities	2 (2%)	7 (7.1%)	1 (1%)	53 (53.5%)	36 (36.4%)	3.288 (0.908)
Overall mean						3.905 (0.865)

The findings revealed that the donors were more concerned about their life now than before donation $M=4.546$, $SD \pm 0.918$ and that their health was better after kidney donation as represented with $M=3.614$, $SD \pm 0.893$. A high number of respondents

(M=4.263, SD ± 0.954) also indicated that they are satisfied with the level of activities they are able to perform in the society and that their health status does not keep them from a paying job M=3.812, SD ± 0.761. The overall mean for Health and Functioning was M=3.905 SD ±0.865 representing 77.9% of the total score for health and functioning component.

4.4 Relationship between Socio-demographic characteristics and QoL

4.4.1 Relationship between age, number of children, BMI and QoL components

Objective one of the study sort to determine the relationship between socio-demographic characteristics and QoL of kidney donors. The findings are represented in table 4.5.

Table 4.5: Relationship between age, number of children, BMI (continuous variables) and QoL components

		Age	Number of children	BMI	Psychological factors	Health and Functioning
Age	Pearson Correlation	1	.668**	.174	-.847	0.194
	Sig. (2-tailed)		.000	.085	.020	.064
Number of children	Pearson Correlation		1	.887	-.634	.219
	Sig. (2-tailed)			.019	.018	0.90
BMI	Pearson Correlation			1	.492	.835
	Sig. (2-tailed)				.07	.021
Psychological Factors	Pearson Correlation				1	0.399
	Sig. (2-tailed)					0.307
Health and functioning	Pearson Correlation					1
	Sig. (2-tailed)					

** . Correlation is significant at the 0.01 level (2-tailed).

Pearson correlation showed that BMI had a strong positive significant relationship with Health and Functioning component of QoL $r(0.835)$, $p < 0.05$ and a moderate positive relationship with psychological factors $r(0.492)$, $p > 0.05$. However, the study findings indicated that there was no significant association between age, number of children and quality of life components.

4.4.2 Relationship between Gender, Highest level of education, Marital status (Categorical variables) and QoL (Psychological component)

The instrument used to measure QoL had 11 items grouped into psychological factors and Health functioning. Psychological factors had 6 items and Health functioning has 5 items, each measured on a 5-point scale. For psychological factors, a global score was obtained by summing together all item scores with maximum obtainable score of 30. Scores below 70% of the maximum score (less than 21) were considered as indicative of Low QoL and scores of 70% and above were considered as indicative of High QoL. For Health and functioning component, a global score was also obtained by summing up all item scores with a maximum obtainable score of 25. Scores below 70% (less than 18) were considered as Low QoL, while scores of 70% and above were indicative of High Quality of Life. The chi-square results are as shown in table 4.6.

Table 4.6: Association between Gender, Highest Level of education, Marital Status after donation and Psychological component of QoL

Demographic Characteristics		Total			Statistical test
		(N)	Low	High	
					$\chi^2(1, n = 99) = 0.487$ p=0.38 (p >0.05)
Gender	Male	55	10	44	
	Female	45	6	39	
Total		99	16	83	
					$\chi^2(1, n = 99) = 1.169$ p=0.76 (p >0.05)
Highest level of education after donation	University level	13	2	11	
	College level	42	5	37	
	Secondary level	29	6	23	
	Primary level	15	3	12	
Total		99	16	83	
					$\chi^2(1, n = 99) = 5.244$ p=0.073 (p >0.05)
Marital status after donation	Married	79	12	67	
	Single	19	3	16	
	Separated	1	1	0	
Total		99	16	83	

A chi-square test was performed to determine if there's an association between gender, highest level of education, marital status and Psychological component of QoL. The findings revealed no association. However, male donors reported a high QoL than female donors as shown in the table. Donors with college level of education and above also reported high QoL. The findings revealed that 84.8% of donors who were married had high QoL.

4.4.3 Relationship Between Gender, Highest level of education, Marital status and QoL (Health and Functioning component)

A chi-square test was also applied to determine if there's an association between gender, highest level of education, marital status after kidney donation and Health Functioning component of QoL. The results as indicated in table 4.7.

Table 4.7: Association between Gender, Highest Level of education and Health & Functioning component

Attributes		Total	Low	High	Statistical Test
Gender	Male	54	5	49	$\chi^2(1, n = 99) = 0.04$ $p = 0.615 (p > 0.05)$
	Female	45	4	41	
Total		99	9	90	
Highest level of education after kidney donation	University level	13	3	10	$\chi^2(1, n = 99) = 3.545$ $p = 0.315 (p > 0.05)$
	College level	42	3	39	
	Secondary level	29	2	27	
	Primary level	15	1	14	
Total		99	9	90	
Marital status after donation	Married	79	6	73	$\chi^2(1, n = 99) = 10.261$ $p = 0.006 (p < 0.05)$
	Single	19	2	17	
	Separated	1	1	0	
Total		99	9	90	

The study findings revealed significant positive association between Marital status after kidney donation $\chi^2(1, n = 99) = 10.261$ $p = 0.006$ ($p < 0.05$) and Health Functioning component of QoL. The findings also recorded 92.4% of those married responded to have high quality of life. However, the study findings indicated that there was no significant association between the respondents' gender, level of education and Health functioning component of QoL.

4.5 Relationship Between Socio-economic Factors and QoL.

Objective two of this study was to determine whether there was a relationship between socio-economic factors and QoL of kidney donors at KNH. A chi-square analysis was applied to psychological and health functioning QoL components independently.

4.5.1 Relationship Between, Current monthly income, Current employment and QoL (Psychological Component)

A chi-square analysis test was also applied to determine if there's an association between Current monthly income, Current employment and Psychological component of QoL. The results are recorded in table 4.8.

Table 4.8: Association between, Current Monthly Income, Current employment and Psychological component of QoL

Socio-economic factors		Total (N)	Low	High	Statistical test
Current employment	Businessman	39	8	31	$\chi^2(1, n = 99) = 6.537$ $p = 0.088$ ($p > 0.05$)
	Working full time	43	3	40	
	Working part time	6	1	5	
	Unemployed	11	4	7	
Total		99	16	83	
Current monthly income	Less than 5000	17	9	8	$\chi^2(1, n = 99) = 24.793$ $p = 0.000$ ($p < 0.05$)
	5001 to 20000	32	6	26	
	20001 to 35000	18	1	17	
	35001 to 50000	13	0	13	
	Over 50000	19	0	19	
Total		99	16	83	

The study findings revealed a strong positive significant association between respondents' current monthly income and psychological component of QoL, $\chi^2(1, n = 99) = 24.793$, $p = 0.000 < 0.05$. The results also revealed that the donors who were in full time employment recorded a higher quality score more than the ones who were in business. However, the study findings revealed no significant association between the respondents' current employment status and psychological component of quality of life

4.5.2 Relationship Between, Current monthly income, Current employment and QoL (Health and Functioning component)

A chi-square analysis was also applied to assess the relationship between socio-economic variables and health functioning QoL component. The findings are reported in table 4.9.

Table 4.9: Association between, Current Monthly Income, Current employment and Health & Functioning component

Socio-economic factors		Total	Low	High	Statistical Test
Current Monthly income	Less 5000	17	5	12	$\chi^2(1, n = 99)=10.512$ p=0.033 (p <0.05)
	5001 to 20,000	32	1	31	
	20001 to 35,000	18	1	17	
	35001 to 50,000	13	1	12	
	Over 50,000	19	1	18	
Total		99	9	90	
Current employment	Businessman	39	2	37	$\chi^2(1, n = 99)=11.474$ p=0.009 (p <0.05)
	Working full time	42	3	40	
	Working part time	6	0	6	
	Unemployed	11	4	7	
Total		99	9	90	

The study findings recorded a significant positive association both in current monthly income and current employment with Health functioning components of QoL with chi-square values, **$\chi^2(1, n = 99) = 10.512, P = 0.033 <0.05$** and **$\chi^2(1, n = 99) = 11.474, p=0.009 (p <0.05)$** respectively. The results also indicated that current employment had a higher association with health functioning QoL than current monthly income. From the findings, Current monthly income had strong association with QoL both in psychological and health functioning where a stronger association is recorded in psychological component than in Health functioning with resultant chi-square values of, **$\chi^2(1, n = 99) = 24.793, p = 0.000, \chi^2(1, n = 99) = 10.512, p = 0.033 (p < 0.05)$** respectively.

4.6 Predictors of QoL of kidney donors.

Objective three of this study sort to determine the predictors of QoL. A multiple regression analysis was conducted to determine how each variable predicted QoL in this donor population. The regression analysis focused on significant socio-demographic variables, marital status and BMI.

Table 4.10: Predictors of QoL.

Variable	Psychological component				Health Functioning Component			
	Adjusted R^2	β	t	p value	Adjusted R^2	β	T	p value
Constant	.125	3.356	6.639	0.000	.276	1.933	11.068	.000
Marital status		1.085	0.836	0.405		0.625	0.234	0.273
BMI		.101	0.221	0.826		0.058	0.891	0.593
Current monthly income		.402	0.714	0.477		0.231	1.524	0.569
Current Employment		.350	3.978	0.000		0.201	3.138	0.291

From the analyzed data in table above, the established regression equations were:

Psychological factors (QoL) = 3.356 + 1.085 (Marital status) + .101(BMI) + 0.208(Current monthly income) + 0.784 (Current Employment) + ϵ

Health & functioning (QoL) = 1.933 + 0.625 (Marital status) + 0.058(BMI) + 0.231(Current monthly income) + 0.201(Current Employment)

From the analyzed data in table above, the established regression equations were:

Psychological factors (QoL) = 3.356 + 1.085 (Marital status) + 0.101(BMI) + 0.208(Current monthly income) + 0.784 (Current Employment) + ϵ

Health & functioning (QoL) = 1.933 + 0.625 (Marital status) + 0.058(BMI) + 0.231(Current monthly income) + 0.201(Current Employment).

The regression analysis focused on significant socio-demographic variables, Marital Status BMI. The regression findings revealed that, Marital status after kidney donation, has a strong positive predictive relationship, $\beta = 1.085$, $t = 0.836$ (psychological factors) and a moderate positive predictive relationship $\beta = 0.625$, $t = 0.234$ (Health Functioning), however the relationship was not statistically significant. Current employment ($\beta = 0.350$, $t = 3.978$, $p = 0.000$) had significant positive predictive relationship with psychological component of QoL. The psychological factors contributed to 12.5%, while Health functioning contributed 27.5% to the QoL of the kidney donors in this study.

CHAPTER FIVE: DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction.

In this chapter, the findings are discussed in line with the research objectives. The study findings are compared with other study findings done locally and internationally. Conclusions from the study findings, recommendations and areas of further research have been outlined in this chapter.

5.2. Relationship between socio-demographic characteristics and QoL of kidney donors at Kenyatta National Hospital.

The study finding revealed that, male donors were the majority. This is consistent with a study (Kabinga, 2015) where males comprised the majority of living kidney donors, meaning that in Kenya males are more likely to be kidney donors than females. However, the margin difference between male and female donors was small. In Kenya, men are seen as a stronger sex and usually preferred to take up hard work and are involved in making difficult decisions. These findings are however in contrast with a study done in India (Sakhuja & Kumar, 2014) and the RELIVE Study done in the United States (Jowsey et al., 2014) both of which reported more females than males participating as kidney donors. According to (Sakhuja & Kumar, 2014), the Indian community looks at men as bread winners and women usually volunteer to be donors so that their men are left to work to feed the family.

Majority of the donors in this study were young with a mean age of 33 years at the time of donation, similar to (Kabinga, 2015). Young people are considered healthier compared to older people and are also expected to have a better quality of life after

kidney donation. Old age is assumed to have increased chances of co-morbidities and reduced natural immune responses (Mihçioğur et al., 2019). This is different from a study done in Norway, where they preferred using older donors (Meyer et al., 2016). The transplant programs in Kenya are mainly using living related donors, majority are siblings and this explains the young donor population (Kabinga, 2015). The countries that prefer old for old transplant programs look at the graft longevity and life potential of the recipient after kidney transplantation, thus they discourage very young donors donating to very old recipients (Mihçioğur et al., 2019). However, age and sex did not have a significant positive or negative correlation with QoL of kidney donors at KNH. This is consistent with results of RELIVE Study in United States (Messersmith et al., 2014).

Regarding level of education, most of the donors were college level holders and above at the time of donation, some of them were able to progress to university education after kidney donation. This implies that kidney donation did not change their quality of life negatively to stop them from progressing with their education. Higher level of education could also imply better understanding of their role and responsibilities to lead a good quality of life after kidney donation. These findings are similar to a study in United States (Jowsey et al., 2014) which revealed that most of the kidney donors with higher educational attainment had higher QoL scores. However, a chi-square analysis applied in this study did not find level of education after kidney donation to have a significant effect on QoL of the donors at Kenyatta National Hospital, although 83.8% responded to high quality of life. This implied

that highly educated donors had a better understanding of what they needed to do to maintain high quality of life.

Kidney Donor pre-transplant evaluation process allows the transplant team to rule out anything that can predispose the donor to any complication post kidney donation. Donor's body mass index was one of the parameters that was assessed in this study. Pearson correlation results revealed a strong positive significant relationship between BMI and Health Functioning component of QoL. The average BMI for the study population was documented as $M=25.5$, indicating that most of the donors, maintained a near normal (18.5 to 24.9) BMI, which imply that they were concerned about maintaining a healthy weight and were likely to have good quality of life. These results were consistent with a study done in Korea that reported an advantage of normal BMI in donor outcome post kidney donation (Lee, Lee, Kim, Lim, & Park, 2017). The results were also similar to another study done in Netherlands (Klop et al., 2018). According to this study, high BMI was associated with surgical complications, increased risk to impaired physical and health related QoL. This means that an improvement in BMI towards normal leads to improvement in kidney donors' quality of life. Transplant units have adapted a weight reduction program pre-kidney donation and counselling of donors to maintain normal BMI post donation to improve their QoL (Muturi et al., 2017).

The study findings also revealed a significant increase in marital status between time of donation and time of enrolment to the study. Chi-square results indicated that there was a significant association between donors' marital status after kidney

donation and QoL (Health functioning components). The results indicated 84.8% of those married were classified to have reported to be in high quality of life. Additionally, the multivariate regression results indicated that marital status after kidney donation had a strong positive contribution on donors' quality of life in psychological component. This means that being married positively impacted on QoL of these donors psychologically and that companionship in marriage can enhance recovery and lead to good quality of life consistent with a study in the United States (Messersmith et al., 2014) and another study done in Germany (Nöhre et al., 2018) that reported that kidney donors who were married after kidney donation had a higher QoL score. Partnership in marriage brings about psychological stability and a sense of satisfaction.

5.3. Relationship between socio-economic factors and QoL of kidney donors at Kenyatta National Hospital.

Socio-Economic factors play a major role in one's quality of life since they can affect the ability to make healthy choices. In this study we assessed, if there was change of occupation after kidney donation, the donor's resumption on duty after kidney donation, current employment status and current monthly income. These factors were meant to give an account on how they affected quality of life of the donor either independently or in association. The data revealed that majority of the donors did not change their occupation after kidney donation and that most of them resumed their normal duties between 2 to 4 months. This implies that the recovery process was good and most of the donors were able to continue with their occupation. These findings were consistent with a study carried out in Rosemont,

Illinois by Tan et al, 2015 where majority of the kidney donors resumed duties in less than five months.

Majority of donors in this study, were on full time employment after kidney donation, which means that they were physically and psychologically stable to take up the job challenges. Working in a stable job will help them plan their life which can lead to psychological stability and could translate to good quality of life, similar to the findings in a study of kidney donors from three major United States transplant centers (Jacobs et al., 2015) that revealed that majority of the donors who were working full time recorded higher QoL scores. Financial stability brings about emotional and psychosocial satisfaction.

The Chi Square analysis results in this study revealed that there was a significant association between donors' current employment status and quality of life (Health & Functioning). Those in full time employment responded as being in a high quality of life category compared with who were in business, similar to (Jacobs et al., 2015). This means that financial stability can be ascertained more in employment than in business and this can have an implication on QoL of a donor. It was however noted that 63.6% of those not employed in our study still enjoyed high quality of life, meaning that Employment was not the only predictor of QoL in this study population.

The findings further revealed that there was a significant association between donors' current monthly income and quality of life both in psychological and health & Functioning components. A stronger association is recorded in psychological

component than in Health functioning. The findings imply that having an income was psychologically satisfying and can be accompanied by an improvement in donors' quality of life, which was consistent with RELIVE study in the United States (Jacobs et al., 2015). Economic empowerment could also mean that the donor is able to respond to any health situation that may arise and this could contribute to a good quality of life. This could also help the donor maintain a healthy living and enable him/her attend post-kidney donation follow-up clinics. Additionally, a multivariate regression analysis done, revealed that current monthly income positively contributed to quality of life, meaning that any increase in income was accompanied by improvement in QoL of the donor.

5.4. Components of QoL of kidney donors at Kenyatta National Hospital

The QoL was also assessed through Psychological factors and Health & Functioning which were measured using a likert scale. The highest mean scores were in psychological factors component of QoL Mean=4.284 SD= 0.971, implying that the donors were psychologically satisfied with the act of kidney donation , similar to a study in Netherlands (Timmerman, Laging, & Westerhof, 2015) and another in Poland by (Bieniasz et al., 2018). This study results also imply that most of the donors were psychologically stable, meaning that their quality of life was good, consistent with a study in the United States (Glotzer et al., 2013).

The response of being appreciated by the family members was rated highest, followed by being in a good relationship with the recipient. The response of

having satisfaction with the social interactions the donors have within the community was also rated high. This means that family relationships and social interactions within the community are important predictors of QoL of donors, similar to findings of a study done in the UK (Lumsdaine et al., 2005)(Maple et al., 2017). The study also reports that appreciation from recipient and family members is the greatest gift to living donors. Being able to retain their position in the society after kidney donation is emotionally and psychologically satisfying.

The overall mean on Health Functioning was reported as $M=3.905$ $SD= 0.865$. The findings revealed that the donors were more concerned about their life now than before kidney donation and that they are satisfied with the level of activities they are able to perform in the society. When donors are concerned about their life, it means that they are likely to lead a better quality of life, similar to the study in Poland (Bieniasz et al., 2018) which reported kidney donation to have a positive impact on donor's quality of life since they tend to be more sensitive to their health after kidney donation. The donor's general health and the ability to participate in activities to promote wellbeing in the society are important predictors of QoL (Lumsdaine et al., 2005 ,Maple et al., 2017).

A multiple regression analysis was applied between, QoL components and significant socio demographic and socio-economic factors, BMI, Marital status after kidney donation, Current employment status and Current monthly income. The findings revealed that, Psychological factors component of QoL contributed 12.5% and Health functioning component of QoL contributed 27.5% towards the

quality of kidney donors at Kenyatta National Hospital. Marital status after kidney donation had high predictive positive association to QoL both in Psychological and Health functioning components although statistically not significant.

The study findings revealed a significant predictive positive association between Current Employment and Psychological component of QoL. Current employment is accompanied with psychological stability, implying that being in employment was a significant predictor of QoL of kidney donors. Employment will assure a constant income which will enable the donor to plan his/her life, thus contributing to a good quality of life. Being able to satisfy financial needs will make the donor psychologically satisfied, leading to a good quality of life.

5.5. Conclusions

The overall quality of life of kidney donors at Kenyatta National Hospital was high. The study concluded that socio-demographic and economic factors particularly, BMI, marital status after kidney donation, current employment and current monthly income play a significant contribution towards quality of life of kidney donors at Kenyatta National Hospital. BMI had a significant positive effect on health and functioning quality of life, implying that an improvement in BMI towards normal will lead to improvement in kidney donors' QoL. The donor's financial stability contributes to their quality of life, meaning that an increase in monthly income will result to improvement in kidney donor's QoL. When donors are in good relationship with the recipient and feel appreciated by

family members, their quality of life is improved. The donor's social interactions and level of activities within the community can lead to improved quality of life. There was a statistically significant positive predictive association between donor's employment status after kidney donation and their QoL.

5.6. Recommendations

The following recommendations can be suggested from this study:

Develop a risk assessment tool to be used when counselling prospective donors to enhance quality of life.

Develop a health education tool which will be used by both prospective and living kidney donors to encourage positive living which will improve quality of life of kidney donors.

Transplant centers to provide communication forums where donors can interact with each other and with those aspiring to be donors. This forum can also be used to give educational materials and to link to other donors globally.

Relevance to Nursing and Midwifery

Nurses play a significant role in donor-recipient selection and recruitment for kidney transplantation. The transplant programs are run by nurses who play the role of transplant counseling and co-ordination. Information regarding safety of transplant procedure and donors' QoL following kidney donation will empower the transplant counselors with knowledge to help potential donors increase

positive attitude towards kidney donation. Knowledge on QoL of existing donors will be useful in promoting kidney donation and also help change practice. The results of this study will help in formulation of policies that will inform practice. The recommendations of this study can also inform future researches.

5.7. Areas for further research

It is recommended that a longitudinal quality of life study be carried out to allow room to follow donors for a longer period of time to establish if there are any changes to quality of life that can be associated with kidney donation.

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LIST OF APPENDICES

DATA COLLECTION TOOLS

Appendix I a: Consent explanation to the patient (English)

The Study Title: Quality of life of Kidney Donors at Kenyatta National Hospital, Nairobi, Kenya.

Part 1

Introduction

My name is Diviner Kemunto Nyarera a student at Kenyatta University department of Medical-surgical nursing. I am doing a study on ‘Quality of life of Kidney Donors at Kenyatta National Hospital’. The study will investigate any changes positive or negative in the donor’s life after kidney donation.

Participation in the study

Your participation in this study will be on voluntary basis and you may decide to withdraw from the study at any stage without any penalty. The study is purely descriptive, non-invasive and will not attract any cost to your part.

Study Procedure

I, the principal investigator together with my research assistants will give you full explanation of the procedure before you participate in this study. You will be required to answer the questions as asked in the questionnaire and the research assistant will be available for any clarification. It will take a maximum of 20 minutes to complete to the questionnaire.

Confidentiality

Your identity will be protected with utmost confidentiality during the study and only your initials and inpatient number will be recorded for purposes of follow up.

Risks and or discomforts

We do not anticipate any risks or discomfort to you during the study. You are encouraged to discuss any discomfort or distress with the research assistant openly. Your participation will not attract any cost to you.

Benefits during the study

There will be no monetary benefit to you for participating in the study but the results of the study will benefit kidney patients and will help those who are yet to make a decision to become a living donor.

Contacts

In case of any clarifications or queries during and after the study you are free to contact the principal investigator on the telephone 0722440642 or email dnyarera@yahoo.com you can also contact the Kenyatta University department of Medical/Surgical Nursing or Kenyatta National Hospital Research department Box 2726300.00202 or KNH Ext 44102

Thank you

Appendix Ib: Consent explanation to the patient (Swahili version)

Jina langu ni Diviner Kemunto Nyarera mhuguzi katika wodi ya figo katika hospitali kuu ya Kenyatta.

Utafiti

Ninafanya utafiti kuhusu “Ubora wa maisha bahada ya kujitolea kupeana figo kwa mugonjwa wa figo katika hospitali kuu ya Kenyatta”.

Utafiti huu utaangazia hali ya maisha ya mtu bahada ya kupeana figo.

Kuhusishwa Kwako

Ushirikiano wako katika utafiti huu utakua kwa hiari yako na una uhuru wa kujiondoa bila kuadhibiwa kwa njia yeyote. utafiti huu ni ya maelezo tuu na haina gharama yeyote kamwe.

Hakuna malipo yoyote utapewa kwa kushiriki utafiti huu.

Utaratibu Ya Utafiti

Mimi nikiwa Mtafiti mkuu pamoja na Watafiti wenzangu tutakupa maelezo ya utaratibu wa jinsi ya kushiriki katika utafiti huu.

Siri

Utambulisho wako utahifadhiwa kwa siri kwenye harakati ya utafiti huu. Ninambari ya kadi ya hospitali pekee itanakiwa kwa ajili ya kufuatilia utafiti huu.

Nambari ya mawasiliano

Kwa maelezo yoyote wasiliana nami katika nambari hii, 0722440642. au barua pepe dnyarera@yahoo.com ama offisi ya utafiti katika chuo kikuu ya Kenyatta, kwa barua pepe: chairman.kuerc@ku.ac.ke , au offisi kuu ya utafiti katika hospitali kuu ya Kenyatta/chuo kikuu ya Nairobi BOX 2726300-00202 ama KNH ext.44102

Ahsante.

Appendix IIa: Consent form for the patient (English)

I..... (Initials only) have understood the explanation of this study,

“Quality of Life of kidney donors at Kenyatta national hospital ”.

It has been explained to me by Ms. Diviner K. Nyarera, 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 IIb: Fomu ya idhini ya kushiriki yawagonjwa (Swahili)

Mimi..... ninatoa kibali kuhusishwa kwenye utafiti uitwao
“UBORA WA MAISHA BAHADA YA KUJITOLEA KUPEANA FIGO KWA
MUGONJWA WA FIGO KATIKA HOSIPITALI KUU YA KENYATTA”.

Nathibitisha kwamba nimeelewa maelezo yote kutoka kwa Diviner Kemunto
Nyarera 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 III: Questionnaire

‘Quality of Life of kidney donors at Kenyatta National Hospital’

Volunteer ID.....

Serial No

Date.....

Investigator name..... Phone no.....

Supervisor name..... Phone no.....

Section 1: Socio-demographic factors

Please the appropriate box;

1) Gender

- i. Male ()
- ii. Female ()

2) Age

- i. Age in complete years at time of enrollment to study ()
- ii. Age in complete years at the time of kidney donation ()

3) Highest level of education before kidney donation

- i. University Level
- ii. College Level
- iii. Secondary Level
- iv. Primary Level
- v. None

4) Highest level of education after kidney donation

- i. University Level
- ii. College Level
- iii. Secondary Level
- iv. Primary Level
- v. None

5) Marital status before donation

- i. Married ()
- ii. Single ()
- iii. Separated ()
- iv. Widow ()
- v. Widower ()

6) Marital status after kidney donation

- i. Married ()
- ii. Single ()
- iii. Separated ()
- iv. Widow ()
- v. Widower ()

7) Number of children before kidney donation

- i. None ()
- ii. More than one ()

8) Number of children after kidney donation

- i. None ()
- ii. More than one ()

9) Body mass index

- i. Below 18 ()
- ii. 18.5 -24 ()
- iii. 24.5 -29 ()
- iv. 29.5 -35 ()
- v. Above 35 ()

Section II Socio-economic factors

10) How were you selected as a donor?

- i. Nominated by family members ()
- ii. Requested by recipient ()
- iii. Promised for financial assistance ()
- iv. Volunteered myself after undergoing counseling ()

11) When did you resume your normal duties after kidney donation?

- i. Before 2 months ()
- ii. Between 2 to 4 months ()
- iii. Between 4 to 6 months ()
- iv. After 6 months ()

12) What was your employment status at the time of donation?

- i. Businessman ()
- ii. Working full time ()
- iii. Working part-time ()
- iv. Retired on pension ()
- v. Unemployed ()

13) What is your current employment status?

- i. Businessman ()
- ii. Working full time ()
- iii. Working part-time ()
- iv. Retired on pension ()
- v. Unemployed ()

14) Did you change your occupation after kidney donation?

i. Yes ()

ii. No ()

15). If your answer to question 14 above was yes, please

explain.....

.....

16) What is your current monthly income in Kenya Shillings?

i. Less than 5,000 ()

ii. 5,001 to 20,000 ()

iii. 20,001 to 35,000 ()

iv. 35,001 to 50,000 ()

v. Over 50,000 ()

17) What was your monthly income in Kenya Shillings before kidney donation?

i. Less than 5,000 ()

ii. 5,001 to 20,000 ()

iii. 20,001 to 35,000 ()

iv. 35,001 to 50,000 ()

v. Over 50,000 ()

Section III: QoL, Psychological Factors

18) Please tick () in the appropriate box, 1-strongly disagree, 2 –disagree, 3- Not sure, 4-agree, 5- strongly agree

- | | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1 I am in a good relationship with my recipient | | | | | |
| 2 I have enough emotional support from my family members | | | | | |
| 3 I am satisfied with my contribution to society | | | | | |
| 4 With my current job am able to satisfy my financial needs | | | | | |
| 5 I am satisfied with my social interactions within the community | | | | | |
| 6 I feel appreciated by all my family members | | | | | |

Section III: QoL, Health and Functioning

19). In the matrix questionnaire provided below, tick in the squares provided how the factors under each domain contribute to the quality of your life where, 1-strongly disagree, 2 –disagree, 3- Not sure, 4-agree, 5- strongly agree

1 2 3 4 5

- 1 My health is not worse than it was before kidney donation
- 2 My health status does not keep me off from working for a paying job
- 3 I am more concerned about my life now and I have a better chance of living longer
- 4 I am satisfied with the level of activities am able to perform
- 5 Pain from kidney donation prevents me from attending to activities of daily living

20) Were you ever admitted in a hospital before Kidney donation?

- i. Yes ()
- ii. No ()

21) If your answer to question 20 above is yes how many times and why.

.....

22.) Have you ever been admitted to hospital after kidney donation?

- i. Yes ()
- ii. No ()

23) If your to question 22 is yes how many times, please give

reasons.....

24). How would you rate your general wellbeing?

- i. Poor ()
- ii. Fair ()
- iii. Good ()
- iv. Very good ()
- v. Excellent ()

25) In a scale of 1 to 10 please rate any pain from the kidney donation site

- i. 1 -2 ()
- ii. 2 -4 ()
- iii. 4 -6 ()
- iv. 6 -8 ()
- v. 8 -10 ()

26) For any of the answers in question 25 above please explain.....

.....

Appendix IV: Approval letter



**KENYATTA UNIVERSITY
ETHICS REVIEW COMMITTEE**

Fax: 8711242/8711575
Email: kuerc.chairman@ku.ac.ke

P. O. Box 43844,
Nairobi, 00100
Tel: 8710901/12

Website: www.ku.ac.ke

Our Ref: **KU/ERC/ APPROVAL WITH ADVICE/VOL.1**

Date: 15th November, 2019

Diviner Kemunto Nyarera
P.O Box 43844-00100
NAIROBI

Dear Ms Nyarera,

**APPLICATION NUMBER: PKU/2025/11172 QUALITY OF LIFE OF KIDNEY DONORS
AT KENYATTA NATIONAL HOSPITAL, NAIROBI COUNTY, KENYA**

1. IDENTIFICATION OF PROTOCOL

The application before the committee is with a research topic “**Quality Of Life of Kidney Donors at Kenyatta National Hospital, Nairobi County, Kenya**” received on 11 /10/2019 and discussed on 12 /11/2019.

2. APPLICANT

Diviner Kemunto Nyarera

3. SITE

Kenyatta National Hospital, Nairobi County

4. DECISION

The committee has considered the research protocol in accordance with the Kenya University Research Policy (section 7.2.1.3) and the Kenya University Ethics Review Committee Guidelines and **APPROVED with Advice that the research may proceed for a period of ONE year from 12th November, 2019.**

5. **ADVICE/CONDITIONS**

- i. Include KUERC address and contacts of your supervisor

YOU MUST ALWAYS ENSURE

- i. Progress reports are submitted to the KU-ERC every six months and a full report is submitted at the end of the study.
- ii. Serious and unexpected adverse events related to the conduct of the study are reported to this committee immediately they occur.
- iii. Notify the Kenyatta University Ethics Committee of any amendments to the protocol.
- iv. Submit an electronic copy of the protocol to KUERC.

When replying, kindly quote the application number above.

If you accept the decision reached and advice and conditions given please sign in the space provided below and return to KU-ERC a copy of the letter.






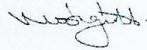

Prof Judith Kimiywe
CHAIRMAN - ETHICS REVIEW COMMITTEE

I, Diviner Mwanja.....accept the advice given and will fulfill the conditions therein.

Signature.....[Signature]..... Dated this day of.....4/12/..... 2019.

cc.
DVC-Research Innovation and Outreach

Appendix V: Research permit /license

 REPUBLIC OF KENYA	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Ref No: 789025	Date of Issue: 27/January/2020
RESEARCH LICENSE	
	
<p>This is to Certify that Ms.. diviner nyarera of Kenyatta University, has been licensed to conduct research in Nairobi on the topic: QUALITY OF LIFE OF KIDNEY DONORS AT KENYATTA NATIONAL HOSPITAL, NAIROBI, KENYA for the period ending : 27/January/2021.</p>	
License No: NACOSTI/P/20/3336	
789025 Applicant Identification Number	 Director General NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
	Verification QR Code 
<p>NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.</p>	