PREDICTORS OF HEALTH-RELATED QUALITY OF LIFE AMONG PRIMARY CAREGIVERS OF CANCER PATIENTS IN KAKAMEGA COUNTY, KENYA

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DECLARATION

This thesis is an authentic piece of work that has been solely developed using the specified sources and support. It has not been previously submitted for any academic degree or recognition..

Signature ……. Date……

Hellen Aoko Odeny

HNR/G/01-53028/2018

CERTIFICATION

The undersigned certify that they have read and hereby recommended for acceptance of Masinde Muliro University of Science and Technology a thesis entitled **"Predictors of Health-Related Quality of Life among Primary Caregivers of Cancer Patients in Kakamega County, Kenya."**

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DEDICATION

I dedicate this thesis to all primary caregivers of cancer patients because the effects of cancer diagnosis go beyond the patient, family and community yet the person who bears the burden of care giving are the primary caregivers.

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Above all, I am deeply appreciative to the Divine Creator for His unwavering support during this academic endeavor. I would like to sincerely thank my competent supervisors, Dr. Tecla Sum and Mr. John Arudo, for their unwavering support, encouragement, direction, and insightful counsel during the course of my studies. I wish to appreciate the research assistants, community health volunteers and health records officers who accepted to voluntarily to assist in data collection and identification of the caregivers from the records. I will not forget to thank my family for their unlimited support, encouragement and creating an enabling environment to complete this thesis.

Thanks everyone who supported me and may God’s blessings you all.

ABSTRACT

Caregivers often undergo a deterioration in their Health Related Quality of Life (HRQOL) as a result of the considerable burden of caring for a cancer patient. Most research undertaken in Western nations have revealed a link between higher caregiving stress and poorer mental and physical well-being, as well as premature death, among family caregivers. Hence, the results of these studies may not have direct applicability to the people of Kenya, particularly in Western Kenya where the socioeconomic and ethnic circumstances are distinct. This research aimed to identify the characteristics associated with the health-related quality of life of main caregivers for cancer patients in Kakamega County. The basic objectives of the proposed research were to investigate the socio-economic determinants, ascertain patient characteristics, and evaluate the correlation between psychological aspects and HRQoL (Health-Related Quality of Life) among primary caregivers of cancer patients in Kakamega County. This research used an institutional-based cross-sectional analytical study design. The Kakamega County Referral Hospital was picked purposely as it houses the cancer center for the western area. The study population consisted of caregivers of cancer patients receiving treatment at the hospital. The caregivers were meticulously selected from a roster obtained from the Cancer Centre registry of cancer patients, where they are recorded as those who provide assistance throughout treatment. It is expected that every cancer patient has a designated caregiver. After calculation, the sample size consisted of 422 primary care providers. A data collection tool was obtained using a QOL questionnaire, such as WHOQoL-BREF, designed to measure both the objective and subjective aspects of quality of life. Additionally, the tool includes PHQ9/GAD-7, which are more sensitive and have a broader range of applications. The SPSS version is a statistics tool for social sciences. 26 was used for data input, cleaning and analysis. Socio-economic variables such as marital status (P=0.043), domicile (P=0.005), occupation (P=0.011) and income (P=0.027) were considerably connected with HRQoL. The patient's characteristics, such as the treatment style (P=0.022) and the kind of test performed (P=0.033), showed a substantial correlation with the patient's health-related quality of life (HRQoL). Caregiver knowledge and family support associated factors including severity of cancer as a disease(P=0.000), other family members supplying help with care(P=0.004), other family members with cancer(P=0.038) and chronic illness(P=0.000) were substantially connected with HRQoL. Psychological associated factors like melancholy (P=0.000), anxiety(P=0.017), perceived quality of life(P=0.000) and being pleased with one’s health (P=0.013) were substantially connected with HRQoL. The research revealed that socio-economic variables, psychological factors, patient characteristics and care giver’s knowledge on cancer were correlated with health-related quality of life among caregivers of cancer patients. The research indicated that financial expenses for cancer management may be lowered since this might lessen the financial stress care providers are enduring. Other family members should help main care providers not only financially, but also mentally to alleviate the strain of the primary care giver. Health care professionals should establish sometime to train caregivers about different forms of cancer their treatment, bad impact of the medications and how to help their patients at home so minimizing the burden of cancer, as a severity of the illness. Psychosocial support group networks should be developed for caregivers via multiple contact channels thereby lowering the mental and psychological strain felt by caregivers.

TABLE OF CONTENTS

LIST OF TABLES

TABLE **PAGE**

LIST OF FIGURES

FIGURE **PAGE**

LIST OF ABBREVIATIONS AND ACRONYMS

GAD7	-	Generalized Anxiety Disorder
GLOBOCAN	-	Global Cancer data
W.H.O	-	World Health Organization
HRQoL	-	Health Related Quality of Life
IARC	-	International Agency for Research on Cancer
JOOTRH	-	Jaramogi Oginga Odinga Teaching and Referral Hospital
KCTRH	-	Kakamega County Teaching and Referral Hospital
KDHS	-	Kenya Demographic and Health Survey
MOH	-	Ministry of Health
NCD	-	Non-communicable Diseases
PHQ9	-	Patient Health Questionnaire
SDGs	-	Sustainable Development Goals
WHOQoL-BREF	-	World Health Organization Quality of Life Assesment Tool

OPERATIONAL DEFINITIONS OF KEY TERMS

Anxiety- The sense of fatigue, overworked and worrying all the time.
Cancer patients - This is a person who has been diagnosed with malignant cells and is having medical therapy for a malignant growth
Depression- It is a mental condition that is often defined by loss of interest or pleasure, decreased energy, feeling of guilt or low self-esteem, problems sleeping, decreased appetite, sense of exhaustion, lack of focus and a continual feeling of despair
Health- The WHO defines health as "a state of complete physical, mental and social well-being, and not merely the absence of disease and infirmity"
Health-related quality of life (HRQoL) - It is a multi-dimensional concept that comprises domains relating to physical, mental, emotional, and social functioning or well-being. A similar notion of HRQoL is well-being, which analyzes the good aspects of a person's life, such as positive emotions and life satisfaction. The variables that was measured in physical domain are; personal appearance, pain and weight loss and sleep disturbance. In mental/psychological domain, the factors that were measured include; stress, depression, anxiety, and emotional support. Economic realm encompasses; level of living, financial independence and work /unemployment.
Hope-It is a reflection of future oriented motivating process where the caregiver has an expectation towards obtaining a desirable goal.
Primary caregivers - Primary caregivers where be a person who most often helps the person with cancer and is not paid to do so. In most circumstances, the main (primary) caregiver is a husband, partner, parent, or an adult child. When family is not around, close friends, co-workers, or neighbours may fill this position. The caregiver has a significant role in the patient's care.
Quality of life- It is defined as an overall general well-being that contains objective

descriptors and subjective evaluations of physical, material, social, and emotional well-being coupled with the extent of personal development and meaningful activities, all weighted by a personal set of values. It involves everything from physical health, family, education, employment, income, safety, and security to freedom, religious views and the environment.
Satisfaction- Feeling of contentment with life.

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CHAPTER ONE

INTRODUCTION

1.0 Overview

The background information, problem statement, study justification, research objectives, research questions, conceptual framework, and study scope are all presented in this chapter.

1.1 Background to the Study

As the major cause of illness and death worldwide, cancer is widely regarded as a pandemic. There are no constraints connected to location, economics, ethnicity, or society (WHO & IARC, 2018). One in six women and one in five men worldwide are anticipated to acquire cancer at some time in their lives, with 18.1 million new cases and 9.6 million deaths from the illness in 2018. Additionally, data suggest that the condition takes the lives of one in eight males and one in eleven women (Bray et al., 2019). According to the World Cancer Report, there may be a 50% rise in cancer rates, or 15 million additional cases, by 2020. (WHO & IARC, 2018).

Cancer in Africa is a rising public health hazard. Approximately 25-30% of all malignancies in Africa are caused by or related with infections. Africa and other low- and middle-income areas contribute for more than half of cases and almost two-thirds of death (Plummer et al., 2021). Kenya's population is likewise witnessing a rise in the cancer rate. With a projected 29,000 new cases and 24,000 cancer deaths documented in 2018, cancer ranks third nationally in terms of causes of mortality, after infectious and cardiovascular illnesses (MOH, 2018).

Cancer diagnoses have an influence on primary caregivers' quality of life in addition to the patients' health (Hadi et al., 2020). A cancer diagnosis has far-reaching implications on the individual getting the diagnosis as well as their family and the greater community (McKeague et al., 2021). Because cancer is a chronic ailment, family members typically take on the bulk of the patient care (Akpan-Idiok et al., 2020). Research reveals that delivering therapy to patients with cancer might be more challenging owing to insufficient diagnosis, delayed identification, and the demand for a high level of patient care (Abdullah et al., 2019).

The majority of family caregivers for cancer patients are ill-equipped to manage the caregiving obligations (Shamsuddin et al., 2019). Because of the stress that comes with being a caregiver, family caregivers of cancer patients commonly suffer a deterioration in their quality of life (QOL) (Idris et al., 2019). As a result of this worsening quality of life (QOL), the caregiver may ultimately have greater psychological repercussions and a higher likelihood of dying (Üzar-ÖzçetiŇn et al., 2020).

Cancer burden in western Kenya is a significant health problem and probably affects a larger number of patients and their caregivers (MOH, 2017) as incidence of cancer is seen to be on the rise with an estimated 600 new cancer cases in 2018 to 1800 cancer cases in 2020 as this number is expected to rise by three fold in 2023 (KHIS and MOH, 2019). Aswani and Joyce M. (2022) did a research in western Kenya and discovered an increase in the number of patients with Kaposi's sarcoma connected with the HIV/AIDS pandemic. However, there is a scarcity of information on research on the health-related quality of life of primary care physicians for cancer patients in western Kenya.

The bulk of studies done in Western nations has proven a relationship between increased caring stress and lower mental and physical health as well as early mortality among family caregivers. . In spite of the growing prevalence of cancer in Kenya, western Kenya included, with attendant stress on caregivers, Data on HRQoL factors among primary caregivers of cancer patients are limited. As a consequence, by attempting to examine the health-related quality of life of primary caregivers of cancer patients in Kakamega County, this study bridges these gaps in the Kenyan literature on cancer research.

1.2 Statement of the problem

The quality of life of primary caregivers is also impacted by a cancer diagnosis, in addition to the patients' health-related quality of life (Guerra-Martín et al., 2023). The health of caregivers is vital and has to be attended to by healthcare professionals; yet, a lack of assistance has a detrimental effect on their health and may result in disease (Idris et al., 2019).

A cancer diagnosis has far-reaching effects on the person receiving the diagnosis as well as their family and the larger community (McKeague et al., 2021). Many specialists in the field of preventative healthcare feel that not enough has been done to support family caregivers of cancer patients, who frequently experience a reduced quality of life (QOL) as a result of stress related to their caregiving responsibilities. This is true even though environmental and lifestyle interventions have greatly increased life expectancy and greatly improved cancer control. (Dolores María, 2023). Anxiety (Sharma et al., 2024), depression (Hossain et al., 2024), sleep disturbance (Rebeka J, 2024), fatigue (Haque et al., 2024), diminished quality of life, impact on work, and economic burden (Bed P et al., 2024) have all been linked to

being a caregiver for a patient with cancer.

A growing proportion of Kakamega County cancer patients are receiving care from family members, who bear the bulk of the psychological and physical burdens associated with their treatment. However, adopting the role of caregiver and the associated caregiving responsibilities alter the dynamics and structure of the family and significantly increase stress levels for caregivers, who may bear burdensome responsibilities that negatively impact their own health. The main caregivers of cancer patients in western Kenya lack knowledge on HRQoL. Therefore, it is essential to identify the variables influencing the Health-Related Quality of Life of primary caregivers for cancer patients in Kakamega County.

1.3 Justification of the study

Research conducted in nations such as China demonstrates a correlation between the HRQOL of spouse caregivers and the degree of symptoms experienced by patients, factors connected to caring, and the spouses' demographics. Wang and associates, 2020. The results of this study included suggestions for more research to be conducted in other developing nations.

There are currently no guidelines available regarding the improvement of primary caregivers' quality of life, despite the fact that there are several guidelines, such as national cancer treatment guidelines and WHO guidelines on cancer treatment, which are intended to help reduce the incidence and mortality of cancer and improve the quality of life for cancer patients. When it comes to giving cancer patients at-home care, family caregivers are playing an increasingly important role. WHO (2018). According to the World Health Organization, everyone in Kenya has a fundamental

human right to health care, and Vision 2030 cites access to universal health care as a need for Kenya to become a middle-income nation. The World Health Organization's (WHO) Global Action Plan 2013–2025 for the prevention and control of noncommunicable diseases (NCDs) and Goal 3 of the Sustainable Development Goals (SDGs) have benefited greatly from the identification and prevention of risk factors for poor health-related quality of life among caregivers.

Research on caregivers' HRQOL has not been extensively studied in Kenya, which leaves a research need for this investigation. Furthermore, Kenya's cancer management policies and recommendations only promote the building of accommodation facilities for patients and caregivers receiving cancer treatment services, independent of the caregiver's HRQoL (NCCS, 2017–2022).

Kakamega County lacks data about the standard of living of main caregivers. Therefore, it is critical to ascertain the health-related quality of life for family caregivers of cancer patients in Kakamega County. The County General Teaching and Referral Hospital is a suitable venue for this activity since it houses the local cancer registry. The proposed research in western Kenya sought to identify the variables influencing the health-related quality of life of caregivers for cancer patients. The findings would be very important in educating healthcare providers about the health needs of primary caregivers in order to improve their HRQOL. The findings may be used as a basis for developing more therapies in the future to assist caregivers in improving their HRQOL.

1.4 Main Objective

to identify factors that Kakamega County primary caregivers of cancer patients use to predict their health-related quality of life.

1.4.1 Specific objectives

i. To evaluate how socioeconomic factors affect primary caregivers' HRQoL among cancer patients in Kakamega County.

ii. To identify the patient characteristics linked to HRQoL among Kakamega County main caregivers for cancer patients.

iii. To assess the psychological elements influencing HRQoL in Kakamega County main caregivers of cancer patients.

1.5 Research Questions

i. What socioeconomic variables affect the HRQoL of Kakamega County main caregivers of cancer patients?

ii. Among Kakamega County main caregivers of cancer patients, what patient variables are linked to HRQoL?

iii. What psychological variables influence HRQoL in Kakamega County main caregivers of cancer patients?

1.6 Limitations of the study

STUDY DESIGN

The primary caregivers of cancer patients provided data, which was analyzed using a cross-sectional analytical study design at a particular point in time.

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SAMPLE SIZE

The sample size was small and could not be generalized to all primary caregivers of cancer patients.

SAMPLING TECHNIQUE

Sampling technique was simple random sampling method from the cancer patient registry record though it was time consuming and bias could still occur under certain circumstances.

1.7 Conceptual framework

The proposed research included the quality of life Ferran's and Power Models. The idea is based on the adoption of an individualistic worldview, which recognizes that the quality of life is a product of each person's own life experiences. Quality of life was defined as an individual's degree of satisfaction with the areas of life that are important to them since individuals vary in what they value, and only each person is equipped to assess their own quality of life. The idea identifies four aspects of quality of life: physical and health, psychological/spiritual, familial, and social and economic (Ferrans, Zerwic, Wilbur, & Larson, 2005). While greater values in the symptom categories indicate more serious measures to improve well-being, especially in palliative care and at the end of life, higher ratings in the functional or physical areas indicate a healthier state of things (Ferrans, 2010; Kimura & Silva, 2009). favorable evaluations of people's everyday lives, such as when they feel resilient, content, and healthy, are implied by better HRQoL. These favorable evaluations are reflected in people's relationships, resilience, positive emotions, and potential fulfillment. It also shows how individuals assess the impact of their health on their capacity for social interaction in their current environment. Learning, employment,

community, social, and recreational activities are all included in engagement. The fundamental idea behind participation measurements is that while people with poor HRQoL do not live productive lives or enjoy their quality of life, people with functional limitations—like blindness, limited mobility, or intellectual disabilities—can lead long, fulfilling lives with high quality of life (Karimi 2016).

A QoL questionnaire such as the WHOQoL-BREF may be used to compare the HRQoL domains that were previously addressed. The survey asks about satisfaction with the following areas: level of living, achievement, accomplishments, community connection, future security, and health. The PHQ9 and GAD-7 were used to measure the psychological factors impacting HRQoL among primary caregivers of cancer patients in Kakamega County. Each of these aspects is likely influenced by poor health, even though they are not often included in HRQoL assessments.

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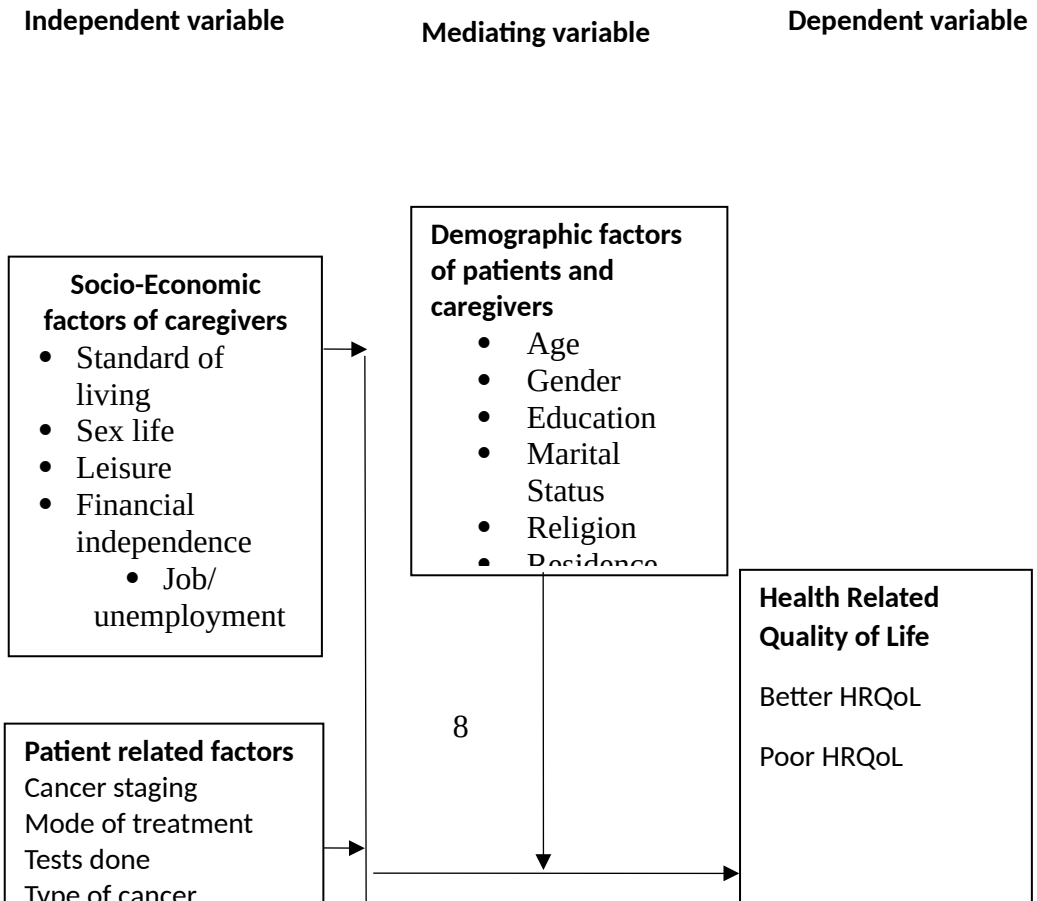

Figure 1.1 Conceptual framework

Source: Ferrans, (2007)

CHAPTER TWO

LITERATURE REVIEW

2.0 Overview

This chapter reviewed the literature in light of the study problem's background and the specified research aims. The global and regional cancer loads are described in this chapter. It covers the following subjects: incidence of cancer Health-related quality of life (HRQOL) among main caregivers of cancer patients, as well as sociodemographic,

economic, and cultural characteristics, physical, and psychological concerns influencing primary caregivers of cancer patient.

2.1 Cancer and its burden on caregivers

Cancer is the world's second greatest cause of mortality, with 9.6 million deaths expected in 2018. Cancer kills around one in every six people worldwide. Low- and middle-income nations account for over 70% of cancer-related mortality. In 2017, just 26% of low-income nations had publically financed pathology services that were freely accessible. More than 90% of high-income nations reported having access to treatment services, compared to less than 30% in low-income countries. Cancer has a major economic impact, which is continually increasing. Cancer is predicted to cost the economy over $1.16 trillion each year. As risk factors such as a high BMI and other lifestyle risks increase, the global cancer burden is expected to rise (Chakraborty et al., 2023; IARC, 2019; Plummer et al., 2021).

Cancer is becoming an increasingly pressing public health problem in Africa. Infections are responsible for 25-30% of cancer cases in Africa, either as the major cause or a contributing factor. More than half of the cases, and more than two-thirds of the deaths, occurred in Africa and other low- and middle-income countries (Plummer et al., 2021). By 2030, these figures are predicted to increase to more than 22 million cases (60 percent in low- and middle-income countries) and 13 million deaths (70 percent in low- and middle-income countries). The low cancer statistics in Africa cause enormous anguish for patients and their families, as well as financial burden on national and regional health budgets.

Olabode, Omotoso, and others (2019). This presents a problem because African governments are the least equipped to upgrade health-care infrastructure and hire

skilled workers capable of providing competent care and adequate support to an increasing number of primary caregivers (Omotoso, Olabode et al., 2019; WHO, 2018).

According to McMaughan et al. (2020), there is a link between the population's aging and rising dependency, which presents new issues, and new problems and demands in socioeconomic, cultural, and healthcare contexts. Support for "primary family caregivers" has become increasingly more vital as older persons with numerous pathologies, dementia, or severe chronic diseases need long-term care. Perpiñá-Galvañ et al. (2019) report that family caregivers do the bulk of emotional and physical caring tasks. Cancer is the second leading cause of death in Kenya, accounting for 7% of all NCD-related fatalities, behind only cardiovascular diseases, according to WHO (2018) and NCD country profile (2018). Following heart disease and infections, it is expected to be Kenya's third greatest cause of death. Ferlay et al. (2019) reported that the yearly incidence

The cancer burden in western Kenya is likely to have a significant effect on patients and their caregivers, making it a major health concern (MOH, 2018). The most common cancers in women are breast, esophageal, and cervical. The most prevalent cancers in men are prostate, esophageal, and Kaposi sarcoma. According to Nairobi Cancer Registry statistics from 2002, cervical cancers accounted for 20% of all recorded malignancies, 9.4% for prostate cancers, and 23.3% for breast cancers. In 2006, 2,354 women were diagnosed with cervical cancer, and 65% of them died from the illness.

Cancer symptoms and indications Patients may experience the following broad, non-specific signs and symptoms, depending on the particular kind and stage of the cancer:

Tiredness, weight loss, pain, skin changes, changes in bowel and bladder function, abnormal bleeding, persistent coughing or voice abnormalities, fever, lumps, or tissue tumors (WHO 2018).Comprehensive cancer diagnostic services include pathology, medical imaging, laboratory medicine, immunology, microbiology, chemistry, immuno-haematological, haematological, biophysical, cytological, pathological, and other examinations of human body materials to provide information for diagnosis. Having laboratory services that are easily accessible, widely available, reasonably priced, and effective is critical for early cancer diagnosis. However, rising nations such as Kenya grapple with the following.

The impact of cancer on caregivers

Recognizing caregiver burden improves both patients' and caregivers' quality of life. Caregivers may experience caregiver load while caring for often unwell individuals (Guerra-Martín et al., 2023). When cancer patients are not hospitalized to the hospital throughout their illness and treatment, family caregivers play an important role in providing care. As long as the patient requires assistance with even the most basic activities of daily living due to the disease's consequences, therapies, or the coexistence of cancer and comorbidities, providing care does not end once the patient is admitted to the hospital and becomes a full-time job (Yuxuan et al., 2023). Furthermore, there is a high link between caregiver perceptions (2021). These results propose framing specific findings in terms of the overall outcome of care load in cancer caregiving by primary care providers.

2.2 Health Related Quality of Life (HRQOL) among primary caregivers

In recent years, health-related quality of life, or HRQOL, has emerged as an important part of medical therapy. According to the World Health Organization (WHO),

predictors are traits such as mental, emotional, physical, and social functioning that are used to assess how they affect another variable, Health Related Quality of Life (Barbosa et al., 2022). The meaning of HRQOL is "an individual's perception of his/her position in life in the context of the culture and value systems in which he/she lives, and in relation to his/her goals, expectations, standards, and concerns relating to wellbeing."

Many HRQOL researchers have traditionally concentrated on the person who has been diagnosed with an illness or disease (Garcia Rodrigues, M., Monteiro Soares, M., Rodrigues et al., 2023). They discovered that addressing caregiver stress may greatly enhance the course of therapy. However, more recent research have focused on the caregiver's HRQOL. Caregivers of cancer patients are often denied an HRQOL test, despite the fact that similar assessments have been utilized in other areas of healthcare practice. According to Sherman et al. (2019), assessing the health and well-being of primary caregivers may help identify and treat physical, psychological, and social difficulties within the family.

Because of ongoing technological advancements, cancer patients are living longer lives and need long-term care from caregivers. Given that caregivers are frequently obliged to offer 24-hour care to fulfill their patients' medical, physical, and social demands, their long-term commitment to these patients may have a substantial impact on their HRQOL. Sadat et al. (2022).

There has been very little specialist research on the health-related quality of life (HRQOL) of family caregivers who care for cancer patients (Fagerström et al. 2020). However, caring for cancer patients has often been related with higher workload and worse HRQOL for caregivers. The severity of a chronic disease increases caregiver

stress (Mishraet et al., 2021).

The WHOQoL-BREF was developed to employ both general and disease-specific questionnaires to assess the subjective element of QOL using single- and multi-item scales. The goal of this is to assess the primary caregivers for cancer patients' health-related quality of life (HRQoL) (Aujla & Needham, 2019).

2.3 Factors influencing primary caregivers' health-related quality of life (HRQOL)

The following characteristics predict HRQoL among primary caregivers: social demographics, economics, physicality, and psychology.

2.3.1 Aspects of sociodemographic and economic status that affect primary caregivers' health-related quality of life for cancer patients

Age, sex, marital status, and education are sociodemographic characteristics that have been linked in several studies to the HRQoL of caregivers for cancer patients. These aspects are explored below.

2.3.1.1 Age

Age and the caregiver's HRQOL are related. Senior caregivers are more likely to be managing chronic illnesses than younger caregivers. An elder caregiver's physical health may be negatively impacted by caregiving responsibilities, age-related biological vulnerabilities, psychological problems, including feelings of loss and sadness. Caregivers of patients with chronic diseases who are also the spouse of the care recipient and have a lower monthly income are also at risk for having a poor HRQOL. According to prior research, the caregiver's age may have an impact on the care burden (Sun, Haiyan, Yang Qin, and Pornpat Hengudomsub, 2021).

2.3.1.2 Sexual

A caregiver's gender is also linked to HRQOL. For example, women who provide care report worse levels of well-being or health status, especially when it comes to mental health, and a higher prevalence of depression as compared to men. Male caregivers often reported higher levels of mental and physical well-being than their female counterparts. Furthermore, Yoshiko et al. (2023) found that female caregivers are more likely to have comorbidities and chronic illnesses, independent of the care recipient's condition.

2.3.1.3 Status as married

Studies have shown that the relationship between the spouses and the cancer patient has an effect on the quality of life (QOL) of spouses who provide care (Lin et al., 2020). Couples also have worries about their capacity to provide emotional and physical support and of losing their life partner to cancer (Mbozi et al., 2020).

According to a study by Jeong et al. (2020), the risk of mortality for older spouse caregivers who reported caregiver stress was 63% higher than for non-caregivers of the same age. Additionally, data obtained from salivary biomarkers of cancer patient caregivers revealed clear alterations in neurohormonal and inflammatory processes within the year after the diagnosis (Mitchell et al., 2021).

2.3.1.4 Educational attainment

Studies show that primary caregivers with higher educational attainment have reported decreased wellbeing because, compared to their less educated counterparts, they are better aware of the consequences and prognosis of cancer (Molassiotis, A., & Wang, M. 2022). A long-term research that assessed the quality of life of prostate cancer patients and their spouses found a correlation between a relatively low level of education for both the patient and the caregiver and a better quality of life for both couples (Andreas Ihrig et al., 2022).

Family caregivers are burdened more when they take on the responsibilities of a sick family member on top of their own. Reports state that family members' verbal encouragement and support are equally important for main caregivers.

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The caregiver's health state affects their HRQoL

A caregiver's personal health has an effect on their HRQOL (Hemphill et al., 2020). Caregivers are less likely to engage in preventative health activities and are more likely to suffer a major illness (Forsythe et al., 2020). Family caregivers of cancer patients experience more severe impairments than non-family caregivers. Approximately half of caregivers report having at least one chronic disease, 20% describe their health as fair or poor, and 17% believe that providing care has negatively impacted their health and the quality of care provided to cancer patients.

Zhong, Nicholas, Yaqin, Jian Wang, and Stephen (2020)

2.3.2 Economic variables influencing main caregivers of cancer patients' health-related quality of life

S. Alam and C. Zimmermann. (2020) discovered a connection between caregiver load and prescription medication usage, a decrease in health-maintaining behaviors, a rise in health-risk behaviors, and the caregiver's own poor health condition. The three economic drivers of job/unemployment, quality of living, and financial independence all affect the HRQoL of caregivers.

2.3.3.1 Having enough money

Caregivers may have to cover the cost of medical treatment out of their own wallets while tending to a sick family member. In 2007, more than forty percent of caregivers in the US spent $5,531, or almost 10% of their annual family income, out of their own wallets on average. The cost does not account for the drop in retirement savings, social security payments, or income and benefits (Collins & Swartz, 2019). Friends and relatives may not be able to help due to their own obligations to their own families and occupations, and caregivers may not be able to hire home care and transportation services due to limited financial and social resources. Minority patients and those who care for them may live in impoverished locations with limited access to healthcare resources, especially those related to drugs that are illegal.

2019).

2.3.3.2 Living standards

Nearly one-fifth (18%) of caregivers said they had lost all or most of the family finances, and another 18% said a family member had drastically changed their life—for example, by quitting their job—in order to care for the patient, according to Erhunmwunsee et al. (2019). Mazanec et al. (2011) investigated 70 caregivers of patients receiving palliative care in a similar study. They found that the overall labor productivity loss in the sample was 22.9%, which was somewhat higher than the figure of 20.1% that had been previously published by Giovannetti, Wolff, Frick, and Boult (2009).

2.3.3.4 Employment/Role

Certain academic studies have shown connections between heightened work productivity loss and heightened degrees of anxiety and despair. Additionally, there has been evidence of a correlation between higher caregiver burden and health problems, scheduling conflicts, and financial hardships (Xiang, Ellen, et al., 2022).

When it comes to accessing acute care services, 24% of the caregivers (N=153) had at least one hospital stay or ER visit in the six months before to study enrollment, according to research on caregivers of individuals with Alzheimer's disease (Afonso-Argilés et al., 2023). Moreover, there was a greater chance of Framingham stroke and all-cause death for caregivers with higher load levels (Swartz, Kristine, and Lauren G. Collins 2019).

2.4 Psychological aspects influencing main caregivers for cancer patients' health-related quality of life

Confusing feelings that accompany obtaining a cancer diagnosis, such as dread, uncertainty, and a lack of hope, last throughout the patient's and caregiver's treatment (Lewandowska, Anna, et al., 2021). The identification of brain metastases might exacerbate these psychological responses. Considering that caring for a loved one with cancer is similar to experiencing chronic stress (Maina, Geoffrey, et al., 2021), it seems natural that the bulk of the detrimental health impacts of this position would fall into the psychological and emotional domain. The following factors are included in these domains: caregiver stress, anxiety, depression, and emotional support.

..2.4.1 Stress of the primary caregiver

The stress that comes with giving care has an adverse effect on the health of caregivers. Feliciano and Broxson (years). (2020). Stress level has been shown to be a reliable indicator of caregiver burden. A caregiver's stress level has been shown to increase in direct proportion to the amount of care they provide. The caregiver load itself has an effect on caregivers' health in addition to excessive stress levels. Numerous research have shown that caregiver burden is linked to depressive symptoms and that caregiver stress might aggravate pre-existing depressive problems in caregivers (Chakraborty et al., 2023). A separate meta-analysis claims that caregiver load causes stress, and that locating the appropriate support networks is essential to lowering stress (Shi, Jing, et al, 2020).

116 caregivers in the sample total

2.4.2 Depression in the primary caregiver

The National Alliance for Caregiving asserts that there is a connection between greater rates of depression and insomnia and providing care. According to the National Alliance for Caregiving (2019), depression rates have been reported to reach 91%, with 60% of cases falling into the serious or severe category. Additionally, a study conducted in Italy with 152 caregivers of cancer patients found that psychological distress was highly prevalent in these individuals; over 50% of the caregivers tested positive for mood disorders, over 10% had severe cases of PTSD, and 37% tested positive for patients who were emotionally disturbed and required clinical treatment (Sullivan, Matthew C., et al., 2022).

The results of a cross-sectional, descriptive, and correlational study including 410 caregivers who were selected from the community show that each of them experiences notable degrees of hardship and hopelessness.

2.4.3 Anxiety of the Primary Caregiver

Researchers have looked at caregivers' negative responses, such as hopelessness and anxiety, in patients with Kim, Y. (2022). Conversely, less research focused on a certain subset of caregivers for patients with brain metastases. Caregivers of patients with advanced cancer may experience higher anxiety, sadness, and emotional stress as a result of their work (Belapurkar, Parth, et al., 2023). Additionally, caregivers of patients with brain tumors have been shown to have greater levels of anxiety and depression symptoms than the general population (Shah et al., 2023). Kilic, S. T., and Oz (2019) have shown that there exists data indicating that the emotional symptoms that carers of cancer patients experience vary over the disease continuum and may be influenced by variables related to the patient's deteriorating health.

2.5.4 Psychological Assistance for Primary Caregivers

Most patients in need of primary care providers get treatment from first-degree relatives, such as siblings or children, according to study done by Akpan-Idiok et al. (2020). Furthermore, they discovered that when the number of helpers helping primary caregivers increases, the caregiver burden scale point decreases (Stavas et al., 2019). It is believed that the caring load on primary caregivers is reduced when caregiver support personnel are present. Caregivers who live in big homes have a heavier strain. This data shows that a rise in family size would result in women having greater duties, contrary to predictions that the caregiver burden would decrease as tasks would be shared among family members. Yoshio

2.5. Hospital-related variables influencing primary caregivers' HRQoL

Hospital elements, such as rules and standards and human resources, may have a favorable or negative impact on primary caregivers' HRQoL.

2.5.1 Rules and regulations

Family caregivers are taking on an increasing amount of responsibility for providing home care for cancer patients, even though there are a number of guidelines, such as the National Cancer Treatment Guidelines and WHO Guidelines on Cancer Treatment, which are meant to help reduce the incidence and mortality of cancer and improve the quality of life for cancer patients. Nevertheless, there are no established recommendations for enhancing the quality of life of primary caregivers. Adhering to the guidelines is expected to improve early detection, accelerate diagnosis, and harmonize cancer treatment. Additionally, this enhanced accessibility to safe and effective cancer therapy

to strengthen proficiency in every area of cancer care (Who, 2012).

2.5.2 Resources for people

Caring for cancer patients is increasingly challenging because to inadequate diagnosis, delays in hospitalization detection, and the need for a high level of patient care (Abdullah et al., 2019). Healthcare practitioners must prioritize the health of caregivers since neglecting them may have a negative impact on their well-being and can lead to sickness (Idris et al., 2019).

Most family caregivers for cancer patients are unable to face the burden of caring because they do not get enough help from the hospital (Shamsuddin et al., 2019). Previous studies found that the following factors influenced the overall quality of life (QOL) of patients and caregivers: the length of hospital stay, the degree and kind of caring, marital satisfaction, and the self-esteem of caregivers.

(Martín-Guerra et al., 2023).

2.5.3 Diagnosing cancer

In addition to the illness and its treatment, a cancer diagnosis presents a person with a variety of obstacles, including the possibility of physical disability, risks to their social and family relationships, and concerns for their own life (Chen et al., 2020).

Pathology, medical imaging, and laboratory medicine for biological, microbiological, immunological, chemical, immune-haematological, haematological, biophysical, cytological, pathological, and other examinations of materials derived from the human body are among the services that provide information for the diagnosis of cancer. Reachable, accessible, affordable, and effective

Laboratory services are essential for early cancer detection, but in poor nations—Kenya included—diagnostic is sometimes difficult, which adds to the lengthy time it takes to diagnose cancer (ACS 2018).

According to IMPACT 2016, pathology services are concentrated in Nairobi and have limited access in most of the country's counties. They are also insufficiently and unequally distributed across the private sector. The lack of established quality control techniques and criteria for pathology-based cancer diagnostic tests sometimes causes delays in the detection of cancer. Cancer patients may have a poor prognosis as a result of delayed diagnosis and limited treatment choices available in developing countries like Kenya. The patients' health-related quality of life (HRQOL) may be impacted by this.

and the people who look for them the most (Chen, et al., 2020).

2.5.4 Duration of hospital stay

Cancer affects more than only the sufferer; it also affects those who are primarily responsible for them. According to Tsai et al. (2019), the bulk of cancer treatments take place in outpatient settings, where the main caregiver has more duty, particularly with regard to continuous, round-the-clock care. Research has shown that the physical health of family caregivers of patients with brain tumors is negatively impacted by the extension of time spent providing care and the stress that goes along with it (Heffernan et al., 2020).

2.5.5 The length and intensity of caregiving

Family members, particularly the primary caregiver who is in charge of providing the patient with care and support, have difficulties related to the disease and its treatment, as do cancer patients (Xu, Ling, et al., 2021). Regretfully, in developing nations like Kenya, most new cases of cancer are often discovered at an advanced stage. Cancer patients' health-related quality of life (HRQOL) may be impacted by their poor prognosis, which may be brought on by the delayed detection of cancer and the dearth of treatment alternatives in these countries. in addition to their main caregivers' and raising the stress of caring (Agyemang-Duah et al., 2024).

2.5.6 Contentment in marriage

Changes in the dynamics of the connection between cancer patients and their spouses, as well as the challenges of obtaining a cancer diagnosis and treatment, may have a detrimental influence on marital satisfaction. This is due to the possibility that one partner's HRQoL may influence the other (Oh, S., & Ryu, E. (2019)

2.5.7 Self-esteem in caregiving

Giving care is often seen as a lifelong stressor, and main caregivers are too focused on giving the right kind of support and care, which may negatively affect their daily lives and health in psychological, behavioral, and physiological ways.

to the cancer patients until they disregard their own health, which causes a decline in their own health and lowers the main caregivers' self-esteem (Li et al., 2020).

2.6 Patient characteristics influencing primary caregivers' HRQoL

The patient factors that impact the HRQoL of primary caregivers include the kind of cancer, the duration of the illness, the diagnosis, the length of hospitalization, the intensity and duration of caring, marital happiness, and the caregiver's self-esteem.

2.6.1 Cancer Types

Studies from the literature have shown that caregivers of patients with upper gastrointestinal cancer are more likely to feel psychological anguish than those caring for tumors with longer disease trajectories, owing to the poor prognosis of this kind of cancer (Abdullah et al., 2019). A long-term research that assessed the quality of life of prostate cancer patients and their spouses found a correlation between better quality of life for both partners and localized cancer at baseline (Kilic, S. T., & Oz, F. (2019)

2.6.2 Length of sickness

Research has shown that the physical health of family caregivers of patients with brain tumors is negatively impacted by the extension of time spent providing care and the stress that goes along with it (Brenner, et al., 2022). According to research from the literature, caregivers for patients with upper GI cancer are more likely to go through psychological distress than those caring for tumors with longer disease trajectories because upper GI cancer has a poor prognosis (Abdullah et al., 2019).

CHAPTER THREE

METHODOLOGY

3.0 Overview

The research plan selected by the investigator is presented in this chapter. Along with the study's assumptions, other topics covered include the research site, study population, target population, sample size calculation, sampling procedure, data scheduling, data analysis, presentation, and dissemination.

3.1 Framework for Research

Several techniques for gathering data were used in this cross-sectional analytical study design. Given that the research included gathering and comparing data from the phenomenon under investigation, this specific approach is perfect.

3.2 Research Site

In Kakamega County, Western Kenya, at the Kakamega County Referral Hospital, this study was carried out. The county is home to 34 health facilities, 86 dispensaries, 12 subcounty hospitals, 1 county referral hospital, and other establishments run by profit-making and religious organizations.

One medical officer, one pharmacist, one oncologist nurse, two master's student nurses studying oncology, one higher diploma nurse, two palliative nurses, one nutritionist, one research registrar, and one cancer registrar are all employed by the cancer registry center. 6550 patients from the western area are thought to be served by the clinic. On average, the registration center reports 120 new cases every month. The institution offers a psychological support group for patients, but not for primary caregivers. On the other hand, the caregivers accompany cancer patients to the hospital, provide them daily attention, administer their medications, and even look

after them in the event that they get unwell while undergoing treatment.

3.3 Subjects of Research

The primary cancer patient caregivers at the Kakamega County Referral Hospital Cancer Center took part in the research.

3.4 Measurable elements

This study's independent variables include the many demographic, psychological, and socioeconomic elements. The primary care doctors' health-related quality of life is the dependent variable.

Each person's physical independence was assessed based on how effectively or badly it performed.

3.5 Inclusion and Exclusion Criteria

3.5.1 Consisting of:

Those who have been with the patients for at least a month and who are at least eighteen years old.

carers who provided unpaid care to cancer patients

3.5.2 Exclusion

caregivers who struggle with mental instability

People who choose not to take part in the study

3.6 Looking Through

The study location was specifically selected since Kakamega County is home to a hospital that has a cancer center for the western region. The cancer center at Kakamega County Referral Hospital provided the sample and acted as a sampling frame. The patients themselves were the sample unit, while the interviewers were the patients' caregivers. The patients were selected at random using a simple random

selection technique until the required sample size was attained. The interviewers served as the patients' primary caretakers.

3.7 Calculating the size of the sample

The Cochran's formula was used to determine the sample size. Since there has never been a national or regional analysis of the cancer prevalence in Kenya, a 50% prevalence is taken as given. Based on the sample frame's assumption that every cancer patient has a primary caregiver, this calculation was made (MOH, 2017).

(⟦z⇩2⟧ pq)/e^2 = n_o

The sample size may be determined using the formula.

where p is the expected population-based cancer prevalence in Kenya, which is 50%. At α = 0.05, the typical normal distribution curve value with a 95% confidence interval (z^2) is 1.96. Q= 1 - p e= Margin of error n - Sample size

n_o = (0.05)^2 / (0.5)(0.5)(0.5)

Practitioners in primary care: n_o = 384 + (10% attrition) = 422.

Ten percent of the loading population is used to account for possible refusals.

3.8 Resources for Data Collection

The primary site of illness, comorbidities (such as diabetes mellitus, hypertension, and coronary heart disease), and socioeconomic and demographic details (such as age, gender, marital status, and educational attainment) were noted by the interviewers. Information about the specific patient-caregiver relationship that was also documented included the patient's spouse, parent, child, if they shared a residence, and whether the patient was the primary caregiver.

), and this suggests that the private patient information of every provider was acquired.

There are four parts to the questionnaire tool. In Section (a) Socio-demographic characteristics, the independent variables include age, sex, marital status, religion, education level, and ethnicity. Section (b) includes Psychological/Physical aspects, which include stress, sadness, anxiety, personal appearance, pain, weight loss, and emotional support. Section (c) covers the following: level of life, financial independence, home, neighborhood, job and unemployment, friends. Section (d) then looks at Health Related Quality of Life (HRQoL), an independent variable. This includes one's bodily well-being, mental and emotional stability, pain, weariness, and sexual life.

A QoL questionnaire like the Personal Wellbeing Index (PWI) may be compared to the HRQoL elements discussed above (Aujla & Needham, 2019). Numerous satisfaction-related questions, including those on relationships, achievement, future security, personal safety, health, and quality of life, are included in the PWI. Even though they are not often included in HRQoL evaluations, each of these factors is probably impacted by ill health. Every single one of the seven satisfaction components on the PWI scale is associated with a quality of life category, including standard of living, health, or accomplishment in

A simplified version of the WHOQOL-100, the WHOQOL-BREF was developed by the WHOQOL Group. According to Kondo et al. (2023), Kenya has approved the WHOQOL-BREF survey as valid and trustworthy. This questionnaire has 26 items that assess general health and overall quality of life. Four categories include the remaining 24 questions: social connection, physical, psychological, and

and environmental, each consisting of six questions. Every item has a grade between 1 and 5.

Every item is rated on a 5-point scale. Next, a linear scale from 0 to 100 is created using the data, with 100 being the best possible quality of life. The descriptive approach assesses five characteristics: pain or discomfort, mobility, self-care, routine activities, and anxiety or depressed symptoms. The respondent is asked to choose the option that best represents their current state of health after each component is further divided into three severity levels. The level selected for that dimension is indicated by the 1-digit number that is produced by this selection. These answers are combined to form a 5-digit health status profile, which represents the respondent's current state of health.

GAD7 is a tool intended to gather information about the

3.9 Sample Test

Offering both inpatient and outpatient care, the Jaramogi Oginga Odinga Teaching and Referral Hospital is home to the region's only operational cancer registry center. The facility is well stocked with drugs and diagnostic equipment for managing cancer. Primary care physicians who treat cancer patients in the cancer registry pretested the instruments. The pre-test was designed to determine whether or not all research participants could easily grasp and follow the directions on the data collection instrument. Following that, the questions' validity and clarity were enhanced. As T. pointed out. Alam, G. M. R. (2019), this endeavor reduces the amount of erroneous data collected; also, the validity and reliability of the instruments were established. The pre-test's two major objectives were to train the research assistants and evaluate the validity and reliability of the questionnaire. The questionnaire's questions were thoughtfully written so that responders wouldn't find them overly long or difficult to understand. Two checks were made on the pre-test

data to look for any gaps. Therefore, any abnormalities were addressed and changes made prior to the instrument being delivered.

3.10 Precision

Validity is the precision, consistency, or efficacy with which an instrument measures the things that it is supposed to measure, according to Alam (2019). According to Alam (2019), the normal approach for assessing the content validity of a measure is to have the assessment conducted by a professional or subject-matter expert. The questionnaire used in this research was verified to make sure that both its structure and content matched the factors under investigation. In this instance, department professionals evaluated the face validation, content, and questionnaire architecture. Before the gadget was deployed in the field, the expert input was integrated into it. A small number of questionnaires were issued during the pre-test, and the results were examined to determine the construct validity.

3.11 Dependability

Internal consistency strategies were applied in the study to increase the tool's reliability. This required comparing the results of one instrument item with the results of other items. In this instance, Cronbach's alpha was used, which is also referred to as the general version of the Kuder-Richardson (K-R) 20 formula (Sürücü, L., & Maslakçi, A. (2020). According to academics, when it comes to measuring dichotomous test items, the Cronbach Alpha coefficient performs better than the Kuder-Richardson Formula 20 (KR-20). Scale reliability is measured using Cronbach's alpha, which is the average of all potential split-half coefficients. The Statistical Package for Social Sciences, version 26.0, was used to administer the test.

Remember that "acceptable" is defined as having a Cronbach reliability coefficient of.70 or above.

For WHOQOL-BREF (α = 0.816), PHQ-9 (α = 0.833), and GAD-7 (α = 0.79), the test results were positive.

Table 3. 1. Cronbach's tests

Domain Cronbach Coefficient Alpha instrument type

WHOQOL-BREF: Every single domain is 0.816

Depression on the Patient Health Questionnaire (PHQ-9): 0.833

Anxiety 0.798 in Generalized Anxiety Disorder (GAD-7)

3.12 Analysis of data

The dependent variables were the physical, psychological, social connection, and environmental components of the WHOQOL-BREF. Kruskal Wallis was used to compare the two groups' QOL ratings. We examined the relationships between the four WHOQOL-BREF dimensions, the patient's characteristics, the caregivers' knowledge and support systems, the QOL (four domains) of the caregivers, depression, anxiety, and sociodemographic variables. The four QOL domains were the dependent variables in the multivariate regression models where the factors exhibiting a significant correlation ($p < 0.05$) with QOL were identified. Prior to being included into the multiple regression models, each independent variable underwent either category measurement or coding.

With the exception of the Hearth Hope Index (HHI), which was included as an interval scale variable, anxiety and melancholy were excluded. When the p-value was less than 0.05, the null hypothesis about the link between the independent and

outcome variables was rejected. The association between the WHOQOL-BREF domains and the Herth Hope Index elements was examined using Pearson correlation analysis to examine the relationship between the variables. In every process, statistical significance was indicated by $P < 0.05$. During analysis, questions #2 and #6 for HHI were reversed to get positive answers that were in line with the answers to the other 10 questions.

3.13 Moral Lessons to Keep in Mind

To make sure the study was conducted ethically, the Masinde Muliro University of Science and Technology Institutional Ethical Review Committee was consulted. Concerns about ethics were avoided by adhering to ethical principles. Before starting any study, the researcher is required by law in Kenya to get research authorization from the National Commission for Science, Technology, and Innovations (NACOSTI). We obtained permission from Kakamega County Referral and Teaching Hospital to carry out the study.

After being made aware of the goal of the study, the instrument to be used, and the information to be gathered, the respondents were asked for their consent to take part in the research. People were only compelled to engage in the study if they were willing to. Participants in the research were told they might withdraw at any time.

3.13.1 Selflessness

This idea made sure that people's social standing, financial circumstances, or physical or mental health would not suffer any negative effects. This was lessened by asking kind, considerate, and nonjudgmental inquiries. The interviewees were advised that they might leave at any time if the situation did not seem comfortable, and that a new date would be arranged if that was feasible. To protect them from

exploitation, participants would not be coerced into circumstances for which they were unprepared. The respondent received a thorough explanation of the study methodology prior to the interview. Participants in the research were told that while there would be no immediate advantages to their involvement, the data collected will help policymakers and medical professionals create policies that would enhance the health-related quality of life for primary caregivers of cancer patients.

3.13.2 Respect for Human Dignity

Both the right to full disclosure and the right to self-determination are ethical ideals that uphold human dignity. Study participants were allowed to ask questions as well as freely decide whether or not to engage in the research without worrying about consequences. To exercise their right to free will and informed consent on their involvement in the study, they need complete information. This was covered in detail in the informed consent form that was completed prior to the interview.

3.13.3 Equitableness

This idea encompasses both the right to privacy and the right to fair treatment. In order to guarantee fair treatment, the study carried out a non-discriminatory participant selection process, followed established protocols, provided participants with the researcher's contact information for any questions they may have at any point during the study, and promised to treat them with respect and courtesy at all times. By putting codes on the questionnaire instead of respondents' names, anonymity was preserved, upholding their right to privacy. As a result, the data remained anonymous and the informants remained unidentifiable. The lead investigator was the only one with the key to unlock the completed questionnaires, which were securely stored.

3.13.4 Preserving Confidentiality

Respondents were protected by having their information kept private. This study ensured the privacy of the information gathered. Instead of a name or other identifying information, each participant was assigned an identification number. Every research assistant who interacted with study data signed a confidentiality agreement. The completed surveys were kept confidential and only the lead investigator, interviewers, and data reviewers had access to them. No one else was given access to the material without authorization.

3.13.5 Conscious Consent

The four components of informed consent were applied: giving participants the freedom to exit the study at any time without consequence, understanding the content, understanding the research, and willingly taking part in it..

CHAPTER FOUR

RESULTS

4.0 Overview

The study looked at main caregivers of cancer patients in Kakamega County to find indicators of health-related quality of life. In the study, both descriptive and inferential statistics were employed. The frequency distributions, means, and standard deviations are among the descriptive statistics that were employed. Multiple regressions and Pearson correlation were utilized in the study's inferential statistics.

4.1 Socio-demographic information of caregivers

Four hundred and twenty-two cancer patient caregivers were eligible for the study and all their questionnaires were fully completed and analysed giving 100% response rate. The profiles of the caregivers are presented in Table 4.1. One-third (33.6%) were in the age group of 25 – 34 years with a mean age of 38.7 ± 11.7 (SD) ranging between 19 – 89 years. Over half (62.1%) were women, 39.3% had attained secondary education, most were married (66.6%), majority being rural residents (93.4%). Slightly more than half (53.1%) were farmers, majority were Christians (94.3%) and more than a third (36.7%) had an income of between KSh. 5000 – 9999.

Table 4. 1: Socio-demographic information of caregivers

Variables	Categories	n	%
Age group in years	15 – 24	29	6.9
	25 – 34	142	33.6
	35 – 44	124	29.4
	45 – 54	88	20.9
	≥ 55	39	9.2
Mean age ± SD (Range)		38.7 ± 11.7 (19.0 – 89.0)	
Gender	Male	160	37.9
	Female	262	62.1
Level of education	None	31	7.3
	Primary	80	19.0
	Secondary	166	39.3
	Tertiary	145	34.4
Marital status	Single	107	25.4
	Married	281	66.6
	Divorced	9	2.1
	Widow	25	5.9
Type of area of residence	Urban	28	6.6
	Rural	394	93.4
Occupation	Housewife	14	3.3
	Farmer	224	53.1
	Casual	42	9.9
	Employed	108	25.6
	Unemployed	28	6.6
	Other	6	1.4

Religion	Christian	398	94.3
	Muslim	20	4.7
	Other	4	1.0
Income	< 5000	78	18.5
	5000 – 9999	155	36.7
	10,000 – 14,999	90	21.3
	≥ 15,000	99	23.5

Eight Focus group discussions (FGDs) were conducted, eight focus group discussions with participants implying each FGD has seven discussants. There were nine distinct caregivers, mothers, husbands, sisters, fathers, wives, children, daughters, brothers and mother in laws. Further, the study identified 8 distinct type of cancers, cervical and Oesophageal accounting 17.4% each, breast, liver, lung and prostate accounting 13.0% while stomach cancer accounted for 8.7% and ovarian accounted for 4.3%. Preliminaries results indicated that care givers offered all kind of support to their cancer patients. One of the respondents in Focus Group Discussion I said that:

> "*With me I do take care of her but at least I get assistance from my siblings but when it comes to her medication, I do it personally from administration of drugs, bringing her to hospital, taking her for investigations even if it means outside the county and I tell you it needs commitment*"

4.1.1 Place of Residence

An equal proportion (11.6%) was residents of Butere, Matungu and Shinyalu sub-counties in Kakamega County (Figure 4.1). Less than 10% were from Vihiga and Uasin Gishu counties.

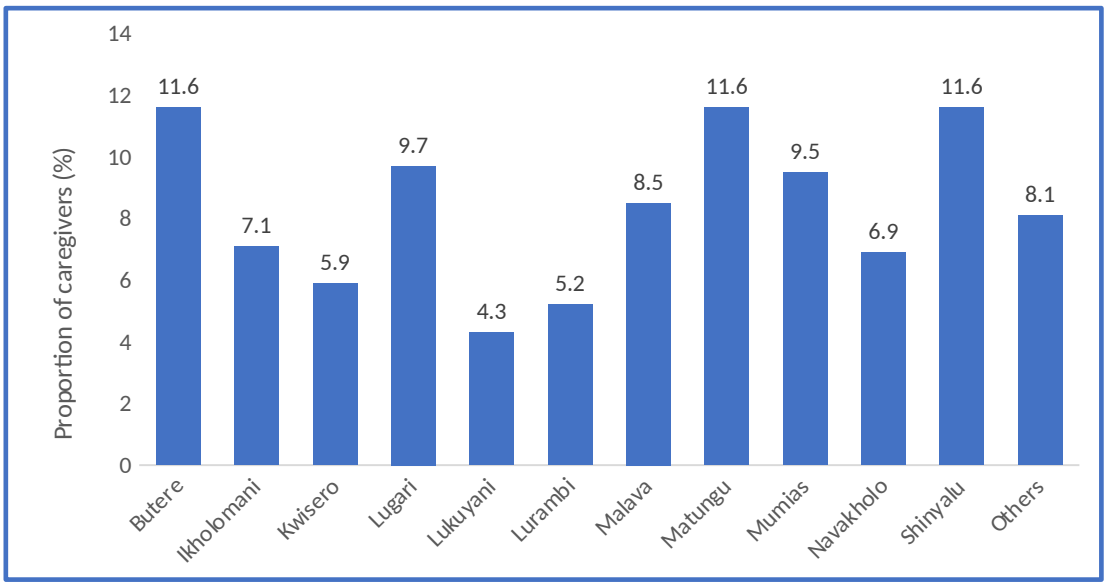

Figure 4. 1: Place of Residence

4.1.2 Caregiver's information about family cancer history and current care provided

Table 4.2 presents caregiver's information on family cancer history. About half (48.6%) were patient siblings and other significant others this was followed by 43.6% who were spouses with less than 10% being mothers (6.6%) or fathers (1.2%). Majority had heard of cancer before the patient was diagnosed with cancer (96.2%) most of whom perceived cancer as a serious disease (91.5%) and severe (97.4%). Only 13.7% had had a member of the family having had cancer. Most of the caregivers spent

6 – 12 hours daily caring for their patient (71.3%) with another quarter (25.6%) spending more than 12 hours. More than three-quarters (79.9%) were also supported by others for care provision. More than 59.7% reported other family members suffering for other chronic illnesses.

Generally, 58.5% of the caregivers had a positive attitude towards the disease with a smaller proportion (16.3%) fully understanding the disease. Over half (54.7%) reported their patients having had the disease from between 4 months and 2 years with an overwhelming majority (96.2%) being still on treatment.

On average, each household had four members ranging between 1 – 9 and over half (54%) having between 4 – 5 members. More than three-quarters (78%) lived in house with 3 to 4 rooms.

Table 4. 2: Caregiver's information about family cancer history and current care provided

Variables	Categories	n	%
Relationship to patient	Mother	28	6.6
	Father	5	1.2
	Spouse	184	43.6
	Sibling, Other	205	48.6
Ever heard of cancer before the patient was diagnosed with cancer	Yes	406	96.2
	No	16	3.8
Is cancer a serious disease	Yes	386	91.5
	No	36	8.5
Perceived severity of the disease	Mild	3	0.7
	Moderate	8	1.9
	Severe	411	97.4
Other family members have had cancer	Yes	58	13.7
	No	364	86.3
Daily care time in hours	< 6	13	3.1
	6 – 12	301	71.3
	> 12	108	25.6
Others help with care	Yes	337	79.9
	No	85	20.1
Other family members with chronic illness	Yes	252	59.7
	No	170	40.3
Care giver attitude towards the disease	Positive	247	58.5
	Negative	175	41.5
Caregiver's understanding of the	Fully	69	16.3

disease			
	Partially	353	83.6
Duration patient has had the	0 – 3 months	15	3.6
disease	4 months – 2 years	231	54.7
	> 2 years	176	41.7
Treatment options	Still on treatment	406	96.2
	Untreated	16	3.8
Mean number of household members (Range)		4.2 (1 – 9)	
Number of household members	1	14	3.3
	2 - 3	102	24.2
	4 - 5	228	54.0
	≥ 6	78	18.5
Number of rooms	1 - 2	37	8.8
	3 - 4	329	78.0
	≥ 5	56	13.3

4.1.3 Socio-economic factor's influence on health-related quality of life of primary caregivers of cancer patients

Table 4.3 shows results on the impact of socioeconomic variables on the health-related quality of life of cancer patients' carers, Higher satisfaction scores were correlated with younger age groups (less than 35 years old).

with their health ($\bar{X}$ = 40.9; p = 0.02) Males enjoyed higher mean scores on HRQOL in the three sub-domains that is social, psychological and environmental except on physical sub-domain where the association had borderline statistically significant

results (p = 0.07). Males compared to females presented with significantly higher mean scores on psychological ($\bar{X}$ = 56.7; p = 0.006), social relationship ($\bar{X}$ = 21.2; p = 0.004) and environment ($\bar{X}$ = 73.4; p < 0.0001). Equally, their mean score on perceived quality of life ($\bar{X}$ = 37.7; p 0.007) and level of satisfaction with health ($\bar{X}$ = 41.5; p = 0.01) was relatively higher than that of females. On the other hand, caregivers with secondary or tertiary education compared with their counterparts with none or primary education, had lower mean level of satisfaction with health ($\bar{X}$ = 34.9, p = 0.005), physical ($\bar{X}$ = 53.3, p = 0.0006), social relationship ($\bar{X}$ = 18.9, p = 0.04) and environment ($\bar{X}$ = 66.4, p = 0.003) score. Caregivers who were single, divorced or widowed got lower mean score on HRQOL under environment sub-scale ($\bar{X}$ = 67.0, 0.002) as opposed to those who were married. Living in rural area resulted in higher mean scores on HRQOL on perceived QOL ($\bar{X}$ = 36.2, p = 0.004) and psychological ($\bar{X}$ = 55.2, p = 0.008) sub-scales but lower scores under physical sub-domain ($\bar{X}$ = 57.1, p = 0.009). Being employed was statistically associated with higher mean scores on physical, ($\bar{X}$ = 64.2, p < 0.0001) psychological ($\bar{X}$ = 58.7, p = 0.0001), social relationship ($\bar{X}$ = 22.0, p 0.0005) and environment ($\bar{X}$ = 75.0, p < 0.0001) HRQOL. Those who were Christians had lower mean scores level of satisfaction with health ($\bar{X}$ = 38.1, p 0.02) compared to non-Christians. Caregivers earning less than KSh 10,000 per months were significantly associated with poor HRQoL on their perceived QoL ($\bar{X}$ = 34.2, p 0.01), satisfaction with health ($\bar{X}$ = 37.0, p = 0.01) and all the four sub-domains of HRQOL (p < 0.0001). Number of household members did not yield significant association with HRQOL in all the areas assessed. However, having fewer number of rooms (1 – 2) was statistically related to lower means scores in perceived quality of life ($\bar{X}$ = 29.2, p 0.0005), level of

satisfaction with health ($\bar{X}$ = 33.5, p = 0.01), physical ($\bar{X}$ = 52.4, p 0.04), psychological ($\bar{X}$ = 48.3, p = 0.0002) and environment ($\bar{X}$ = 64.3, p 0.02) sub-domains of HRQOL.

Table 4.3: Socio-economic factor's influence on health-related quality of life of primary caregivers of cancer patients

Variable	Categories	n	QoL	Satisfaction	Physical	Psychological	Social relationship	Environment
			$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$
Age group in years	< 35	171	36.9	40.9	57.7	55.2	19.9	69.0
	≥ 35	251	34.9	37.1	57.5	54.6	20.0	70.1
	P value		0.10	**0.02**	0.92	0.68	0.54	0.55
Gender	Male	262	37.7	41.5	60.0	56.7	21.2	73.4
	Female	160	34.5	36.9	56.1	53.7	19.2	67.3
	P value	262	**0.007**	**0.01**	**0.07**	**0.006**	**0.004**	**< 0.0001**
Level of education	Secondary / Tertiary	311	33.5	34.9	53.3	53.7	18.9	66.4
	None / Primary	111	36.6	40.0	59.1	55.3	20.4	70.8
	P value		0.07	**0.005**	**0.0006**	0.33	**0.04**	**0.003**
Marital status	Single / Others	141	35.5	38.7	56.7	54.8	19.3	67.0
	Married	281	36.4	38.6	58.0	54.9	20.4	71.0
	P value		0.59	0.91	0.78	0.96	0.14	**0.002**
Type of	Rural	39	36.2	38.9	57.1	55.2	19.9	69.6

area of		4						
residenc	Urban	28	29.3	35.7	63.3	49.4	21.0	70.0
e	P value		**0.00**	0.13	**0.009**	**0.008**	0.22	0.65
			4					
Occupati	Employ	10	35.4	39.6	64.2	58.7	22.0	75.0
on	ed	8						
	Others	31	36.8	38.3	55.3	53.6	19.3	67.8
		4						
	P value		0.39	0.59	<	**0.0001**	**0.0005**	< **0.0001**
					0.0001			
Religion	Christia	39	35.6	38.1	57.3	55.1	20.1	69.8
	ns	8						
	Others	24	38.3	48.3	62.2	51.5	19.2	67.0
	P value		0.48	**0.02**	0.07	0.12	0.69	0.44
Income	<	23	34.2	37.0	53.5	52.1	18.7	66.3
in KSh	10,000	3						
	≥	18	37.7	40.7	62.5	58.2	21.6	73.8
	10,000	9						
	P value		**0.01**	**0.01**	<	< **0.0001**	< **0.0001**	< **0.0001**
					0.0001			
Number	< 4	11	37.9	38.1	58.0	54.7	20.5	69.0
of		6						
househol	≥ 4	30	34.9	38.9	57.4	54.9	19.8	69.9
d		6						
members	P value		0.22	0.61	0.96	0.72	0.22	0.59
Number	1 – 2	37	29.2	33.5	52.4	48.3	18.6	64.3
of rooms	≥ 3	38	36.4	39.2	58.0	55.5	20.1	70.1
		5						
	P value		**0.00**	**0.01**	**0.04**	**0.0002**	0.32	**0.02**

05

4.1.4 Family support's influence on health-related quality of life of primary caregivers of cancer patients

Table 4.4 shows survey findings on influence of family support on HRQL of caregiver of cancer patients in the study area. Caregivers who were being supported by other family members in care provision and whose daily care time was less than 12 hours received higher mean score in satisfaction with health ($\bar{X}$ = 39.2, p = 0.01; $\bar{X}$ = 39.6, p = 0.006), social relationship ($\bar{X}$ = 20.3, p = 0.04; $\bar{X}$ = 20.7, p = 0.0002) and environment ($\bar{X}$ = 70.4, p = 0.004; $\bar{X}$ = 70.6, p 0.003), the relationship being statistically significant. In addition, those providing daily care for less than 12 hours also registered better HRQL in their perception of quality of life ($\bar{X}$ = 37.1, p = 0.0002) and psychological ($\bar{X}$ = 55.7, p 0.006) sub-domains. On the contrary, caregivers who were spouses had significantly lower mean score on physical sub-scale ($\bar{X}$ = 56.3, p = 0.03) on HRQOL. The same has been confirmed by several studies (Barben, Jérémy, *et al.*, 2023)) that social support, such as support from friends and family, can have a positive impact on caregivers' mental HRQOL. A plausible explanation for this finding is that when there are more family members, they are better able to offer emotional support to caregivers, which lowers their psychological stress.

Table 4. 4: Family support's influence on health-related quality of life of primary caregivers of cancer patients

Variable	**Categories**	**N**	**QoL**	**Satisfaction**	**Physical**	**Psychological**	**Social relationship**	**Environment**
			$\bar{x}$	$\bar{x}$	$\bar{x}$	$\bar{x}$	$\bar{x}$	$\bar{x}$
Relationship to patient	Spouse	184	35.5	37.7	56.3	54.8	19.7	70.4
	Mother, Father, etc	238	35.9	39.4	58.6	54.9	20.2	69.1
	P value		0.74	0.24	**0.03**	0.87	0.88	0.55
Other family members also provide care	Yes	337	35.8	39.2	57.2	54.9	20.3	70.4
	No	85	35.3	36.7	59.0	54.9	18.7	66.3
	P value		0.30	**0.01**	0.09	0.94	**0.04**	**0.004**
Care giver attitude towards	Positive	247	36.4	38.8	58.5	55.2	20.2	70.0
	Negative	17	34.7	38.5	56.2	54.4	19.8	69.1

the		5						
disease	P value		**0**.33	0.85	**0.07**	0.52	**0.26**	0.79
Daily	≤ 12	3	37.1	39.6	58.1	55.7	20.7	70.6
care		1						
time in		4						
hours	> 12	1	31.7	35.9	55.9	52.5	18.0	66.8
		0						
		8						
	P value		**0.00**	**0.006**	**0.15**	**0.006**	**0.0002**	**0.003**
			02					

4.1.5 Caregiver's knowledge on cancer and its influence on health-related quality of life of primary caregivers of cancer patients

As displayed in Table 4.5, having heard of cancer before patient was diagnosed with cancer ($\bar{X}$ = 39.1, p = 0.003) and patient having had the disease for two years or less since diagnosed, ($\bar{X}$ = 40.0, p = 0.003) was related to higher mean level of satisfaction scores. Duration patient has had the disease was also associated with higher scores on caregiver's perceived quality of life ($\bar{X}$ = 37.7, p = 32.9). Perception that cancer is a serious disease resulted in higher mean score on psychological sub-domain ($\bar{X}$ = 55.9, p < 0.0001) while caregiver's fully understanding of the disease was significantly associated with higher mean score on the physical sub-domain ($\bar{X}$ = 60.8, p = 0.02) compared to those who partially understood the disease.

Results also show that other family members having had cancer ($\bar{X}$ = 32.4, p = 0.05), caregiver's full understanding of the disease ($\bar{X}$ = 33.6, p = 0.02) and patient being still on treatment ($\bar{X}$ = 35.1, p = 0.0009) were associated with lower mean scores on caregiver's perceived quality of life. Other family members having chronic illness ($\bar{X}$ = 35.5, p < 0.0001) and caregiver's understanding fully the disease ($\bar{X}$ = 34.2, p = 0.001) negatively influenced level of satisfaction with health resulting in lower mean score. The former was also negatively associated with lower mean physical score ($\bar{X}$ = 54.6, p < 0.0001). Under environment sub-scale, lower mean scores were reported caregiver perceived cancer as serious ($\bar{X}$ = 69.2, p = 0.02) and where other family members had had cancer before ($\bar{X}$ = 65.7, p = 0.02).

Table 4. 5: Caregiver's knowledge on cancer and its influence health-related quality of life of primary caregivers of cancer patients

Variable	Categories	N	QoL	Satisfaction	Physical	Psychological	Social relationship	Environment
			$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$
Heard of cancer before patient diagnosed with cancer	Yes	406	35.6	39.1	57.5	55.1	19.0	69.6
	No	16	40.0	28.7	58.0	50.0	21.7	69.5
	P value		0.58	**0.003**	0.94	**0.07**	0.61	0.82
Cancer is a serious disease	Yes	386	35.7	38.5	57.8	55.9	19.9	69.2
	No	36	35.6	40.0	55.1	44.0	21.1	73.7
	P value		0.95	0.98	0.29	**< 0.0001**	0.24	**0.02**
Cancer severity	Severe	411	35.8	38.6	57.6	55.0	20.0	69.6
	Mild, Moderate	11	34.5	41.8	54.9	50.5	20.0	71.3
	P value		0.93	0.91	0.63	0.26	0.78	0.67
Other family member has had cancer	Yes	58	32.4	40.0	60.6	54.2	18.9	65.7
	No	364	36.3	38.5	57.1	55.0	20.2	70.3
	P value		**0.05**	0.99	**0.03**	0.54	0.28	**0.02**

Other family members have chronic illness	Yes	252	35.2	35.5	54.6	54.1	19.9	69.3
	No	170	36.5	43.4	61.9	56.0	20.1	70.1
	P value		**0.17**	**< 0.0001**	**< 0.0001**	**0.15**	0.81	0.92
Caregiver's understanding of the disease	Fully	69	33.6	34.2	60.8	53.9	19.3	68.3
	Partially	353	36.1	39.5	56.9	55.1	20.1	69.9
	P value		**0.02**	**0.001**	**0.02**	0.26	0.25	0.36
Duration patient has had the disease	0 -2 years	246	37.7	40.0	57.7	55.1	20.2	70.6
	> 2 years	176	32.9	36.8	57.3	54.5	19.7	68.3
	P value		**0.0002**	**0.003**	0.56	0.31	0.40	0.13
Treatment options	Still on treatment	406	35.1	38.7	57.6	54.9	20.0	69.5
	Untreated	16	52.5	37.5	57.8	53.7	19.5	72.0
	P value		**0.0009**	0.99	0.71	0.78	0.97	0.35

In relation to information seeking, the discussants sought information about cancer from various sources which are not limited to health care providers, internet, family and friends. The information mostly sought after are information on various management of cancer, side effects of the various types of management. One of the respondents further said that "*The most common thing that I usually look for in an interest is where cancer came from and if there is a drug that can completely treat cancer and especially breast canc*er". One of the discussant indicated that:

> "*I do get information about cancer from the internet and how the hospital could organize some lessons for us the caregivers on how to take care of the cancer patients because like me, I found myself in this without any knowledge on how to take care of my husband leave alone taking care of myself."*

However, not all care givers trust and got their information from the internet. Two of the discussants indicated that they rely on health care provider for any information pertaining their patients. One of the discussants stated that:

> *"About information seeking, I only trust the one I get from the medical team, I have never tried internet because I don't know anything about it. I don't trust information given to me by word of mouth from peers or friends because most of the time they mislead people. My children also advice accordingly and I trust their input in the management of their sister but any other source of information from anyone apart from medical team and my children, I don't trust."*

The study also sought to find out information regarding healthcare information from the discussants. The results revealed that health care provider communicated with the care givers although the communication was not consistent. The researcher noted that communication is very key in management of cancer patients. One of the respondents stated that:

> *"what I have learned during this period that I have nursed my husband is that the most important people to communicate with about my husband's illness are the medical team, those are the once with first-hand information about my husband. Other people can at times mislead you because there was time a friend introduced me to a herbalist who made me almost lose my husband because he became worse than before. The only problem with the medical team is that you have to ask or prompt to get more information about the patient's progress, though they are very friendly but they are overwhelmed because we are many compared to the few providers available."*

Health care communication is important for the care givers since it improves their quality of life. The results revealed that healthcare communication especially with the healthcare providers is closely associated with social relationship and psychological support. Communication with family member has also been associated better quality of life. This was supported by one of the respondents who said that; "*In our family since mother started ailing we have really embraced communication. This communication has made the burden bearable amongst the family members*" However, one of the discussants had contrary opinion as indicated below.

"I feel that my brother's health information is safe with the immediate family members and the health care team. At times, we share the health information with our church pastors and other few ordained servants of God, we don't like sharing with other people because we need people who are contributing positively, and they worsen the situation spreading false information about the illness."

4.1.6 Multiple regression analysis on Socio-Demographic Information of Caregivers associated with health-related quality of life

Table 4.6 displays HRQL predictors. Regression models were constructed using the variables that were found using the Kruskall Wallis statistics. After adjusting for other confounding variables in the multivariate model, the gender of the caregiver did not substantially correlate with any of the four sub-scales of HRQOL among the sociodemographic characteristics included in the regression model. The model found a positive correlation between the marital status of the caregiver and the environmental sub-scales of HRQOL ($\beta = 3.216$, $p = 0.043$). The caregiver's residence had a favorable correlation with psychological well-being ($\beta = 4.624$, $p = 0.005$). A profession that was categorized as employed as opposed to other occupations was positively correlated with the environment ($\beta = 4.3874$, $p = 0.011$), psychological ($\beta = 2.764$, $p = 0.016$), and physical ($\beta = 4.398$, $p = 0.043$). Physical ($\beta = -2.641$, $p = 0.043$) and psychological ($\beta = -2.156$, $p = 0.027$) factors were inversely correlated with income. Caregiver awareness of

Table 4. 6: Multiple regression analysis on Socio-Demographic Information of Caregivers associated with health-related quality of life

Predicto	Physical	Psychological	Social	Environment

rs							relationship					
	Adj β	**T**	**P**	**Adj β**	**T**	**P**	**Adj β**	**T**	**p**	**Adj β**	**T**	**p**
Gender of caregiver: Male vs Female	-0.123	-0.10	0.919	1.362	1.51	0.132	0.833	1.243	0.214	2.552	1.78	0.061
Caregiver: Married vs Single, etc	1.998	1.42	0.158	-0.434	-0.41	-0.681	0.754	0.963	0.336	3.216	2.03	**0.043**
Residence: Rural vs urban	-4.071	-1.85	0.066	4.624	2.81	**0.005**	-2.181	-1.791	0.075	-1.603	-0.65	0.518
Occupation: Employed vs Others	4.398	2.89	**0.004**	2.764	2.43	**0.016**	1.334	1.584	0.115	4.387	2.56	**0.011**
Income: < 10,000 vs ≥ 10,000	-2.641	-2.03	**0.043**	-2.156	-2.22	**0.027**	-0.946	-1.319	0.191	-2.576	-1.76	0.079
Cancer a serious	3.037	1.60	0.120	12.162	8.61	**<0.001**	-0.376	-0.31	0.761	-4.397	-2.03	**0.039**

disease:						**001**	5	6			7	
Yes vs												
No												
Other	-1.400	-	0.396	-	-	0.2	-	-	**0.02**	-	-	**0.004**
family		0.8		1.5	1.	09	2.08	2.2	**2**	5.386	2.9	
member		5		41	26		4	9			2	
s have												
cancer:												
Yes vs												
No												
Other	-2.387	-	0.084	-	-	0.1	1.58	2.0	**0.03**	2.618	1.6	0.092
family		1.7		1.3	1.	77	9	8	**8**		9	
member		3		91	35							
s help												
with												
care: Yes												
vs No												
Other	-5.287	-	<	-	-	0.1	0.27	0.4	0.66	-	-	0.798
family		4.4	**0.000**	1.3	1.	24	9	3	8	0.339	0.2	
member		9	**1**	52	54						6	
s have												
chronic												
illness:												
Yes vs												
No												

4.2 To determine the patient factors associated with HRQoL among primary caregivers of cancer patients in Kakamega County

4.2.1 Patient socio-demographic characteristics

Table 4.7 shows results on patient characteristics. A comparable proportion of patients aged 35 – 44 (28%) and 45 – 54 (27.5%) years and a mean age of 49.9 ± 11.8 (SD) years ranging from 10 to 99 years. More than half (56.6%) were females, married (68.2%) with more than a third (35.1%) having completed secondary education most whom were farmers (50.2%).

Table 4. 7: Patient socio-demographic characteristics

Variables	Categories	n	%
Age group in years	< 25	3	0.7
	25 – 34	29	6.9
	35 – 44	118	28.0
	45 – 54	116	27.5
	≥ 55	156	37.0
Mean age ± SD (Range)		49.9 ± 11.8 (10.0 – 99.0)	
Gender	Male	183	43.4
	Female	239	56.6
Marital status	Single	34	8.1
	Married	288	68.2
	Divorced	24	5.7
	Widow	76	18.0
Level of education	None	63	14.9
	Primary	109	25.8
	Secondary	148	35.1
	Tertiary	102	24.2

Occupation	Housewife	19	4.5
	Farmer	212	50.2
	Casual	9	2.1
	Employed	86	20.4
	Unemployed	96	22.7

4.2.2 Patient's medical History

Table 4.8 reveals results on patient disease information. Over half (54.7%) had had the disease for at least 1 year since diagnosed and another 40.3% having had it for two years. Two-thirds (66.6%) were in stage 4 with almost all having been on chemotherapy (99.5%). All had had CT Scan with an equally higher proportion (98.6%) having had biopsy done. Overall, all had spent over KSh. 100,000 on treatment. Majority of the patients had the following complications as a result of the disease: hair loss (98.3%), anaemia (97.9%), nausea and vomiting (95.3%) and body weakness (98.6%).

Table 4. 8: Patient's medical History

Variables	**Categories**	**n**	**%**
Number of years since	0 -1	231	54.7
diagnosed	2	170	403
	≥ 3	21	5.0
Stage of cancer	1	6	1.4
	2	21	5.0

	3	114	27.0
	4	281	66.6
Mode of treatment	Surgical	374	88.6
	Chemotherapy	420	99.5
	Radiation	302	71.6
Tests done	CT scan	422	100.0
	Biopsy	416	98.6
	Ultrasound	310	73.4
	Tumour analysis	124	29.4
Cost of treatment in KSh.	> 100,000	422	100.0
Complications due to cancer	Hair loss	415	98.3
	Anaemia	413	97.9
	Nausea and vomiting	402	95.3
	Body weakness	416	98.6

4.2.3 Type of cancer

Figure 4.2 illustrates type of cancer that patients presented with. The top three were oesophageal (26.1%), breast (23.7%) and prostate (13.3%) cancer. Of the 110 with oesophageal cancer 69.1% were males. Males were also leading number of those presenting with lung cancer (77.8%, n = 18), stomach cancer (78.9%, n = 19), colon cancer (90%, n = 10) and bone cancer (100%, n = 9). The least common types of cancer were leukemia (0.7%), skin cancer (0.5%) and liver cancer (0.5%), the two latter cases being males.

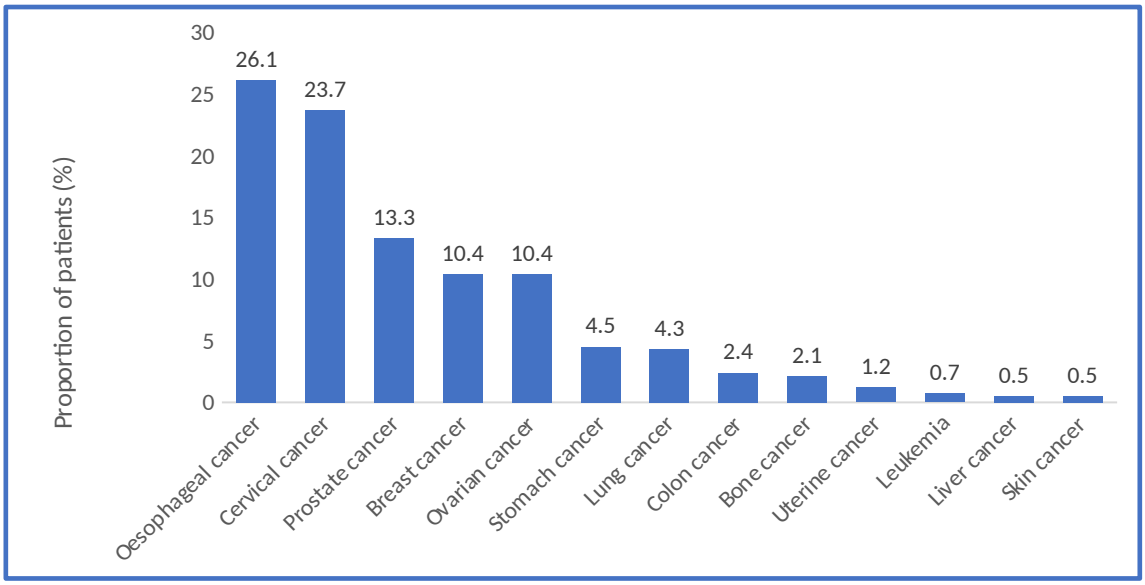

Figure 4. 2: Type of cancer

4.2.4 Patient factor's influence on health-related quality of life of primary caregivers of cancer patients

Table 4.9 depicts study findings on the influence of patient factors on HRQOL of caregivers for cancer patients. Caregivers who had patients who were on radiation ($\bar{X}$ = 36.9, p = 0.006) reported higher mean score on perceived quality of life. On

physical sub-scale higher mean scores were associated with younger patients (< 35 years) ($\bar{X}$ = 62.9, p = 0.01) and those in stage 1, 2 or 3 ($\bar{X}$ = 58.3, p = 0.05). Higher mean scores on psychological sub-scale were significantly associated with younger patients (< 35 years) ($\bar{X}$ =58.6, p = 0.03) and those who were on radiation mode of treatment ($\bar{X}$ = 55.6, p = 0.03, this findings was contradicting According to a Korean study by Choi et al. (2015), younger patients result in a higher care load, which lowers family caregivers' quality of life. The reduction in function, degree of independence, and stress levels experienced by patients are factors that influence the quality of family caregivers.

There was negative association between male gender ($\bar{X}$ = 34.1, p = 0.03), cancer stage of 1 – 3 ($\bar{X}$ = 33.9, p = 0.02) and caregiver's perceived quality of life as indicated by comparatively lower mean scores. As regards caregiver's level of satisfaction, patients secondary / tertiary level of education ($\bar{X}$ = 37.1, p = 0.02) and patient being employed ($\bar{X}$ = 35.8, p = 0.04) were associated with lower mean scores, the relationship being statistically significant. Being male ($\bar{X}$ = 56.3, p = 0.03) was associated with lower HRQOL mean score on the physical sub-scale. Similarly, where tumour analysis test was done on a patient ($\bar{X}$ = 19.0, p = 0.03), posted lower means scores social relationship suggesting poor performance on HRQOL on that sub-scale.

None of patient factors assessed had any statistically significant association with environment sub-scale. In the same manner none of the different types of cancer yielded any statistically significant association with any of the HRQOL sub-scales.

Table 4. 9: Patients factor's influence on health-related quality of life of primary caregivers of cancer patients

Variable	Categories	N	QoL	Satisfaction	Physical	Psychological	Social relationship	Environment
			$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$
Age group in years	< 35	32	35.0	39.4	62.6	58.6	21.4	70.5
	≥ 35	390	35.8	38.6	57.1	54.6	19.9	69.6
	P value		0.58	0.82	**0.01**	**0.03**	0.29	0.71
Gender	Male	183	34.1	38.0	56.3	54.7	20.0	69.3
	Female	239	37.0	39.2	58.5	55.0	20.0	69.9
	P value		**0.03**	0.71	**0.03**	0.83	0.72	0.83
Marital status	Single / Others	134	34.0	39.0	59.2	54.3	20.0	68.3
	Married	288	36.5	38.5	56.8	55.1	20.0	70.0
	P value		**0.07**	0.62	0.13	0.42	0.41	0.23
Level of education	Secondary / Tertiary	250	36.0	37.1	57.3	54.6	20.1	70.0
	None / Primary	172	35.3	40.9	58.0	55.3	19.8	69.0
	P value		0.80	**0.02**	0.77	0.44	0.47	0.60
Occupati	Employed	86	33.9	35.8	59.0	54.8	20.5	68.9
	Others	33	36.2	39.4	57.2	54.9	19.9	69.8

on		6						
	P value		**0.09**	**0.04**	0.48	0.86	0.17	0.47
Cancer	1 – 3	14	33.9	37.0	58.3	53.4	19.1	68.9
stage		1						
	4	28	36.6	39.5	57.2	55.6	20.5	70.0
		1						
	P value		**0.02**	0.22	**0.05**	**0.08**	0.25	0.64
Mode of	Radiation	30	36.9	39.5	57.8	55.6	20.0	69.5
treatmen		2						
t	Others	12	32.8	36.5	57.0	53.0	20.1	70.0
		0						
	P value		**0.00**	0.16	0.58	**0.03**	0.40	0.57
			6					
Tests	Tumour	12	34.5	39.7	57.8	54.5	19.0	69.7
done	analysis	4						
	Others	29	36.2	38.2	57.5	55.0	20.4	69.6
		8						
	P value		0.25	0.56	0.86	0.51	**0.03**	1.00
Type of	Oesophag	11	35.6	38.9	56.8	55.0	20.2	70.0
cancer	eal	0						
	Others	31	35.8	38.6	57.8	54.8	19.9	69.5
		2						
	P value		0.97	0.66	0.22	0.91	0.89	0.79

4.2.5 Multiple regression analysis on Patient factors associated with health-related quality of life

Table 4.10 presents predictors of HRQL. Kruskall Wallis statistics was used to identify variables to include in regression models. Out of the patient factors that were entered into the regression model, only cancer severity was not significantly associated with

any of the four sub-scales of HRQOL after controlling for other confounding factors in the multivariate model. In this model, Mode of treatment which was classified as Radiation vs Surgery and other was positively associated with psychological (β =2.000, p = 0.022). Type of test done classified as Tumour analysis vs Others of life was negatively associated with social relationship (β = -1.360, p = 0.033).

Table 4. 10: Multiple regression analysis on patient factors associated with health-related quality of life

Predictors	**Physical**			**Psychological**			**Social relationship**			**Environment**		
Patient Factors	**Adj β**	**T**	**P**	**Adj β**	**T**	**P**	**Adj β**	**T**	**p**	**Adj β**	**t**	**p**
Mode of treatment: Radiation vs Chemotherapy, etc	1.402	0.46	0.643	2.000	2.29	**0.022**	-0.340	-0.53	0.600	-0.421	-0.32	0.749
Type of test done: Tumour analysis vs Others	-0.595	-0.52	0.604	-0.896	-1.05	0.295	1.360	-2.14	**0.033**	0.517	0.40	0.688
Cancer severity: Severe vs Mild Moderate	4.105	1.22	0.223	1.941	0.77	0.440	0.584	0.31	0.754	-0.004	-0.00	1.000

4.3 To evaluate psychological factors affecting HRQoL among primary caregivers of cancer patients in Kakamega County

4.3.1 Descriptive statistics of variables

Table 4.11 shows results on descriptive statistics on four instruments used in the study. The mean score for Hearth Hope Index was 32.8 ± 2.8 (range: 41.0 – 41.0) out of a maximum score of 48 suggesting higher mean score on Hope Index. However, means scores for depression (19.1 ± 4.7; range: 3.0 – 27.0) and anxiety (17.1 ± 3.6; range; 4.0 – 21.0) were more than half the maximum score for both indicating higher number of caregivers with depression and anxiety. All the four sub-domains of health-related quality of life namely: physical (57.6 ± 14.4; range: 32.0 – 112.0), psychological (54.9 ± 10.7), social relationship (20.0 ± 6.2; range: 12.0 – 48.0) and environment (69.6 ± 13.0; range: 40.0 – 112.0) had mean score of the less than half the maximum score in each sub-scale indicating poor health-related quality of life. The same was true of caregivers' perceived quality of life (35.7 ± 13.5; range: 20.0 – 80.0) and their level of satisfaction with their health (38.7 ± 15.4; range: 20.0 – 100.0) both of which had a mean less than half total expected score.

Table 4. 11: Descriptive statistics of variables

Variable	$\bar{X}$	SD	Minimum	Maximum	Expected Maximum
Hearth Hope Index					
Hope	32.8	2.8	24.0	41.0	48.0
Depression and Anxiety					
Patient Health Questionnaire	19.1	4.7	3.0	27.0	27.0
Generalized Anxiety Disorder	17.1	3.6	4.0	21.0	21.0
Health-related quality of life					
Perceived quality of life	35.7	13.5	20.0	80.0	100.0
Level of satisfaction with health	38.7	15.4	20.0	100.0	100.0
Physical	57.6	14.4	32.0	112	140
Psychological	54.9	10.7	32	88.0	120
Social relationship	20.0	6.2	12.0	48.0	60
Environment	69.6	13.0	40.0	112.0	160

In regards to care giver isolation and care giver social nature, the study established that care givers have been isolated from the rest of the community due to intense nature of taking care of their cancer patients. It was evident the quality of life of all the 56 care givers is negatively affected. This was not limited to physical, spiritual, psychological but also social relationship and environment. They are supposed to accompany their cancer patients to all errands related to their which has not only isolated them, but they have been forced to cut short their participation in socio-economic activities. This was well summarized during FGD 1 by the fourth discussants who stated that:

> "*My husband does not understand the magnitude of my sister's illness, so he married a second wife because most of the time I am taking care of my sister. I miss my family so much but I also have to be with my sister. I no longer attend church, women group or any other leisure activity because my sister needs me so much. Financially I am down. I am a business woman and most of my businesses have collapsed and it is not easy to make ends meet. I am not at peace with my mind, I am always stressed and sometimes I fear that I might lose my sister.*"

This was also reported by Respondents 5 in the second focus group discussion who said that:

> "*The issues affecting care givers include both physical, emotional and social burden and there is no one to help because I started nursing my daughter two years ago and no one has ever talked to us like you are doing today. How I wish someone could be concerned*

about us like you are doing today. At least the hospital could have known our challenges/ problems and may be see how to help us together with our patients."

In the fourth focus group discussion, the sixth discussant stated that

"*as a care giver, we face several issues for instance, since I started taking care of my wife I have had a lot of issues. Psychologically I am not okay, physically my body is worn out and I have developed ulcers and hypertension due to care giving. I have to ensure that children are stable and remain strong for everyone and yet personally I also don't feel okay and I have no one to turn to not even the service providers."*

From the above results, it is clear that sampled care givers have been isolated and this is negatively affecting their quality of life. During the focus group discussion, various discussants brought forward various ways that can address isolation and social nature challenges of the primary care givers of cancer patients. This was well stated by one of the respondents from the second focus group discussion who stated that:

> "*the issues affecting care givers include both physical, emotional and social burden and there is no one to help because I started nursing my daughter two years ago and no one has ever talked to us like you are doing today. How I wish someone could be concerned about us like you are doing today. At least the hospital could have known our challenges/ problems and may be see how to help us together with our patients."*

From the above statement, it is clear that care givers need support but from the results of this study, no support has been accorded to the care givers as must of the support is directed towards their cancer patients. This was evident by one the of the discussant said that "Personally I have never been engaged in any social network, we have social network for cancer patients but not for caretakers". Therefore, all the discussants affirmed that there is need for social support directed towards the giver since caring for cancer patients has negatively affected their quality of life. One of the discussants who took part in this study indicated that:

> "*I wish the hospital could organize for us a support group where we share our challenges and know how to cope with the burden or challenges we face will need to be done for periodic medical examination especially for screening of cancer so that in any case will test positive we can be helped in an earlier stage."*

Respondents six in focus group II stated that

> "*the services that would be helpful for care giver include psychosocial support group for caregivers. At least in this forum we*

can be able to share with others who have the same burden and so will not feel all alone. Secondly, how I wish the financial charges for cancer management could be subsided as this could relieve the financial burden we are facing as care givers.".

4.3.2 Relationship between depression, anxiety and health-related quality of life

As shown in Table 4.13, depression was highly statistically significantly associated with caregiver perceived quality of life ($\bar{X}$ = 34.2, p < 0.0001), level of satisfaction with health ($\bar{X}$ = 35.8, p < 0.0001) and all the four sub-scales (p < 0.0001). In all these outcomes, severe depression posted lowest mean scores suggesting that caregivers who presented with signs suggestive of severe depression performed poorly on HRQOL.

An assessment on relationship between anxiety and HRQOL revealed that statistically significant relationship between anxiety and caregiver perceived quality of life (($\bar{X}$ = 34.2, p = 0.002), level of satisfaction with life, physical and psychological, each having a p < 0.0001). Again, among caregivers presenting with signs suggestive of severe anxiety, the mean scores were relatively lower indicating lower HRQOL. This was however, not the case with social relationship and environment sub-domains which resulted in non-statistically significant outcome.

Table 4. 12: Relationship between depression, anxiety and health-related quality of life

Variable	Categories	N	QoL	Satisfaction	Physical	Psychological	Social relationship	Environment
			$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$
Depression	Normal	2	50.0	50.0	82.0	74.0	32.0	98.0
	Mild	18	51.1	66.7	86.0	74.7	30.0	82.7
	Moderate	46	40.9	49.6	70.3	63.2	21.7	75.0
	Severe	356	34.2	35.8	54.3	52.7	19.2	68.1
	P value		**< 0.0001**	**< 0.0001**	**< 0.0001**	**< 0.0001**	**< 0.0001**	**< 0.0001**
Anxiety	Normal	2	50.0	60.0	92.0	68.0	24.0	82.0
	Mild	17	41.2	50.6	70.6	62.8	25.4	75.5
	Moderate	76	40.5	48.1	66.7	61.3	21.3	73.5
	Severe	327	34.2	35.7	54.5	52.9	19.4	68.4
	P value		**0.002**	**< 0.0001**	**< 0.0001**	**< 0.0001**	0.09	0.07

Table 4.13 The number of caregivers with depression and anxiety

Variable	Categories	N
Depression	Normal	2
	Mild	18
	Moderate	46
	Severe	356
	P value	
Anxiety	Normal	2
	Mild	17
	Moderate	76
	Severe	327
	P value	

4.3.3 Multiple regression analysis on psychological factors associated with health-related quality of life

Table 4.14 presents predictors of HRQL. Kruskall Wallis statistics was used to identify variables to include in regression models. Out of the psychological factors that were entered into the regression model, only hope and anxiety were not significantly associated with any of the four sub-scales of HRQOL after additional confounding variables were taken into account in the multivariate model. Depression was shown to be negatively correlated with the following variables in this model: psychological ($\beta = -0.880$, $p = 0.000$), physical ($\beta = -1.08$, $p = 0.000$), social relationships ($\beta = -0.343$, $p = 0.000$), and environment ($\beta = -0.711$, $p = 0.000$). Perceived quality of life was positively connected with the following factors:

environment (β = 0.218, p = 0.000), social relationship (β = -0.077, p = 0.003), psychological (β = 0.169, p = 0.000), and physical (β = 0.121, p = 0.011). Health satisfaction and physical well-being had a positive correlation (β = 0.200, p = 0.011).

Table 4. 14: Multiple regression analysis on psychological factors associated with health-related quality of life

Psychological factors	Physical			Psychological			Social relationship			Environment		
	Adj B	**T**	**P**	**Adj β**	**T**	**P**	**Adj β**	**T**	**p**	**Adj β**	**t**	**p**
Hope	-0.127	-0.666	0.508	0.267	1.866	0.063	-0.042	-0.40	0.690	0.358	1.666	0.098
Depression	-1.08	-7.070	**<0.0001**	-0.880	-7.665	**<0.0001**	-0.343	-4.032	**<0.0001**	-0.711	-4.111	**<0.0001**
Anxiety	-0.358	-1.85	0.065	-0.189	-1.31	0.192	0.017	0.176	0.873	0.238	1.10	0.274
Perceived quality of life	0.121	2.57	**0.011**	0.169	4.79	**<0.0001**	0.077	2.95	**0.003**	0.218	4.111	**<0.0001**
Being satisfied with one's health	0.200	4.46	**<0.0001**	0.018	0.54	0.588	0.013	0.51	0.610	-0.048	-0.96	0.337

CHAPTER FIVE

DISCUSSION

5.0 Overview

This chapter presents the findings from a research conducted in Kakamega County on the variables influencing the Health-Related Quality of Life of primary caregivers for cancer patients. The chapter is structured into multiple sections, including the following: socioeconomic factors influencing HRQoL among primary caregivers of cancer patients in Kakamega County; the relationship between psychological factors and HRQoL among these caregivers; and patient factors related to HRQoL among these caregivers. inside the County of Kakamega.

5.1 The effect of socioeconomic factors on HRQoL in Kakamega County main caregivers of cancer patients

Compared to their contemporaries, primary caregivers under the age of 35 scored higher on the general life satisfaction scale. Previous research has shown that the age of the caregiver influences the amount of care that they provide (Sezgin et al., 2022). The study's findings may be explained by the fact that health and the perception of quality of life in old age are greatly impacted by aging and the physiological changes that take place in the body. Because aging may be a stressful time in caregivers' life, it can also negatively affect their HRQoL.

..In line with previous research (Waldron, 2022; Stenberg et al., 2020) and the National Family Caregivers Association report (National Family Caregiver Association, 2018), the study found that there were more female caregivers than male caregivers. Men do engage in caring, however women still account for 63% of caregivers, according to the statistics. The outcome might be accounted for by the traditional roles that women fulfill, given that caring for others is their primary duty.

Across the three sub-domains in the present study—social, psychological, and environmental—men had higher mean HRQOL ratings, with the exception of the physical sub-domain, where the connection yielded results that were only marginally statistically significant. Results of a cross-sectional research on the HRQoL of main caregivers for gastrointestinal cancer impacting each of the four sub-domains of their HRQoL. According to Veenstra et al. (2022), the main caregiver may experience financial strain, missed work, and job loss after a family member's cancer diagnosis, all of which might have a detrimental effect on their HRQoL.

According to the present research, compared to caregivers who were married, caregivers who were single, divorced, or widowed had lower mean scores on the HRQOL under the environment sub-scale. This was also verified by Shang-Yu's research from 2021. The fact that married caregivers scored higher because of the assistance they get from their spouses and families may help to explain this. When it came to their degree of happiness with their health, Christians scored lower on average than non-Christians. According to Ying et al. (2021), the Islamic faith helped primary caregivers—who, unlike Christians, were caring for family members with impairments or health issues—manage their own physical and emotional health. Islam's comprehensive teachings in all areas of life include family members' caring duties, and this has improved believers' relationships with their families and relatives. Primary caregivers found it easier to accept their ill relatives when they adopted Islamic religious beliefs, which perceive sick relatives as gifts from God and give them a sense of purpose Asano et al., (2021). The findings might be explained by Christians exacerbating the psychological and spiritual impacts of their situations by seeing them as unfair, unjust, God's wrath, or God's abandonment. and reduced average HRQoL

scores overall

In every region evaluated, there was no significant correlation found between the number of household members and HRQOL. The physical, psychological, and environmental sub-mains of HRQOL, as well as perceived quality of life and degree of health satisfaction, all showed statistically significant declines with fewer rooms (between one and two). Those residing in homes with more than three rooms performed better than their counterparts in the present research. According to Tinson and Clair (2020), 39% of individuals living in overcrowded households exhibited signs of both physical trauma and psychological agony during COVID-19, when people were advised to remain at home. Those who live in small spaces have a bigger influence on their well-being than those who live in secure, spacious houses, claim Mornis et al. (2020). Anxiety increased by 18% due to environmental factors, such as noise pollution from poor housing (Bowel et al., 2021).

5.2 Patient Factors Affecting HRQoL in Kakamega County Primary Caregivers of Cancer Patients

According to Mokhzan et al. (2023), primary caregivers of patients under 35 years old had a higher mean score in the physical and psychological area. The results may be explained by the fact that, in contrast to their younger counterparts who are capable of doing some tasks on their own, elderly patients completely rely on their caregivers for many elements of their care.

Male patient caregivers scored lower on the QoL and physical sub-domain mean scores. This is in line with an Israeli research that found male caregivers for colorectal cancer patients had greater levels of stress than female caregivers (Akpan-Idiok et al., 2020). This may be explained by the fact that, in contrast to their female counterparts,

male patients depended more on external assistance, including acquaintances, while their female counterparts relied more on their spouses. In contrast, Üzar-ÖzçetiŇn et al. (2020) showed that caregivers of male cancer patients had better HRQOL than those of female patients, according to a research done in Thailand. Because of their social position, female patients may feel worried about having to care for others even when they are ill. This sadness may have a detrimental effect on the caregiver's HRQOL. The results of a longitudinal study by Raghupathi (2020) that evaluated the quality of life (QOL) of caregivers of patients with prostate cancer showed that primary caregivers whose patients had only a primary or no education scored higher overall satisfaction with HRQOL than those with higher levels of education. This finding may be explained by the fact that an individual with a poor prognosis for cancer may become more anxious, which would have a detrimental effect on the caregiver. Alternatively, it could be explained by the fact that an individual with higher education will likely acquire more knowledge and skills related to his condition. Poor quality of life and low satisfaction have been observed by primary caregivers of cancer patients who are working. The findings of a research by Tamminga et al., (2022), support this. This conclusion may be explained by the fact that cancer patients stop working as a consequence of exhaustion, nausea, and an unfavorable prognosis after their diagnosis. This gradually lowers the family cash flow, which has a detrimental effect on primary caregivers' HRQoL.

When it came to HRQoL, caregivers of cancer patients in stages 1-3 performed worse than those in stages 4. This was consistent with the results of Mwangi's research from 2022. This discovery may help to explain why patients first suffer treatment-related side effects such headache, tiredness, nausea, and dizziness soon after being diagnosed. Primary caregivers have a worse HRQoL as a consequence of the intensity

of the patient's symptoms and behavioral abnormalities, which places a bigger "burden" on them. Cancer alters the lives of patients and those close to them, resulting in unpleasant social and spiritual experiences, physical and psychological distress, and other undesirable outcomes (Avancini et al., 2020). Following a cancer diagnosis, patients must manage not only the physical side effects of the disease and its treatment, but also long-term health impairment, disability, weariness, and pain, all of which have an impact on the health-related quality of life (HRQoL) of those who are their main caregivers. Cohabiting with the patient and having low patient performance status are similarly linked to low caregiver HRQoL (Adele et al., 2019).

The mean perceived quality of life score was greater among caregivers whose patients were receiving radiation therapy. Higher mean scores on the psychological sub-scale were substantially correlated with radiation therapy patients, according to a research by Lawrie, Theresa A., et al. (2019). This may be explained by the fact that chemotherapy causes the patient to experience severe side effects by killing or eliminating cancer cells throughout the body, not only at the original location. In contrast, radiation therapy involves the direct application of large doses of radiation beams into a tumor. The tumor shrinks or dies as a result of the radiation beams altering its DNA. Since this kind of cancer treatment only affects one part of the body, it has less adverse effects than chemotherapy.

Numerous tests were performed on cancer patients, and the findings showed that those who had tumor analysis were doing badly in the social area (Belapurka et al., 2023). The results of the research may be explained by the fact that primary caregivers' quality of life declines, particularly in their social domain, as a result of the pain and stress that cancer patients endure before and after surgery. The financial load that comes with the anticipated long-term therapy after receiving a cancer diagnosis may be upsetting for

patients.

5.3 Knowledge of caregivers and how it affects the health-related quality of life of cancer patients' main caregivers

Caregivers who were aware of cancer before their patients received a cancer diagnosis reported higher levels of overall life satisfaction. Primary caregivers have higher levels of stress and worry when they are not informed about cancer before a diagnosis is made (McCarthy, 2011). According to the author, family caregivers who have never heard of cancer have a tendency to put their own health last, in contrast to those who have. Being able to provide for their patients enhances their general sense of well-being. Additionally, reports indicate a statistically significant relationship between primary caregivers' HRQOL and the psychological and environmental sub-domains, particularly with respect to caregivers who saw cancer as a severe illness. The outcomes are comparable to those of a Turkish research by Kilic and Fatma (2018) on patients with general cancer. They claimed that, regardless of the kind of disease, receiving a cancer diagnosis alone results in multifaceted stressors that lower primary caregivers' HRQol.

The results also showed that caregivers who had a family history of cancer performed poorly in the environmental area but better in the physical domain. According to Liu's (2014) research, caregivers for cancer patients who had prior cancer diagnoses in their family tended to be considerably stronger than those who had no family history of the disease. This may be the case since the caregivers in question have already developed a coping strategy.

Conversely, caregivers with long-term conditions performed badly on the physical and psychological sub-domains of HRQOL, which measures total life satisfaction. According to (Kilic, S. T., & Oz, F.) (2019), main caregivers with chronic diseases

scored worse on the satisfaction scale since their health prevented them from providing care for the cancer patient. Giving care is a big job in and of itself, thus being in a state that makes it difficult to provide care would inevitably cause stress and lower the main caregivers' HRQoL (Jadalla, Ahlam, et al., 2020). Caregivers with a thorough understanding of cancer performed better in the physical realm but showed lower levels of overall life satisfaction. A primary caregiver who is knowledgeable about the disease, how to manage the illness, available treatment options, and potential side effects would be less afraid of the unknown and be better able to handle the burnout that comes with providing care, which will improve their performance in the physical domain Mwangi (2020). Nonetheless, the multifaceted stress brought on by cancer, which has a detrimental impact on their HRQoL, may be blamed for the low performance on overall life satisfaction (Mulugeta et al., 2023). The length of time the patient had been ill since diagnosis was linked to a higher mean HRQOL score overall. On the sub-domain of overall life satisfaction, caregivers whose patients had had the condition for 0 to 2 years performed better than others. A longer time to diagnosis with cancer is linked to a higher need for care (Sun, H., Qin, Y., & Hengudomsub, P., 2021).

The main caregivers whose patients were still receiving treatment options did not have good HRQoL, according to the results. Cancer patients often encounter and endure many side effects throughout their treatment, including but not limited to headache, weariness, nausea, dizziness, and lethargy. When a patient's symptoms and behavioral abnormalities are more severe, main caregivers are put under more stress, which lowers their HRQoL (Mwangi, 2022).

5.4 The impact of family support on the HRQoL of cancer patients' main caregivers

When compared to caregivers for other family members, spouses performed worse in the physical sub-domain in this research. Kilic, S. T., & Oz, F. obtained a similar result in their research, which showed that the HRQOL of the spouse caregivers of cancer patients is influenced by the couples' relationship. (2019). In addition, spouses deal with concerns about their capacity to provide physical and emotional assistance as well as the possibility of losing their life partner to cancer (Sevcan Toptas et al., 2019). Spousal caregivers performed badly in the physical domain, which may be explained by the fact that in a research of older spousal caregivers, individuals who experienced caregiver stress had a 63% higher death risk than non-spousal caregivers of the same age (Schulz, Beach, et al., 2021).

The social, environmental, and overall life satisfaction sub-domains showed better mean scores for primary caregivers who received caring assistance from other family members. The findings align with other research from Uganda and Vietnam, which shown a noteworthy variation in caregivers' HRQoL depending on the assistance they received while caregiving (Kizza and Kanaabi., 2019; Nguyen et al., 2019). When other family members offer care, the primary caregiver will have more time to unwind since they will be spending less time caring for others. According to Stavas et al. (2018), the caregiver burden scale points drop with an increase in the number of helpers providing assistance to main caregivers.

Less than 12-hour caregiving caregivers scored better on the mean of the following sub-scales: overall pleasure with life, physical, psychological, social, and environmental. Personal care, mobility, transportation, communication, the administration of drugs and treatments, and many more tasks are among the various and diverse activities that make up caregiving (Fisher et al., 2021). Another study's caretakers (Schofield et al., 2021) revealed that over half of them felt overwhelmed by

their workload, which negatively impacted their HRQoL.

5.5 Psychological variables influencing main caregivers of cancer patients' health-related quality of life

The four other sub-scales, caregiver satisfaction with health, and perceived quality of life were all extremely statistically substantially correlated with depression. Severe depression had the lowest mean scores across all of these outcomes, indicating that caregivers who had symptoms indicative of severe depression fared poorly on HRQOL. Caregiver load has been connected to signs of depression in many studies. Stress from providing care may exacerbate depression in those who are providing it (Hanzawa et al., 2013; Fitzmaurice et al., 2017; Geng et al., 2018). An analysis of the association between anxiety and HRQOL found a statistically significant relationship between anxiety and the physical and psychological subdomains, caregivers' perceived quality of life, and their degree of life satisfaction. Once again, the mean scores among caregivers exhibiting symptoms indicative of severe anxiety were comparatively lower, suggesting a worse HRQOL. But in the case of social relationships, this was not the case. Research has shown that when caring was a major burden, caregivers' levels of anxiety symptoms increased. This may be attributed to more schedule disturbances, worsening health, a larger feeling of family desertion, and decreased self-esteem among caregivers (Tang et al., 2012; Mazzotti et al., 2013; Papastavrou et al., 2012).

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.1 Overview

This section presents the study's findings in line with its objectives. The suggestions and opportunities for further research based on the study's results are presented in the chapter's conclusion.

6.2 Final Thoughts

The HRQoL of primary caregivers for cancer patients in Kakamega County was shown to be highly correlated with socioeconomic factors, including age, gender, income, number of rooms, profession, marital status, and housing. In terms of their level of happiness with their health, the younger caregivers performed better. Men's mean HRQoL scores were higher in the social, psychological, and environmental sub-domains than in the physical sub-domain. Employment was correlated with a higher mean score on the psychological, environmental, social relations, and physical categories. In regard to environmental health, married caregivers score better on quality of life measures. The psychological well-being of caregivers in rural areas is higher. Employed caregivers have better bodily, psychological, and environmental health and have higher-quality lives overall. On the other hand, however, caregivers with secondary

The research discovered a significant correlation between HRQoL and patient-related factors, such as the kind of test conducted and the therapeutic method, among primary caregivers of cancer patients in Kakamega County. Patients' general quality of life and mental health have both improved, according to caregivers of patients undergoing radiation treatment. Patients' caregivers who had their tumors examined reported a low quality of life in terms of their health and social interactions.

According to the research, there was a significant correlation between HRQoL and psychological traits including anxiety and sadness among primary caregivers of cancer patients in Kakamega County. Lower quality of life was shown by depressed caregivers in terms of psychological, physical, social interaction, and environmental health. Caregivers who reported a greater quality of life showed evidence of improved psychological, physical, social, and environmental health-related quality of life. carers who weighed 6.3 Advice

Based on its results, the report recommended the following actions.

The study found that primary caregivers' health-related quality of life was negatively impacted by low income among cancer patients in Kakamega County. Consequently, the study suggested that the national and local governments develop a financial program to help subsidize the costs associated with cancer management in order to lessen the financial strain these caregivers are under.

The quality of life of caregivers with regard to their health was adversely impacted by the cancer and chronic illnesses of other family members. In order to lessen the stress on main caregivers, the research suggested that other family members provide them with psychological as well as financial assistance. A program aimed at lessening caregivers' load, boosting their support and family resilience, and assisting them in maintaining their quality of life should be developed by health care professionals. Primary caregivers of cancer patients in Kakamega County had a negative impact on their quality of life connected to health when they were aware of cancer as a severe illness. The study suggested that in order to lessen the burden of cancer as a serious illness, the cancer regulatory body should develop a policy that permits healthcare providers to set aside time to train caregivers on the different types of cancer, how to manage them, the side effects of the medications, and how to

help their patients at home.

In order to provide personalized health information about cancer and educate primary caregivers at risk strategies for enhancing their health-related quality of life, nurses should make an effort to identify these individuals. In order to provide training that may include a contemporary method of digital networking through social groups & organizations that support cancer patients & their care givers, such as Kenya Network of Cancer Organization (KENCO), nurses should use the HRQol scale—family version—as a tool to identify primary caregivers at risk.

Policy-wise, the government and other state actors must start offering psychological counseling services to caregivers for cancer patients. The quality of life connected to care giver health was significantly impacted by depression in Kakamega County main caregivers for cancer patients. In order to lessen the emotional and psychological strain that caregivers endure, the research advised hospital administration to cooperate with the cancer regulating body to create networks of psychosocial support groups for them via a variety of communication methods.

6.4 Research ideas for the future

The study's focus was on the main caregivers of cancer patients at the Kakamega County Referral Hospital Cancer Center. More studies from other fields should be conducted at other medical centers.

More research is needed to determine potential determinants of health-related quality of life among primary caregivers of cancer patients, since the study mainly examined socioeconomic, patient-related, and psychological factors.

Caregivers whose patients were hospitalized to Kakamega County private hospitals were not included in this research. Comparable research at private hospitals should

be carried out in the future to have a better understanding of how hospital-related variables impact primary caregivers' health-related quality of life.

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APPENDIX I: INFORMATION SHEET

The following information is to enable you to give voluntary, informed consent to participate in this study. Please read the information carefully before signing the consent form (part B). To be verbally read for those who are not able to read.

Study title: Predictors **of** Health-Related Quality of Health of primary caregivers of cancer patients in Kakamega County.

Investigators Names: Hellen Aoko Odeny

Address County Government of Kakamega,
Lurambi Sub-County,
Po Box 750 – 50100,
Kakamega.
Tel: 0728475932

Aim and Significance of the study

This study aims at determining the Predictors of Health-Related Quality of Life amongst primary care givers of cancer patients in Kakamega County. The findings will therefore be instrumental in educating health care providers on the health needs of primary care givers so as to improve their HRQOL and as well be used as baseline for developing future intervention to support care givers towards improving their HRQOL.

What participation will involve

Participation in the research is dependent upon signing the informed consent form. Upon signing the consent form, you will be asked detailed questions on social, economic and demographic information concerning Health Related Quality of Life of primary care givers of cancer patients. This information will be recorded onto forms. The participant in this study will be required to give honest information to their level best.

Data Security

All information you provide will remain confidential. Only the study team will have access to this information and will be treated with confidentiality unless your express permission is obtained.

You may withdraw from participating in this study at any time without giving reasons. This will not affect services you are receiving.

APPENDIX II: CONSENT FORM

Please read the previous information sheet (or have the information read to you) carefully before completing and signing this consent form. Should you have any questions about the study please feel free to ask the investigator prior to signing your consent

Consent Form for the Study

Health Related Quality of Life of primary care givers of cancer patients in Kakamega County Teaching and Referral Hospital.

Investigators Names: Hellen Aoko Odeny

Address County Government of Kakamega,
Lurambi Sub-County,
Po Box 750 - 50100
Kakamega.
Tel: 0728475932

FOR COMPLETION BY PARTICIPANTS

I have read (or the enumerator has read to me) the following sheet concerning this study and I understand what will be required of me if I take part in the study.

I understand that at any time I may withdraw from the study without giving a reason and this will not affect the care am receiving.

I AGREE TO TAKE PART IN THE STUDY:

Name Initials of participant: ……

Signed……. (Or thumb print)

Date: ……...

APPENDIX III: QUESTIONNAIRE

Inclusion criteria: (Male and female individuals)

RESPONDENT ID

Health facility name_____ Initials of respondent: _____
Serial #: _____ Date: _____
Name of Interviewer: _____ Signature: _____

A. Clinical

Cancer patient clinical information's

#	Question	Response	Code
1	Patient has been diagnosed with cancer?	1.Yes 2. No	
2.	Date when patient was diagnosed _ _/_ _/_ _ _ _(DD/MM/YYYY		
3	PT. Initials or Hosp. No.		
4	What type of cancer	…….	
	What's the age of patient		
	Indicate gender of patient	1. Male 2. Female	
	Indicate patient's marital status	1. Single 2. Married 3. Divorced 4. Widowed 5. Others (specify)	
	Patient's level of education	1. Did not go to school 2. Primary education 3. Secondary education 4. Tertiary education 5. Others (specify)	
	Patient's employment status	1. Employed 2. Unemployed 3. House wife 4. Farmer 5. Any other (specify)	
5.	Stage of cancer at diagnosis	1. Stage 1 2. Stage 2 3. Stage 3 4. Stage 4	

6.	Mode of treatment	1. Surgical	

		2. Chemotherapy 3. Radiation 4. Others (specify)	
7	Tests done	1. CT-Scan 2. Biopsy 3. Ultrasound 4. Tumours analysis 5. Others (specify)	
8	Cost of treatment	1. <Ksh50,000 2. 50,000-100,000 3. >Ksh 100,000	
9	Complications due to cancer/treatment	1. Hair loss 2. Anaemia 3. Nausea/Vomiting 4. Body weakness 5. Others (specify)	
B. SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE PRIMARY CAREGIVER			
10.	What is your age please?	……	
11.	Indicate gender of the respondent.	1. Male 2. Female	
12.	What is the highest level of education that you have attained? (Don't read the options)	1.Did not go to school 2.Primary education 3.Secondary 4. Tertiary	
13.	What is your current marital status?	1.Single 2.Married 3.Divorced 4.Widowed	
14.	Where do you stay (Name of the S/County)	**……**	
15.	Which type of area do you come from?	1.Urban 2.Rural 3. Don't know?	
16.	What is your job status?	1.Housewife 2.Farmer 3.Casual 4. Employed 5. Unemployed 6.Any other (please specify) _____	
17	Religious belief	1.Christian 2.Hindu 3.Islamic 4.Others	
18	Relationship to patient	1.Mother 2.Father 3.Spouse 4.Other	

19	Perceived disease severity	1.Mild 2.Moderate 3.Severe	
20	Whether other family members have cancer.	1.Yes 2.No	
21	Daily care time	1. < 6 hrs. 2. 6-12 hrs. 3. >12 hrs.	
22	Whether others help with caregiving	1.Yes 2.No	
23	Chronic illness	1.Yes 2.No	
24	Caregiver attitude	1.Positive 2.Negative	
25	Understanding of disease	1.Full 2.Partially	
29	Patient's duration since diagnosis	1.0 – 3 months 2.4months- 2 years 3.> 2 years	
30	Treatment options	1.Treated 2. Un treated	
31.	Please tell me the number of your family members you are currently living with? (just enter the number in the box provided) _____	……	
32.	Please tell me the number of rooms in your house? (just enter the number in the box provided) _____	……	
33.	What is your personal monthly Income (KShs)?	1. <5000 2. 5000 – 9999 3. 10000 to 14999 4. More than 15000 5. Don't know	

Perceived Health Status of primary care givers

Please read each question, assess how you perceive your HRQoL, and circle the number on the scale for each question that gives the best answer for you.

		V. Poor	Poor	Neither poor/Good	Good	V. Good
1	How would you rate your quality of life?	1	2	3	4	5

		V. Dissatisfied	Dissatisfied	Neither satisfied/dissatisfied	satisfied	v. satisfied
2.	How satisfied are you with your health?	1	2	3	4	5

The following questions ask about how much you have experienced certain things in the last four weeks

		Not at all	A little	A moderate amount	Very much	An extreme amount
3.	To what extent do you feel that physical pain prevents you from doing what you need to do?	5	4	3	2	1
4.	How much do you need any medical treatment to function in your daily life?	5	4	3	2	1
5.	How much do you enjoy life	1	2	3	4	5
6.	To what extent do you feel your life to be meaningful?	1	2	3	4	5
7.	How well are you able to concentrate	1	2	3	4	5
8.	How safe do you feel in your daily life	1	2	3	4	5
9	How healthy is your physical	1	2	3	4	5

	Environment					

The following questions refers to how completely you experience or were able to do certain things in the last two weeks.

		Not at all	A little	Moderately	Mostly	Completely
10	Do you have enough energy for everyday life?	1	2	3	4	5
11	Are you able to accept your bodily appearance?	1	2	3	4	5
12	Have you enough money to meet your needs	1	2	3	4	5
13	How available are you to the information that you need in your day to day life?	1	2	3	4	5
14	To what extent do you have the opportunity for leisure activities	1	2	3	4	5

		Very poor	poor	Neither poor nor	Good	Very good
15	How well are you able to get around?	1	2	3	4	5

		Very dissatisfied	Dissatisfied	Neither dissatisfied nor satisfied	Satisfied	Very satisfied
16	How satisfied are you with your sleep?	1	2	3	4	5
17	How satisfied are you with your ability to perform	1	2	3	4	5

	your daily living activities?					
18	How satisfy are you with your capacity at work?	1	2	3	4	5
19	How satisfied are you with yourself?	1	2	3	4	5
20	How satisfied are you with your personal relationship?	1	2	3	4	5
21	How satisfied are you with your sex life?	1	2	3	4	5
22	How satisfied are you with the support you get from friends?	1	2	3	4	5
23	How satisfied are you with the condition of your living place?	1	2	3	4	5
24	How satisfied are you with your access to health services?	1	2	3	4	5
25	How satisfied are you with your transport?	1	2	3	4	5

The following question refers to how often you have felt or experienced certain things in the last two weeks.

		Never	Seldo	Quite often	Very often	Always
26	How often do you have negative feelings such as blue mood, despair, anxiety, depression?	1	2	3	4	5

27.	Had you ever heard of cancer before your patient was	1.Yes 2.No	

	diagnosed?		
28.	In your opinion is cancer a serious disease?	1.Yes 2.No	

Adapted from (Ferrans, 2010; Ferrans *et al.*, 2005)

Listed below are a number of statements. Please place a tick in the box that describes how much you agree with that statement right now.

Herth Hope Index

		Strongly disagree	Disagree	Agree	Strongly agree
1.	I have a positive outlook towards life.				
2.	I have short/long range goals				
3.	I feel all alone				
4.	I can see possibilities in the midst of difficulties				
5.	I have a faith that gives me comfort				
6.	I feel scared about my future				
7.	I can recall happy/joyful times				
8.	I have deep inner strength				
9.	I am able to give and receive caring /love				
10	I have a sense of direction				
11	I believe that each day has potential				
12	I feel life has value and worth				

PHQ-9 is a multipurpose instrument used for measuring the severity of depression.

Please tick [√] the option that best describe your mental health.

0= Not at all +1 = several days +2 = More than half the days +3 = nearly every day 99 = I prefer not to answer the question

Choose one number from each line

No.	Over the last 2 weeks, how often have you been bothered by any of the following problems?	0	+1	+2	+3	99
1.	Little interest or pleasure in doing things.					
2.	Feeling down, depressed, or hopeless.					
3.	Trouble falling asleep, staying a sleep or sleeping too much.					
4.	Feeling tired or having little energy.					
5	Poor appetite or over eating					
6	Feeling bad about yourself or that you are a failure or have let yourself or your family down					
7	Trouble concentrating on things such as reading the newspaper or watching television					
8	Moving or speaking so slowly that other people could have noticed. Or the opposite being fidgety or restless that you have been moving around a lot more than usual					
9	Thoughts that you would be better off dead or of hurting yourself in some way.					

PART M: GENERALIZED ANXIETY DISORDER 7 – ITEM (GAD-7)

The Generalized Anxiety Disorder 7-item (GAD-7) is tool for generalized anxiety disorderPHQ-9.

Please tick [√] the option that best describe your mental health.

0= Not at all +1 = several days +2 = More than half the days +3 = nearly every day 99 = I prefer not to answer the question

Choose one number from each line.

No	Over the last 2 weeks, how often have you been bothered by any of the following problems?	0	+1	+2	+3	99
1	Feeling nervous, anxious or on edge					
2	Not being able to stop or control worrying					
3	Worrying too much about different things					
4	Trouble relaxing					
5	Being so restless that it is hard to sit still					
7	Becoming easily annoyed or irritable					
8	Feeling afraid as if something awful might happen					

APPENDIX IV: FOCUS GROUP DISCUSSION WITH PRIMARY CARE GIVERS OF CANCER PATIENTS

All information collected in the group discussion is confidential and will only be used for the purpose of research to assist with improving the quality of life of primary care givers.

Focus Group Guide

Questions will be asked from an Interview Guide. Not all questions will be asked for each group.

Cancer Caregiving Interview Guide

I. Introduction and Warm-Up: 10 minutes

1. Purpose and agenda.

2. Audiotaping information.

3. Introductions and ground rules.

II. Caregiver Needs

We would like to understand:

- What are your roles as a primary caregiver of cancer patient in your day to day life?
- How has caregiving affected your life physically, that is your appearance/grooming, sleep, appetite and pain/weight loss?
- How has your quality of life been affected psychologically as a result of caregiving? How have you managed your emotions during this period?
- Have has your standard of living and financial independence been affected as a result of being a primary caregiver?
- What are your most important needs as a caregivers?" "Are they being met?" If so, "How?"
- What are your unmet needs as a caregivers?"
- How does the family unit supports and coordinate care needs and appointments of the cancer patient?"

Caregiver Isolation and Caregiver Social Network

- Generally what are the issues affecting caregivers and how do you resolve them?"

- What services are available in the facilities for caregivers to take care of themselves?"

- What support services would be helpful for caregivers?" "How do you find them and how would you like to be handled?"

- Have you engaged in social networks for support during this period of caregiving?" "What has been your experience like?"

III. Information Seeking

We are interested in understanding how you look for information, specifically health information?"

- Health Domains

- What information do you think would help caregivers be better able to offer caregiving services better?

- Legal/Social Issues

- What questions have you had about legal planning related to health? Where you would you look for that information? For example advanced directives, living will, and health care proxy.

- Utility of Different Resources

- Tell us how you look for information. For instance, how do you use the following resources?" "What was the experience like?"

    - Internet?
    - Peers/friends/word of mouth?
    - Children?
    - Other people (doctors, social workers)?

- **Prompt**: What tools are most useful?" "What tools are least useful?"

    - Tell us about something you were looking for but had a hard time finding."

    - Tell us about a search for medical information that went really well."

- Trustworthiness of Information

- Tell us how you decide what information to believe. For example Internet, books, peers and your doctor.

- Internet
- If you used the Internet:
    - How easy is it for you to use the Internet?"
    - What was the experience like?"
    - What is hard?" "What is easy?"
- If you did not use the Internet:
    - Why not? What barriers exist?

IV. Health Care Communication

- Communication
- **Prompts:** In your life, who are important types of people to communicate with about your health?" "Who would you want to be aware of your health updates? For example
    - How does your family communicate among themselves?"
    - How are family member involved in discussions of the patient's progress with their clinicians?"
    - What are the communication barriers that exist between patients and their providers?
- Privacy and Control of Personal Health Information
- Who do you want to control your information?" "How do you decide when that should change?" "When might you give control to someone else?"
- **Example:** Specific questions/prompts about communication:
    - Specialists versus primary care doctors.
    - Children, children-in-law.
    - Visiting nurses.
    - Physical therapy, other providers.
    - Spiritual support: priests, rabbis, imams, etc.

V. Privacy

The group has discussed privacy as a theme throughout; we want to make sure that specific areas are addressed if not already covered:

- Caregiver Communication With Clinicians
- Caregiver Review of Medical Records
- Handing Off Rights
- End-of-Life Decisions

VI. Closing

1. Do you have any additional comments or questions?

2. Please may you provide a brief evaluation of the focus group discussion experience?

APPENDIX V: RESEARCH PROPOSAL APPROVAL

COUNTY GOVERNMENT OF KAKAMEGA

E-mail: wpgh15@yahoo.com
Telephone: Kakamega 0702930346
When replying, please quote:

REF: CGH/KAK/ERC/VOL.I/108

COUNTY GENERAL HOSPITAL
P.O. Box 15-G.P.O-50100
KAKAMEGA

DATE: 31st August, 2021

MINISTRY OF HEALTH SERVICES

HELLEN AOKA ODENY
LICENCE NO. NACOSTI/P/21/11895

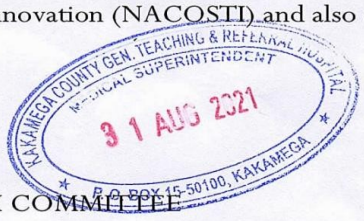
RE: RESEARCH PROPOSAL APPROVAL – NO. ERC/130-08/2021

This is to inform you that **Kakamega County General Hospital Ethics Review Committee (KCGH ERC)** has approved your research proposal titled: ***"Predictors of Health-Related Quality of Life Among Primary Caregivers of Cancer patients in Kakamega County, Kenya".*** The approval period is 31st August 2021 – 21st July, 2022

This approval is subject to compliance with the following requirements:

i. Only approved documents including informed consent, study instruments, MTA will be used.
ii. All changes including amendments, deviations and violations are submitted for review and approval by the **KCGH ERC.**
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to **KCGH ERC** within 24 hours of notification.
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety of welfare of the study participants and others or affect the integrity of the research must be reported to **KCGH ERC** within 24 hours.
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to **KCGH ERC**.

This approval should be attached to your research license from National Commission for Science, Technology and Innovation (NACOSTI) and also other necessary clearances.



DR. AJEVI AUSTINE
CHAIRMAN
ETHICS AND RESEARCH COMMITTEE
CGH - KAKAMEGA

APPENDIX VI: COUNTY RESEARCH AUTHORIZATION

REPUBLIC OF KENYA
COUNTY GOVERNMENT OF KAKAMEGA

DEPARTMENT OF HEALTH SERVICES

Telephone: 056 31125
E-mail: pdmswestern@gmail.com
Website : www.kakamega.go.ke
When replying please quote

THE COUNTY DIRECTOR
P O BOX 2309- 50100
KAKAMEGA

DATE: 5TH AUGUST, 2021

Ref : CGK/MOH/CDH/2021/8/2

To

The Medical Superintendent,
Kakamega County General Hospital.

RE: RESEARCH AUTHORIZATION – PREDICTORS OF HEALTH-RELATED QUALITY OF LIFEAMONG PRIMARY CAREGIVERS OF CANCER PATIENTS IN KAKAMEGA COUNTY, KENYA

Mrs. Hellen Aoko Odeny of Masinde Muliro University, Department of Clinical Nursing and Health Informatics is hereby approved by the County Department of Health Services to carry out the aforementioned research. She is instructed to remain within the confines of the research protocol as has been underscored in the ethical approval. She will submit an executive summary report within 90 days upon completion of the study to my office. Kindly accord her the necessary assistance she carries out the research.

DR. JOHN OTIENO,
05 AUG 2021
Ag. COUNTY DIRECTOR FOR HEALTH SERVICES
KAKAMEGA

APPENDIX VII: RESEARCH LICENCE

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **993371**

Date of Issue: **21/July/2021**

RESEARCH LICENSE

This is to Certify that Ms.. Hellen Aoko Odeny of Masinde Muliro University of Science and Technology, has been licensed to conduct research in Kakamega on the topic: PREDICTORS OF HEALTH-RELATED QUALITY OF LIFE AMONG PRIMARY CAREGIVERS OF CANCER PATIENTS IN KAKAMEGA COUNTY, KENYA for the period ending : 21/July/2022.

License No: **NACOSTI/P/21/11895**

993371

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

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

APPENDIX VIII: INSTITUTIONAL ETHICS REVIEW COMMITTEE (IERC)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY
Tel: 056-31375
Fax: 056-30153
E-mail: ierc@mmust.ac.ke
Website: www.mmust.ac.ke
P. O. Box 190-50100
Kakamega, Kenya

Institutional Ethics Review Committee (IERC)

Ref: MMU/COR: 403012 Vol 4 (01)

Date: 14th July, 2021

Hellen Aoko Odeny,
HNR/G/01-53028/2018
Masinde Muliro University of Science and Technology,
P.O. Box 190-50100, Kakamega.

Dear Ms Odeny,

RE: Predictors of Health-Related Quality of Life among Primary caregivers of Cancer Patients in Kakamega County, Kenya. - MMUST/IERC/201/2021

Thank you for submitting your proposal entitled as above for initial review. This is to inform you that the committee conducted the initial review and approved (with no further revisions) the above Referenced application for one year.

This approval is valid from **14th July, 2021** through to **14th July, 2022**. Please note that authorization to conduct this study will automatically expire on by **14th July, 2022.** If you plan to continue with data collection or analysis beyond this date please submit an application for continuing approval to the MMUST IERC by **14th June, 2022.**

Approval for continuation of the study will be subject to submission and review of an annual report that must reach the MMUST IERC Secretariat by **14th June, 2022.** You are required to submit any amendments to this protocol and any other information pertinent to human participation in this study to MMUST IERC prior to implementation.

Please note that any unanticipated problems or adverse effects/event resulting from the conduct of this study must be reported to MMUST IERC. Also note that you are required to seek for research permit from NACOSTI prior to the initiation of the study.

Yours faithfully,

Dr. Gordon Nguka (PhD)
Chairman, Institutional Ethics Review Committee

Copy to:
- The Secretary, National Bio-Ethics Committee
- Vice Chancellor
- DVC (PR&I)