IMPACT OF SOCIAL SUPPORT ON PSYCHOLOGICAL WELLBEING AND QUALITY OF LIFE OF CANCER PATIENTS AT KENYATTA NATIONAL HOSPITAL

GITONGA ISAIAH

H57/88729/16

A DISSERTATION SUBMITTED TO THE SCHOOL OF PUBLIC HEALTH IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR AWARD OF THE DEGREE OF MASTER OF PUBLIC HEALTH OF THE UNIVERSITY OF NAIROBI

2019

DECLARATION OF ORIGINALITY FORM

Student's Name	Gitonga Isaiah
Student Number	H57/88729/2016
College	Health Sciences
School	School of Public Health
Course Name	Master of Public Health
Title of Study	Impact of social support on psychological wellbeing and quality of life of cancer patients at Kenyatta National Hospital

DECLARATION

I am aware of the University's policy on plagiarism and understand it. I certify and declare that this dissertation is my original work and has not been presented elsewhere, to the best of my knowledge, for examination, publication or award of degree. References of other people's work has been formally and properly acknowledged and all sources indicated in accordance to good academic practices and University guidance. This work is my own effort and I have not sought or used the services of any professional agencies to produce it. I have and shall not allow anyone to copy my work so as to pass it as his/her own. In addition, I understand that any false claim in respect to this work shall result in disciplinary action, in accordance with the University plagiarism regulations.

Signature: ---

APPROVAL OF SUPERVISORS

This dissertation has been submitted for examination with our approval as University Supervisors.

Prof. Joyce Olenja
Professor,
School of Public Health, University of Nairobi jolenja@uonbi.ac.ke

Signature____ Date____________

Faith Thuita PhD
Senior Lecturer,
School of Public Health, University of Nairobi fthuita@uonbi.ac.ke

Signature____ Date____________

Prof. David M. Ndetei
Professor of Psychiatry, University of Nairobi, dmndetei@uonbi.ac.ke

Signature____ Date____________

Approved by the Director, School of Public Health, University of Nairobi Prof. Mutuku A. Mwanthi, Bsc; MSEH; PhD

Director and Professor of Public Health

Signature: _____________________________ Date______________

DEDICATION

This work is dedicated firstly to almighty God for His unending Grace. Secondly, I dedicate this dissertation to my late parents whose love and support has brought me this far. Finally, this work is dedicated to my wife Jackie and our son Myles for their unwavering love and support.

ACKNOWLEDGEMENTS

I would like to thank the University of Nairobi for giving me a full scholarship to undertake this Master's Programme. I am very grateful to my three university supervisors and my research mentor Prof David Ndetei, through the Africa Mental Health Research and Training Foundation (AMHRTF), for their patience, support and guidance throughout the entire study period. They read this work chapter by chapter and provided excellent feedback.

My sincere appreciation to AMHRTF for logistical support, research mentorship and opportunity to nurture my research skills and competences.

I also wish to thank Director, School of Public Health (SPH), the Coordinator of the Master of Public Health programme and all the lecturers for their advice, encouragement and constructive criticism in building up this research work.

Special appreciation to all the cancer patients at the KNH cancer treatment centre who volunteered their time and information, despite their sickness. Without them, this research work would not have to come to fruition. Recommendations from this work will be of greatest value to them.

Finally, a big thank you to my classmates, the technical and administrative team from the SPH (Esther, Jane and Muriithi) who assisted in one or the other to bring this study to its home stretch.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ABSTRACT

Background: The ever-increasing incidence of cancer means that cancer-associated emotional and mental distress is set to increase. Despite this, research in cancer care has mainly focused on the management of physical symptoms, with lack of studies assessing the impact of cancer on patient's mental health and quality of life throughout the course of illness and the possible remedies.

Purpose: This study aimed to determine the impact of social support on psychological wellbeing and quality of life of cancer patients at Kenyatta National Hospital.

Materials and Methods: This was an analytic cross-sectional study. One hundred and eighty nine cancer outpatients were invited to participate in the study upon giving written informed consent. A semi-structured questionnaire was used to collect participants' sociodemographic characteristics as well as to determine stage and type of cancer. The World Health Organization's Quality of Life tool was used to measure the participants' quality of life while their psychological wellbeing was measured by the Hospital Anxiety and Depression Survey. Multidimensional Scale of Perceived Social Support measured the patient's level of perceived social support. Data was double-entered into MS-Access software and checked for errors prior to commencement of data analysis using STATA software. For discrete variables, frequency tables and proportions were used to describe the distribution of data while for continuous variables, measures of central tendency were computed. At bi-variate and multivariate levels, correlation and regression analysis were done to investigate the relationships between study variables and provide regression coefficients. The level of significance was set at $p<0.05$.

Results: A total of 189 participants consented to participate in the study and their mean age was 57.1±13.1 years. Majority were females (65.1%), Christians (94.7%), married (68.3%), employed (58.2%) and with post primary education (55.0%). Over two thirds (69.8%) earned Kshs.10000 and below. The three types of cancer sampled were in almost equal proportions (Breast: 35.4%, Cervical: 31.7% and Prostate cancer: 32.8%). More than half of the respondents had depression (57.3%) and anxiety (62.3%). Quality of life scores was as follows: Psychosocial 42.8 (SD 12.7), Environmental 41.7 (SD 10.9). Social 41.0 (SD 14.6) and Physical 39.5 (SD13.5) domains. The highest source of social support came from family 5.6 (SD 1.3), followed by significant others 4.4 (SD 1.9) and finally friends 3.8 (SD 1.5). Low level of education, lack of formal employment, being widowed, earning low income and being in the advanced stage were significantly associated with higher depression scores ($p<0.05$). Similarly, low levels of social support was significantly associated with higher depression and anxiety and lower quality of life scores.

Conclusions: There is a positive association between social support and psychological wellbeing and quality of life of cancer patients. Integrating social support in the management of cancer patients has the potential to improve patient’s psychological wellbeing and quality of life. Longitudinal studies correlating social support and treatment outcomes among cancer patients are recommended.

LIST OF ABBREVIATIONS/ACRONYMS

ANOVA	Analysis of Variance
GLM	Generalised Linear Models
GLOBOCAN	Global Cancer Observatory
HADS	Hospital Anxiety and Depression Scale
HIC	High Income Countries
HPV	Human papillomavirus
IARC	International Agency for Research on Cancer
ICO	Catalan Institute of Oncology
KNH	Kenyatta National Hospital
LMIC	Low and Middle income Countries
MOH	Ministry of Health
NCCS	National Cancer Control Strategy
MSPSS	Multi-Dimensional Scale of Perceived Social Support
UON	University of Nairobi
WHO	World Health Organization
WHOQOL_BREF	World Health Organization Quality of Life- Shorter version

DEFINITION OF OPERATIONAL TERMS

Psychological wellbeing Dynamic concept that includes subjective, social,

	and psychological dimensions as well as health-related behaviours. For purposes of this study, depression and anxiety scores were used, as measured by HADS, to quantify the psychological wellbeing of cancer patients.
Quality of Life (QoL)	Person’s perception of his/her life situation. QoL was measured using the WHOQOL BREF tool.
Social Support	Perception and actuality that one is cared for, has assistance available from other people, and that one is part of a supportive social network. Social Support was be measured using the MSPSS tool.

CHAPTER 1: INTRODUCTION

1.0 Introduction

This chapter outlines the background, problem statement and justification of the study. In addition, research objectives and hypotheses are included.

1.1 Background of the Study

According to the World Health Organization (WHO), cancer refers to "the uncontrolled growth of cells, which can invade and spread to distant sites of the body (WHO, 2019b)." Cancer can affect any part of the body. There are more than 100 types of cancer (American Cancer Society, 2018). A recent study shows that in terms of worldwide mortality, the three most important cancers are lung cancer, liver cancer and stomach cancer – responsible for 1.6 million, 745,000 and 723,000 deaths annually (Ferlay *et al.*, 2015).

Reports from around the world show that cancer rates are on the rise. Indeed, studies show that the global burden of disease from cancer is on the rise (Siegel, Miller and Jemal, 2016; Bray *et al.*, 2018; Prager *et al.*, 2018). Consequently, global mortality rates from cancer have also seen a congruent rise. A recent global review of cancer incidence and mortality rates showed that cancer is now responsible for more deaths than coronary heart disease and stroke combined (Ferlay *et al.*, 2015).

Though initially the preserve of high-income countries, cancer is now on the rise in low and middle-income countries (Abegunde *et al.*, 2007; Sankaranarayanan, 2014). This assertion is supported by recent studies that seem to indicate that, for the most part, cancer rates are either slightly declining or flat-lining in the USA and Europe (Malvezzi *et al.*, 2016; Balakrishnan *et al.*, 2017), while rising in Africa (Anorlu, 2008; Denny and Anorlu, 2012; Kimani *et al.*, 2017). The situation in Kenya follows a similar pattern to the rest of

Africa (Korir *et al.*, 2015; Ndetei *et al.*, 2018). The overall disease burden and mortality from cancer is increasing with cancer accounting for 7% of mortality in Kenya (Topazian *et al.*, 2016).

The evidence base for cancer care has long pointed to the need to integrate social support and care for the mental wellbeing of patients – aimed at better physical health outcomes and improved responses to therapeutic interventions (Nakash *et al.*, 2014; Dekker *et al.*, 2015) In the absence of psychosocial support for cancer patients from the traditional health care system, the onus is on social networks i.e. friends and family to provide the social support needed by cancer patients. A prospective cohort study by Singer and colleagues to assess the level of emotional distress among patients with head and neck cancers found that in the absence of social support, the emotional distress exhibited by cancer patients increases (Singer *et al.*, 2012).

1.2 Statement of the Research Problem

The ever-increasing incidence of cancer means that cancer-associated emotional and mental distress is set to increase. Indeed, findings from a study that examined a four-week prevalence of mental disorders in patients with various types of cancer showed that onethird of cancer patients meet the diagnostic criteria for mental disorders (Mehnert *et al.*, 2014). However, due to the fact that they have a relatively serious underlying physical disorder – cancer – their mental disorders are not well recognised or managed. A recent review of data derived from the World Mental Health Surveys showed that there exists a treatment gap for mental disorders among cancer patients (Nakash *et al.*, 2014). Further, another study conducted in KNH found that increasing severity of cancer increases the risk of psychological impairment (Ndetei *et al.*, 2018). Increased mental distress means that even in the face of improved therapeutic interventions for underlying cancer, the overall quality of life (QoL) of patients is severely hampered (Nipp *et al.*, 2016).

Beyond the obvious deleterious effects that cancer has on a person's physical health, it has an even greater and, arguably, more serious impact on a person's mental health and overall QoL (Naughton and Weaver, 2014). Nonetheless, traditional approaches to the treatment and management of cancer have been geared towards tackling its physical effects, with little care given to a person's mental health status (Naughton and Weaver, 2014; Ndetei *et al.*, 2018).

It is worth pointing out that a good portion of cancer research has focused on its effects on physical health, without attention to its effect on the mental health of patients, the effect that mental wellbeing has on QoL and the overall effect on treatment outcomes (Aaronson *et al.*, 2014). While there have been studies that have examined the effect of social support on treatment outcomes, there is a paucity of studies investigating the significance of social support on the psychological well-being of cancer patients. In addition, few studies on this subject have been carried out in Kenya.

1.3 Conceptual Framework

Social support has been shown to moderate or buffer the impact of psychosocial stress on physical and mental health and quality of life (Kong, Wertheimer and Myers, 1994). Therefore, presence, or absence of social support, as perceived by the patient has a direct impact on his/her mental and physical health outcomes. Presence of social support is associated with better psychological wellbeing, improved QoL and better treatment outcomes (Nakash *et al.*, 2014; Dekker *et al.*, 2015). Social support can be in the form of tangible, emotional or informational support, and can be from family, friends and signifcant others. It is conceptualized that the influence of social support on a patient's psychological wellbeing and QoL is moderated by other factors such as the type and severity of illness and patient's sociodemographic and economic factors such as age, sex, level of education among others. These variables are operationalized as shown in Figure 1 below.

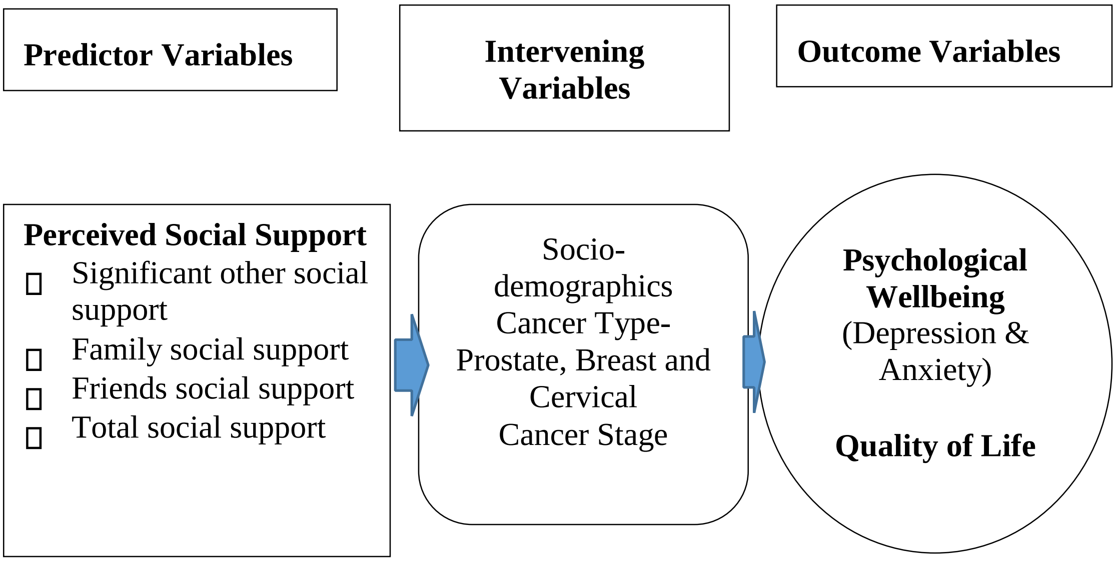


Figure 1: Conceptual Framework

1.4 Study Justification

There is a paucity of data on the role of social support in the wellbeing and quality of life of cancer patients in Kenya. This study will, therefore, provide baseline data on the role of social support on the patient's psychological well-being and QoL for cancer patients. This will underscore the importance of social networks in ensuring favourable treatment outcomes for cancer patients. The findings will also inform the design of package of palliative care and hence improve QoL and treatment outcomes for patients with cancer. This study will focus on breast and cervical which are the most prevalent cancers in women and prostate cancer which is the most prevalent among men in Kenya.

1.5 Study significance

Findings from this study will provide baseline data on the significance of social support on the patient's psychological wellbeing and overall QoL. This baseline data will inform future formulations of cancer care and management packages, especially in palliative settings.

1.6 Study Objectives

1.6.1 Broad Objective

To determine the impact of social support on psychological well-being and quality of life of cancer patients attending cancer treatment centre at Kenyatta National Hospital.

1.6.2 Specific Objectives

1. To determine the level of social support received by cancer patients attending cancer treatment centre in KNH.
2. To establish the psychological status and quality of life of cancer patients attending cancer treatment centre in KNH.

3. To determine the association between socio-demographic factors and psychological wellbeing of cancer patients attending cancer treatment centre in KNH.
4. To assess the significance of perceived social support on the psychological wellbeing and quality of life of cancer patients attending cancer treatment centre in KNH.

1.7 Research Hypotheses

1.7.1 Null Hypotheses (H_0)

1. There is no difference in the psychological well-being of cancer patients receiving social support and those who do not receive.
2. There is no difference in the quality of life of cancer patients with social support and those without.

1.8 Research questions

1. What is the level of social support received by cancer patients attending KNH cancer clinic?
2. What the psychological status (in terms of depression and anxiety) of cancer patients attending KNH cancer clinic.
3. How does social support influence the psychological wellbeing and quality of life of cancer patients?

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

This chapter outlines the definitions of cancer and outlines the recent global, regional and Kenyan prevalence of cancer. Further, the chapter describes the three types of cancer that are of interest to this study (Breast, Cervical and Prostate) and describes social support, psychological wellbeing and quality of life, palliative care and finally the knowledge gap that this study seeks to address.

2.1 Definition and prevalence of cancer

According to American Cancer Society (2015), cancer affects nearly all families in the world due to the extent of the burden that it causes. Cancer is an uncontrolled growth of the body cells which in turn invade and spread across other parts of the body (Ferlay *et al.*, 2015). There are various types of cancer which occur due to various factors like age, gender genetic predisposition and exposure to carcinogens among others.

Latest data from the WHO shows that Cancer is the second leading cause of death globally, and was responsible for an estimated 9.6 million deaths in 2018 (WHO, 2019a), with one in every six individuals in the world dying as a result of cancer (Bray *et al.*, 2018). Global trends shows that the incidence of cancer is highest in high income countries (HICs); however, the combination of robust screening with timely high quality management and integrated care improves the prognosis for those diagnosed with cancer in HICs compared to low and middle-income countries (LMICs) (Chalkidou *et al.*, 2014). Inadequate and inaccessible screening services, delayed diagnosis and poor management leads to poor prognosis and higher mortality in LMICs (Ebrahim *et al.*, 2013). Thus, even though there are numerically fewer cases of cancer in LMICs, the prognosis is mostly poor with lower rates of survival compared to their HICs counterparts, with approximately 70% of cancer deaths occurring in LMICs (WHO, 2019a).

The burden of cancer is even greater in Sub-Saharan Africa largely due to improper health structures and the double burden of communicable and non-communicable disease (Olaleye and Ekrikpo, 2017). Other issues like the extent of population ageing also play a key role in the occurrence of cancer (Smith and Mensah, 2003; Jemal *et al.*, 2012). Females in Africa are mostly affected by breast and cervical cancer which captures at least
50% of the burden while males in the region are affected by prostate cancer with a total of 51,900 reported cases (Bray *et al.*, 2018).

A decade ago in East Africa, there were an estimated 175,000 persons living with cancer and that number has dramatically increased over the years (MOH, 2016). Cancer is projected to become the leading cause of death in sub-Saharan Africa over the next few years (Pilleron *et al.*, 2019).

Cancer is among the highest causes of morbidity in Kenya, accounting for at least 7% of the deaths that occur annually (Korir *et al.*, 2015). It is, however, difficult to find accurate national statistics as most data on cancer deaths is acquired only in urban settings. However, there are at least 39,000 new cases and 27,000 cases associated with cancer in the country

(MOH, 2016). A majority of the individuals affected are those aged <70 years and 70-80% of these cases are diagnosed when the cancer is at an advanced stage (Malloy *et al.*, 2017).

To date, the real causes of majority of cancers remains largely unknown. However, there are several risk factors that that have been shown to increase the chances of contracting the disease (Brown *et al.*, 2018). Some of these include lifestyle related factors like lack of physical exercise, use of tobacco, bad alcohol habits, low fruit and vegetable intake, environmental factors such as exposure to harmful environmental carcinogens, infectious ailments like HIV/AIDS, Human Papilloma Virus (HPV) and Hepatitis B & C, bacterial infections as well as parasitic infestations among others (WHO, 2019a).

Cancer management and prognosis often depends on burden of disease on the patient, usually referred as staging (Brierley *et al.*, 2019). Cancer staging helps healthcare practitioners classify various cancers depending on how far they have spread(Edge and Compton, 2010). Ordinarily, cancers are staged from Stage 1 to Stage 4, with Stage 4 being the most severe and Stage 1 being the least severe (Edge and Compton, 2010;
Brierley *et al.*, 2019). There are various other classification systems, whose use is similar. Importantly, however, cancer staging determines the type and intensity of treatment intervention taken. This means that the more severe cancer, the more aggressive the treatment – and the higher the likelihood that patients will suffer serious physical and emotional side effects (Greene *et al.*, 2013; Ndetei *et al.*, 2018).

Indeed, more often than not, the diagnosis of cancer subjects individuals to deep mental and emotional torture (Kadan_Lottick *et al.*, 2005). A person progresses through various stages of grief which are denial, anger, bargaining, depression, and acceptance (Spiess *et al.*, 2014).Studies also show that cancer patients are more likely to experience mental disorder relative to other patients and the general population (Dekker *et al.*, 2015; Ndetei *et al.*, 2018). This points to a need to not only manage the physical symptoms of cancer diagnosis but to also deal with the psychological burden that the diagnosis imposes upon the patient. From a social perspective, cancer treatment is often so intense that a patient is forced out of the daily work or school life (Kamal *et al.*, 2017). This has the potential to isolate them socially, which can lead to the development of depression or other mental disorder, resulting in a dual burden for the patient (Wilson *et al.*, 2007).

2.2 Types of Cancer

This study focused on the three most common cancers in Kenya namely cervical, breast and prostate cancers (Korir *et al.*, 2015).The Ministry of Health indicates the burden of these cancers to be 40.1 per 100,000 for cervical cancer, 38.3 per 100,000 for breast cancer and 31.6 per 100, 000 for prostate cancer (MOH, 2016). It is worth noting that global estimates postulate that the cancer burden is ten-fold what the Ministry of Health reports. For example, a recent study indicates that the burden of cervical cancer stands at 414 per 100,000 in Kenya and it is expected to rise to 518 per 100,000 by 2025 (Kangmennaang *et al.*, 2018).

2.2.1 Cervical cancer

Cervical cancer is caused by the human papillomavirus. Globally, cervical cancer is associated with approximately 275,000 deaths annually and there are at least 528,000 new cases. This burden is even higher in developing countries as 86% of cervical related deaths are located in these areas (IARC and WHO, 2014). In Kenya at least 22% of the cancer cases that occur in the region are associated with cervical cancer (Njuguna et al., 2017). According to latest report by ICO/IARC, cancer of the cervix is the second most frequent cancer among women in Kenya and the first most frequent cancer among women between 15 and 44 years of age. Approximately 9.1% of women in the general population are estimated to harbour cervical HPV-16/18 infection at a given time, and 63.1% of invasive cervical cancers are attributed to HPVs 16 or 18 (ICO/IARC Information Centre, 2019).

Cervical cancer is preventable, through vaccination to girls aged between nine and fourteen years (two doses) or curable when diagnosed at an early stage (Geremew, Gelagay and Azale, 2018). Kenya's ministry of health has recently announced plans to roll out this vaccination to all 10-year old girls across the country through routine immunization (MOH, 2019).

2.2.2 Breast cancer

Breast cancer is the leading cause of death among women in the world despite the implementation of various screening methods and treatment strategies to help reduce its incidence (Siegel, Miller and Jemal, 2016). According to Coughlin and Ekwueme (2009), cancer of the breast affects at least 1.5 million women in the world with at least 570,000 deaths reported annually. The incidence rates vary greatly however in eastern Africa it is estimated to be 19.3% among women in Eastern Africa (Wata, 2012). A recent study that reviewed records of cancer patients treated at both private and public facilities from Ghana, Nigeria and Kenya showed that breast cancer is not only the most frequently diagnosed, but also the most common cause of cancer-related mortality in the three countries (Twahir *et al.*, 2019). Lack of public awareness, inadequate access to early screening services and subsequent late diagnosis were found to be the main factors behind the high mortality. Indeed, the 2018 report from the WHO's International Agency for Research on Cancer listed breast cancer as the leading type of malignancy diagnosed among women in Kenya, with almost half of the approximately 6,000 women diagnosed each year, dying of it (Bray *et al.*, 2018).

2.2.3 Prostate Cancer

Prostate cancer occurs among men and it affects the prostate gland(IARC, 2008). This is increasingly becoming a health burden around the world and it mainly occurs among men older than 65 (Carlsson *et al.*, 2012). According to W.H.O, (2017), prostate cancer is associated with the incidence of at least one million new cases and 307,000 deaths. In Africa, there are 52,000 new cases and at least 37,000 deaths (IARC, 2016). In the East African region, it is the third cause of death with 9,000 reported cases and at least 7,300 deaths annually (Chu *et al.*, 2011; Centre*et al.*, 2012). In Kenya, there are no accurate and comprehensive surveillance for prostate cancer and therefore no reliable epidemiological data. However, the Ministry of Health in its 2015 guidelines identified prostate cancer as the most common cancer affecting men, with approximately 1,000 new cases reported each year and around 850 deaths every year. The numbers could be higher since many cases often go unreported and undiagnosed due to poor uptake of screening services (Makori, 2015; MOH, 2016). According to the ministry of health, the above three cancers, i.e. breast, cervical and prostate cancer are the most prevalent cancers yet the easiest to screen and manage with a good prognosis if detected early (MOH, 2016).The ministry of health has in the last three years started several initiatives to reduce the prevalence and cancer associated mortality. These include increased public awareness on need for early screening, investment in better diagnostic equipment, review of national cancer policies, introduction of cervical cancer vaccines among others. However, challenges such as rejection of the vaccine by some religious factions, inadequate specialists among them radiologists, oncologists and oncology nurses continue to hamper these efforts.

2.3 Social Support

Simply put, social support refers to “the number of social connections a person has.” (Revenson and Singer, 2012). All human beings are social in nature and exist within a given community of social contacts which range from parents and siblings to relatives and friends (Revenson and Lepore, 2012). Social support is not merely the presence of this community but their active participation in helping a person cope with the bad times and celebrating the good times with them (Feeney and Collins, 2015). Given that life comprises of the physical, mental, social and spiritual facets, it follows that a person requires social support on all facets of their life (Revenson and Lepore, 2012). Studies show that the absence of social support in the life of a person predisposes them to poor health outcomes (Revenson and Lepore, 2012; Singer *et al.*, 2012).

The link between social support and health status means that for people whose health is already compromised through long-term illness, like cancer, social support is of paramount importance to help them cope with the stresses of life, more so life with a chronic disease (Pfaendler *et al.*, 2015). A study conducted in Midwestern United States among AfricanAmerican women with a breast cancer found that while social support is often high immediately following the diagnosis phase of cancer, it tends to reduce sharply thereafter especially among black people (Thompson *et al.*, 2017).

Social support is also closely linked with QoL among cancer patients (Pfaendler *et al.*, 2015). It is directly associated with reported QoL for cancer patients. Therefore, low social support is likely to lead to a lower reported QoL among cancer patients (Luszczynska *et al.*, 2013). Despite the fact that no studies have been conducted in Kenya on social support of cancer patients, a study conducted among HIV-positive patients from a low-income urban setting in Kenya found that higher social support was associated with lower odds of having poor overall health (Kingori, Haile and Ngatia, 2015).

2.4 Psychological Wellbeing

According to the World Health Organization, psychological wellbeing is defined as “a state of mental well-being in which every person realizes his or her own potential and can cope with daily life stresses and work productively to make a contribution to her or his community."(WHO, 2001). This state of psychological wellbeing is the desired state even for cancer patients. However, due to the seriousness of the condition, it is often not the case.

Studies show that for at least one-third of cancer patients around the globe, mental disorders are commonplace (Dekker *et al.*, 2015). This means that their condition predisposes them to mental disorders. Anxiety over their prognosis as well as depression are the two most common mental disorders that face cancer patients (Linden *et al.*, 2012; Stafford *et al.*, 2015). As such, their presence or absence is, therefore, a good indicator of the presence or absence of psychological wellbeing, respectively.

It is worth mentioning that various studies have demonstrated that social support for people with mental disorders helps to improve their overall health status (Smith *et al.*, 2013; Pietrzak *et al.*, 2015). This suggests, therefore, that for cancer patients – who are already predisposed to these same mental disorders – social support is doubly important. Additionally, a study conducted in Northern California that extracted from Utah cancer registry found that larger social networks led to lower mortality for breast cancer (Kroenke *et al.*, 2013), meaning that more social support may have a significant role to play in the cancer experience of patients.

2.5 Quality of Life and Treatment Outcomes

Quality of life is a highly subjective construct and is often related to the level of happiness, comfortability or health a person derives from a given state (Theofilou, 2013). Studies among patients with chronic illnesses suggest that lack of social support is a barrier to high QoL (Brand, Barry and Gallagher, 2016; Unsar, Erol and Sut, 2016). A study among patients with coronary artery disease showed that low social support was highly correlated to lower reported QoL (Staniute, Brozaitiene and Bunevicius, 2013). In addition, other studies show that the side effects of radiotherapy treatment – such as sexual dysfunction, bowel dysfunction and mental disorders – are associated with lower reported QoL among cancer patients (Pfaendler *et al.*, 2015). It is important to note, additionally, that a patient's QoL affects their adherence to given treatment intervention (Loon, Jin and Jin Goh, 2015). This link has commonly been demonstrated among patients with diabetes, in that, a lower QoL is related to non-adherence to treatment (Martínez *et al.*, 2008). More recently, however, this link has been demonstrated among cancer patients (Puts *et al.*, 2013; Cheville *et al.*, 2015). This, therefore, suggests that while cancer may lead to low QoL for patients, this low QoL may then result in non-adherence to treatment and ultimately poor treatment outcomes.

2.6 **Palliative Care**

According to the WHO, palliative care is defined as "an approach that improves the QoL of patients and their families facing a life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment, management of pain and other physical, psychosocial and spiritual problems (WHO, 2016)." While this definition encompasses all the facets of a person's life, the reality is often far different. Indeed, majority of what is defined as palliative care is concerned with the management of only the physical with the exception of other problems in the life of a patient (Breen *et al.*, 2014; Wiener *et al.*, 2015). A recent study in a high-income country pointed to the fact that while bereaved parents and oncologists were able to identify 15 key components of palliative care, only 3 were actually accessible to the patients (Kirk, 2013). A 2014 review of palliative care policies in United States and Europe found that while palliative care seems good on paper, there is an obvious disconnect between policy and practice – leaving patients with the short end of the stick (Breen *et al.*, 2014). This may be due to gaps in the training of medical personnel, who are often concerned with the physiological outcome more than the psychological needs of their patients, hence absconding their role as a source of social support for patients.

2.7 Knowledge Gap

There is a paucity of data on the significance of social support in determining the psychological wellbeing and QoL of cancer patients in Kenya. This study provides some level of insight on the same.

CHAPTER 3: METHODOLOGY

3.0 Introduction

This chapter outlines the study design, description of the study site, study population, sample size calculation and sampling procedures, study variables, tools and study implementation including recruitment of research assistants and participants. Further, the chapter describes data collection, management and analysis procedures. Finally, ethical considerations, study limitations and minimization of errors are described.

3.1 Study Design

The study utilized analytic cross-sectional design to investigate the significance of social support on psychological wellbeing and quality of life of cancer patients.

3.2 Study Area description

This study was carried out at the cancer treatment centre KNH, Nairobi Kenya. KNH is Kenya’s main referral and teaching hospital. The centre is the only public health facility in Kenya where the poor can obtain advanced comprehensive treatment for cancer. The centre attends to over 100 patients, both new and old, every day.

3.3 Study Population

The study respondents were both new and old patients attending the cancer treatment entreat KNH. KNH was chosen as the study area for several reasons. The centre runs daily from Monday through Friday for both new and old patients. This increased the probability of getting adequate participants for the study.

3.3.1 Inclusion Criteria

i. Respondent must be a cancer patient attending KNH cancer clinic.

ii. Respondents with cervical, breast and prostate cancer.

iii. Respondent must give consent in writing.

iv. Respondent must be aged 18 years and above.

3.3.2 Exclusion Criteria

i. Respondent who declined to give consent as appropriate.

ii. Respondent declined to give an informed consent in writing to participate in the study.

iii. Respondents who were too sick and unable to participate.

iv. Respondents with obvious psychological distress or too sick to answer the questions in the questionnaire.

3.4 Sampling

3.4.1 Sampling Procedure

Purposive sampling was used to recruit respondents in the study. All new and old cancer patients with prostate, cervical and breast cancer were included in the study. This was done until the minimum sample size is reached. A trained nurse explained all the study details to eligible participants and then sought consent to participate. If the participant consented to participate, then they were invited to a private room where data collection took place.

3.4.2 Sample Size

The sample size for this study was derived using Fisher's formula with a precision /absolute error of 5% and type 1 error of 5% (Rosner, Bernard, 2010).

$$n = \frac{Z_{1-\alpha/2}^{2}\, p(1-p)}{d^{2}}$$

Where; n = the desired

sample size.

$Z_{1-\alpha/2}$ =the standard normal variate (at 5% type 1 error, $P<0.05$) =1.96 p =is the expected proportion of patients with depression in a hospital-based population based on a previous study that found a prevalence of 10.8% (Lichtenthal *et al.,* 2009). d= is the absolute error or precision-decided by researches usually 5%.

$$Samplesize = \frac{(1.96^{2} \times 0.108 \times 0.892)}{0.05^{2}} = 148$$

For this study, we required a minimum of 148 subjects to be enrolled in the study. Assuming a 20% non-response rate/lack of compliance, the sample size was increased to 178 respondents. Using the reported Ministry of Health prevalence rates for the three commonest cancers, the sample size was distributed as follows 4: 3: 3 for cervical, breast and prostate cancer respectively hence 71, 54 and 53 patients respectively.

3.5 Variables

3.5.1 Predictor Variables

Perceived social support: Significant other's social support, family's social support, friend's social support and total social support.

3.5.2 Intervening Variables

- Socio-demographic Characteristics: Age, Sex, Education Level, marital status,

  Occupation, level of income, etc

- Cancer Type (breast/cervical/prostate) and Cancer Staging

3.5.3 Outcome Variables

- Psychological Well-being: Level of anxiety, level of depression
- Quality of Life

3.6 Data Collection

3.6.1 Recruitment strategy

Both new and old respondents referred to the Cancer Treatment Centre and those who meet the criteria for inclusion were invited to participate in the study. The head of the centre was briefed on the procedures, objectives and ethical issues in order to ensure that the interests of the respondents were safeguarded. The target respondents were identified by registration number from the patient's file. Nurses running the centre introduced research assistants to the patients. Purposive sampling was used such that only patients with breast, prostate and cervical cancer were recruited. This was done until the minimum sample size was reached. The RAs explained the procedure and objective of the study to the respondents before participation. Written consent was obtained from all respondents prior to administration of questionnaires.

3.6.2 Data collection tools

Data was collected by means of interviewer-administered questionnaires. The following data collection tools were used to collect data to meet the study objectives:

1. A structured sociodemographic and clinical profile questionnaire.
2. Multi-dimensional Scale of Perceived Social Support
3. The Hospital Anxiety and Depression Scale
4. The World Health Organization Quality of Life- Brief Version

3.6.3 Psychometric Properties of the data collection tools

Apart from the socio-demographic and clinical profile questionnaire, the other three tools used to collect data have been tested for validity and reliability and been found to have good psychometric properties as described below;

(a) ***The Multidimensional Scale of Perceived Social Support (MSPSS)*** is a brief research tool designed to measure perceptions of support from 3 sources: Family, Friends, and a Significant Other. MSPSS is a 12-item scale, rated on a 7-point Likert scale, ranging from (1) *very strongly disagree* to (7) *very strongly agree*. The scale comprises of a total of 12 items, with 4 items for each subscale. The total social support is the sum of the scores from 12 items. The higher the sum of the 12 items, the higher the level of social support. It is free to use (Wilcox, 2010).

Scoring: The respondent completes 12 questions relating to the extent to which they feel they have support of their family, friends and a special person. Each of these forms a separate subscale relating to perceived support from a significant other, from friends and from family.

Significant Other Subscale: Add together items 1, 2, 5, & 10, then divide by 4.
Family Subscale: Add together items 3, 4, 8, & 11, then divide by 4.
Friends Subscale: Add together items 6, 7, 9, & 12, then divide by 4.
Total Scale: Add together all 12 items, then divide by 12.

Any mean total scale score ranging from 1 to 2.9 could be considered low support; a score of 3 to 5 could be considered moderate support; a score from 5.1 to 7 could be considered high support.

Validity and Reliability: Across many studies, the MSPSS has been shown to have good internal and test-retest reliability, good validity, and a fairly stable factorial structure (Akhtar *et al.*, 2010; Ng *et al.*, 2015). Several studies have found

Cronbach's coefficient for the 12 item MSPSS was ranging from .90 to .93 while for the Family, Friends, and Significant Other subscales demonstrated _'s of .91, .89, and .91 respectively (Canty-Mitchell and Zimet, 2000; Wongpakaran, Wongpakaran and Ruktrakul, 2011).

(b) ***The Hospital Anxiety and Depression scale (HADS)*** is a 14-item self-rated questionnaire that has been well established as a measure of overall psychological distress in cancer patients, with Depression and Anxiety subscales of seven items each (Zigmond and Snaith, 1983; Bjelland *et al.*, 2002).

Validity and Reliability**:** A study conducted in Ethiopia found that HADS has an internal consistency of 0.78 for anxiety, 0.76 for depression subscales and 0.87 for the full scale. The ICC was 80 for anxiety, 86% for depression subscales and 84% for the full scale (Ayalu, 2011). These properties indicate that HADS has promising acceptability, reliability and validity to examine psychological distress among patients in clinical settings (Camara *et al.*, 2015).

(c) ***The World Health Organization Quality of Life (WHOQOL)***is an assessment tool developed by the WHO quality of life team in 1991 (Harper, 1998). It assesses the individual's perceptions in the context of their culture and value systems, and their personal goals, standards and concerns. The instrument was developed collaboratively in a number of centres worldwide, and have been widely field-tested (Harper, 1998). The WHOQOL-Bref is a shorter version of the original instrument that may be more convenient for use in large research studies or clinical trials. The tool has been used extensively in a number of centres in low and middle-income countries (Feelemyer *et al.*, 2014). The tool is grouped into four domains of Quality of Life (QOL). (i) Physical health (raw score range: 7-35); (ii) Psychological health (raw score range: 6-30); (iii) Social relationships (raw score range: 3-15); (iv) Environment (raw score range: 8-40); (v) 2 items that measure overall QOL and general health. It is a self-report questionnaire whereby respondents express how much they have experienced the items in the preceding 2 weeks on a 5-point Likert scale ranging from 1 (not at all) to 5 (completely).Administration time is usually 10-15 minutes.

WHOQOL-Bref can provide data for both research and clinical purposes. Although it is a relatively brief instrument, its structure allows one to acquire specific information covering many aspects of life. The WHOQOL-Bref is short and easy to administer and has been widely used in Kenya (Musyimi *et al.*, 2017; Mutiso *et al.*, 2019). ***Validity and Reliability:*** Intra-rater reliability is excellent for the total WHOQOL-Bref and its subscales (ICC range: 0.840.93). Inter-rater reliability is adequate to excellent for the total WHOQOL-Bref and its subscales (ICC range: 0.56-0.95)(Jang *et al.*, 2004; Miller, Anton and Townson, 2008); Validity: Correlation of the WHOQOL-Bref subscales with the Satisfaction with Well-Being Index is adequate to excellent (Psychological – Pearson's r=0.75, Physical – Pearson's r=0.63, Family/social – Pearson's r=0.45, Financial/environment – Pearson's r=0.59) (Skevington, Lotfy and O'Connell, 2004).

3.6.4 Study Implementation

Data was collected through interviewer-administered questionnaires from respondents who met the inclusion criteria and provided written consent. Data was collected at the cancer treatment centre when the patients came for their routine check-ups. Trained nurses, working as research assistants, were responsible for seeking consent and data collection.

They read the consent form to the potential respondent, explained everything and answered individual questions as necessary. Only the respondents who gave informed consent in writing or thumbprint participated in the study. Once a respondent consented, he or she was given two copies of the consent form to sign or indicate with thumbprint after which he or she was given one copy to keep while the other was kept by the researcher. The respondent was then invited to a private room where the interviews were conducted. The entire data collection took approximately 30 to 40 minutes. The study took place between
February 2019 and April 2019.

3.6.5 Recruitment and training of research assistants

Qualified nurses who were not employees of KNH at the time of data collection were invited to apply to work as research assistants for this study. Priority was given to nurses with experience in research/data collection. Three of those meeting eligibility criteria were recruited. A four full-day training was conducted by the principal researcher prior to data collection. The training covered among other things: the purpose of the study, eligibility criteria, study methodology and sampling procedure Interviewing skills and techniques were discussed. A detailed question by question review of all the questionnaires both in English and Kiswahili with role plays were done to ensure an in-depth understanding of study tools. Ethical considerations in research involving human subjects including consenting procedures were also covered.

All the tools were pretested among five patients selected from the medical outpatient clinic at the Kenyatta National Hospital. Any ambiguity or errors detected in the pre-test were corrected before the start of actual data collection.

3.7 Data management

Data collected was double-entered into MS-Access software and checked for errors. All identified errors including double entries and duplicate study IDs were corrected by comparing the hard copy questionnaire and the two independent entries. Entries with missing data were deleted from the final data set. The final data set was saved in a password protected file ready for analysis.

3.8 Data Analysis

Three levels of analysis (descriptive statistics, Bivariate, and multivariate) were conducted.

(i) Univariate Analyses: Exploratory data analysis technique was used to uncover the distribution structure of the study variables as well as identify outliers or wrongly entered values. Descriptive statistics were used to examine the general distribution of the hypothesized factors and outcomes using means, median, standard deviations and range for continuous variables and proportions for categorical variables. Prevalence of the outcomes were reported with their corresponding 95% confidence intervals.

(ii) Bivariate Analyses: Association between anxiety, depression, quality of life and participant's characteristics (socio-demographics, social support) were assessed using independent samples t-test, ANOVA and Pearson's correlation for the continuous variables and spearman's Rho for the mixed variables to inform multivariable analyses.

(iii) Multivariable Analyses: Generalized linear models (GLM) were used to determine independent predictors of depression, anxiety and quality of life by entering factors that were significantly associated with it at the bivariate level. Beta coefficients and their respective 95% confidence interval were determined and reported. The threshold for statistical significance was be set at $p<0.05$. All the analysis was conducted using Stata version 14.

3.9 Ethical Considerations

In order to ensure that this study adhered to the ethical principles of respect, beneficence and justice and in order to protect and prevent unnecessary risk to respondents, ethical clearance was sought from the KNH/UoN Ethics Review Committee, and ethical approval number **P515/07/2018** was granted. This study was also registered under registration number **CTC/53/2019** by the Research Department at KNH. The consent forms are attached as appendices.

Trained research assistants were responsible for obtaining consent using a language that respondents could understand. The consent form was read to a potential participant with explanations provided and individual questions answered as necessary. Respondents who give informed consent in writing or thumbprint were interviewed for the study. Each respondent was provided with a copy of the consent form and the other retained by the research assistant. Interviews were conducted in private rooms that had been reserved for this purpose

3.10 Limitations of the Study

This study was carried out at the KNH's cancer treatment centre which is a public facility and therefore the study and the results cannot be generalised to private clinics.

3.11 Minimization of Errors and Biases

To adjust for confounding, variables that were significantly associated with the depression and anxiety and quality of life at bivariate analyses were considered using generalised linear regression models. Regression coefficients are provided. All tests were two-sided and the level of significance was set at $p < 0.05$.

CHAPTER 4: RESULTS

4.0 Introduction

This chapter discusses in detail, the presentation of the findings obtained from the study. It presents the socio-demographic information of the respondents and research findings based on the objectives of the study. Descriptive and inferential statistics have been used to analyse the data.

4.1 Descriptive Analyses

4.1.1 Socio-demographic characteristics of study respondents.

Socio-demographic characteristics of the study respondents were assessed including sex, marital status, age, religion, level of education and income. Nearly two-thirds of all the respondents were female (65.1%). The mean age of the respondents was 57.1±13.1 years. Majority of the respondents were Christians (94.7%) with the rest being Muslims. Over half of the respondents (55%) had attained post-primary level of education and were selfemployed. Over two-thirds (68.3%) were married with less than one third (25.9%) being either separated or widowed. Over two-thirds (69.8%)of the respondents had monthly earning of less than Kshs. 10000, with only less than 2% earning more than Kshs. 50,000 per month.

Regarding cancer types, the three cancers (Breast, Cervical and Prostate) were almost equally distributed. Three-quarters of the respondents, irrespective of the cancer type were on chemotherapy, with others either being on radiotherapy or brachytherapy. More than half (56.7%) of the respondents were in cancer stage 2 (as per patients files), with about a third (31.7%) being in stage 3; 5% of the respondents were in stage one and only 6.7% were in stage 4.Table 1 summarises the respondent’s sociodemographic characteristics, stages of cancer and types of treatment.

Table 1: Socio-demographic characteristics of study respondents

Variable	Category	Frequency (N=189)	Percentage (%)
Sex	Female	123	65.1
	Male	66	34.9
Age	Mean±SD; Median; Range	57.1±13.1; 57; 24-87	
	Missing	2	
Religion	Christian	178	94.7
	Muslim	10	5.3
	Missing	1	
Education Level	None	32	16.9
	Primary	53	28.0
	Secondary	38	20.1
	Tertiary	66	34.9
Employment status	Self-employed	110	58.2
	Employed	43	22.8
	Others	36	19.0
Marital Status	Never married	11	5.8
	Married	129	68.3
	Separated/Divorced	25	13.2
	Widowed	24	12.7
Income	10,000 and Below	132	69.8
	10,001-20,000	22	11.6
	20,0001-50,000	32	16.9
	Above 50,000	3	1.6
Cancer type	Breast Cancer	67	35.4
	Cervical Cancer	60	31.7
	Prostrate	62	32.8
Type of treatment	Brachytherapy	12	7.0
	Chemotherapy	130	75.6
	Radiotherapy	30	17.4
	Missing	17	
Cancer Stage	1	9	5.0
	2	102	56.7

	3	57	31.7
	4	12	6.7
	Missing	9	

4.1.2 Scores of depression and anxiety, quality of life and social support

Depression, anxiety, quality of life and social support were assessed on a continuous scale. Scores for each parameter were determined. Findings are presented in Table 2 below**.**

Table 2: Scores for depression, anxiety, quality of life and social support

Measure	**Mean**	**Median**	**S.D.**	**Min.**	**Max.**	**IQR**
Depression Scores	10.7	11.0	4.6	0.0	21.0	5.5
Anxiety Scores	11.1	11.0	5.1	0.0	21.0	7.5
Physical quality of Life	39.5	38.9	13.5	16.0	77.7	20.0
Psychosocial quality of Life	42.8	40.0	12.7	21.3	80.0	18.7
Social Quality of Life	41.0	42.7	14.6	16.0	74.7	26.7
Environmental quality of life	41.7	40.0	10.9	22.0	70.0	16.0
Significant Other-Social Support	4.4	5.0	1.9	1.0	7.0	3.0
Family Scores-Social Support	5.6	6.0	1.3	1.8	7.0	1.6
Friends Scores-Social Support	3.8	3.6	1.5	1.0	7.0	2.3
Total Scores-Social Support	4.6	4.8	1.3	1.6	7.0	2.0

4.1.3 Levels of depression and anxiety, quality of life and social support.

Levels of various categories for depression, anxiety, social support and quality of life were assessed. Proportions each category were determined. More than half of the respondents were within the abnormal range for depression “cases” (*based on the HADS cut off points*-with only 23.8% being within the normal range. This was similar to anxiety whereby 56.2% were within the abnormal range and only a quarter (25.4%) being within normal range. The rest were borderline abnormal. Majority of the respondents (80% and above) reported to have received moderate to levels of high social support. However, these varied depending on the different domains of social support. Findings for various proportions are summarised in Table 3 below**.**

Table 3: Proportions for various categories for predictor and outcome variables

Measure	**Levels**	**Frequency**	**Percentage**	**95% C.I**	
Depression Levels	Normal	44	23.8	17.8	29.7
	Borderline abnormal	48	25.9	19.5	32.4
	Abnormal (case)	93	50.3	43.2	57.3
Anxiety Levels	Normal	47	25.4	19.5	31.4
	Borderline abnormal	34	18.4	13.0	24.9
	Abnormal (case)	104	56.2	48.6	62.7
Social Support-Significant Other Levels	Low Support	40	21.6 33.5	16.2	28.1
	Moderate Support	62	44.9	26.5	40.0
	High Support	83		38.4	51.9
Social SupportFamily Levels	Low Support	7	3.8	1.1	7.0
	Moderate Support	57	30.8	24.3	37.3
	High Support	121	65.4	58.4	72.4
Social SupportFriends Levels	Low Support	51	27.6	21.6	33.5
	Moderate Support	97	52.4	45.4	60.0
	High Support	37	20.0	14.1	25.9
Social SupportTotal Levels	Low Support	24	13.0 45.4	8.6	18.4
	Moderate Support	84		37.9	52.4
	High Support	77	41.6	34.6	48.1

HADS Scoring*: Total score: Depression (D) ___________ Anxiety (A) ______________*

0-7 = Normal, 8-10 = Borderline abnormal (borderline case), 11-21 = Abnormal (case)
***MSPSS Scoring**: 1.0-2.9=Low support; 3.0 - 5.0 = Moderate support; 5.1- 7.0 High support.*

4.2 Bivariate Analyses

4.2.1 Factors Associated with Depression Scores

Association between depression scores and participant characteristics, stage and type of cancer and level of social support was assessed. Low level of education (p<001), lack of formal employment (p<0.05), being widowed/separated, earning low income (p<0.05), being in the advanced stage (p<0.005), were significantly associated with higher depression scores. Similarly, low levels social support (all domains) were significantly associated with higher depression scores (p<0.005).These findings are summarised in table 4 below.

Table 4: Factors associated with depression scores among cancer patients

Variable	**Category**	**N**	**Mean±SD**	**Significance**
Sex	Female	123	10.7±4.7	$t_{(187)}$=0.30; P=0.768
	Male	66	10.5±4.5	
Religion	Christian	178	10.6±4.6	$t_{(186)}$=-1.36; P=0.176
	Muslim	10	12.6±5.3	
Education Level	None	32	13.4±3.8	*F(3, 185)*=198.8; P**<0.001**
	Primary	53	12.1±4.5	
	Secondary	38	8.9±4.1	
	Tertiary	66	9.3±4.5	
Employment status	Self-employed	110	10.6±4.7	*F(2, 186)*=68.2; P=**0.041**
	Employed	43	9.5±4.2	
	Others	36	12.2±4.6	
Marital Status	Never married	11	9.8±4.9	*F(3, 185)*=104.9; P**=0.002**
	Married	129	10.2±4.4	
	Separated/Divorced	25	10.2±5.2	
	Widowed	24	14.0±4.0	
Income	10,000 and Below	132	11.2±4.6	*F(3, 185)*=56.5; P=**0.047**
	10,001-20,000	22	9.1±3.4	

	20,0001-50,000	32	10.0±5.1	
	Above 50,000	3	6.0±1.7	
Cancer type	Breast Cancer	67	11.1±5.0	*F(2, 186)*=8.6; P=0.671
	Cervical Cancer	60	10.5±4.6	
	Prostrate	62	10.4±4.3	
Type of treatment	Brachytherapy	12	9.7±4.6	*F(2, 169)*=5.6; P=0.762
	Chemotherapy	130	10.7±4.4	
	Radiotherapy	30	10.6±5.1	
Cancer Stage	1	9	4.6±4.0	*F(3, 176)*=180.0; **P<0.001**
	2	102	10.2±4.1	
	3	57	12.1±4.2	
	4	12	13.0±6.4	
Social Support-Significant Other Levels	Low Support	40	13.5±3.4	*F(2, 186)*=351.2; **P<0.001**
	Moderate Support	63	11.6±4.3	
	High Support	86	8.7±4.5	
Social SupportFamily Levels	Low Support	7	12.0±4.8	*F(2, 186)*=133.8; P=**0.002**
	Moderate Support	58	12.3±4.1	
	High Support	124	9.8±4.6	
Social SupportFriends Levels	Low Support	53	13.5±3.8	*F(2, 185)*=450.9; **P<0.001**
	Moderate Support	98	10.5±4.1	
	High Support	37	7.1±4.5	
Social SupportTotal Levels	Low Support	24	13.5±3.5	*F(2, 182)*=374.3; **P<0.001**
	Moderate Support	84	11.9±4.4	
	High Support	77	8.3±4.3	

4.2.2 Factors Associated with Anxiety Scores

Association between anxiety scores and participant characteristics, stage and type of cancer and level of social support was assessed. Low level of education (p<0.001), lack of formal employment (p<0.05), being widowed, earning low income (p<0.05) and being in advanced stage (p<0.001) were significantly associated with higher scores of anxiety. Similarly, low level of social support (all domains) was significantly associated with higher anxiety scores (p<0.005).These findings are summarised in table 5 below.

Table 5: Factors associated with anxiety scores among cancer patients

Variable	Category	N	Mean±SD	Significance
Sex	Female	123	11.4±4.9	$t_{(187)}$=1.3; P=0.191
	Male	66	10.4±5.5	
Religion	Christian	178	11.0±5.2	$t_{(186)}$=-0.5; P=0.607
	Muslim	10	11.9±4.6	
Education Level	None	32	13.2±4.5	*F(3, 185)*=6.6; **P<0.001**
	Primary	53	12.6±5.1	
	Secondary	38	9.9±5.3	
	Tertiary	66	9.5±4.8	
Employment status	Self-employed	110	11.1±5.2	*F(2, 186)*=3.1; **P=0.049**
	Employed	43	9.8±4.9	
	Others	36	12.6±4.9	
Marital Status	Never married	11	9.9±5.9	*F(3, 185)*=3.2; **P=0.024**
	Married	129	10.7±5.0	
	Separated/Divorced	25	10.6±5.5	
	Widowed	24	14.0±4.6	
Income	10,000 and Below	132	11.7±5.0	*F(3, 185)*=2.7; P=**0.047**
	10,001-20,000	22	8.9±4.9	
	20,0001-50,000	32	10.3±5.7	
	Above 50,000	3	7.7±0.6	
Cancer type	Breast Cancer	67	12.1±5.1	*F(2, 186)*=2.3; P=0.108
	Cervical Cancer	60	10.9±5.1	
	Prostrate	62	10.2±5.2	
Type of treatment	Brachytherapy	12	10.9±4.5	*F(2, 169)*=0.0; P=0.988
	Chemotherapy	130	10.9±4.9	
	Radiotherapy	30	11.1±5.7	
Cancer Stage	1	9	6.3±5.1	*F(3, 176)*=4.9; P=**0.003**
	2	102	10.6±4.8	
	3	57	12.3±4.7	
	4	12	13.3±7.3	
Social Support-Significant Other Levels	Low Support	40	14.1±3.9	*F(2, 186)*=17.0; **P<0.001**
	Moderate Support	63	11.9±4.5	
	High Support	86	9.0±5.2	
Social SupportFamily Levels	Low Support	7	13.6±2.6	*F(2, 186)*=6.5; **P=0.002**
	Moderate Support	58	12.8±4.7	

	High Support	124	10.1±5.2	
Social SupportFriends Levels	Low Support	53	14.2±4.4	*F(2, 185)*=19.3; **P<0.001**
	Moderate Support	98	10.4±4.4	
	High Support	37	8.2±5.8	
Social SupportTotal Levels	Low Support	24	14.3±4.0	*F(2, 182)*=15.6; **P<0.001**
	Moderate Support	84	12.1±4.7	
	High Support	77	8.9±5.1	

4.2.3 Factors Associated with Physical Quality of Life

Association between physical quality of life and participant's characteristics (sociodemographics, cancer stage and type, social support) were assessed. Being a Christian, having a higher level of education, being employed, never married, having a higher income, being in lower cancer stage and receiving moderate to high social support was significantly associated with a higher physical quality of life ($p<0.005$). These findings are summarised in table 6 below.

Table 6: Factors associated with Physical quality of life of cancer patients

Variable	Category	N	Mean±SD	Significance
Sex	Female	122	40.0±13.7	$t_{(186)}$=0.7; P=0.507
	Male	66	38.6±13.3	
Religion	Christian	177	40.0±13.6	$t_{(185)}$=2.0; P=**0.043**
	Muslim	10	31.1±10.4	
Education Level	None	31	28.8±9.7	*F(3, 184)*=21.1; **P<0.001**
	Primary	53	34.2±13.7	
	Secondary	38	44.3±13.3	
	Tertiary	66	46.1±9.9	
Employment status	Self-employed	109	39.3±13.6	*F(2, 185)*=13.3; **P<0.001**
	Employed	43	46.5±10.3	
	Others	36	31.7±12.5	
Marital Status	Never married	11	49.0±13.1	*F(3, 184)*=7.5; **P<0.001**
	Married	128	40.4±13.0	
	Separated/Divorced	25	40.7±11.6	
	Widowed	24	29.0±13.4	

Income	10,000 and Below	131	36.7±13.6	*F(3, 184)*=6.8; **P<0.001**
	10,001-20,000	22	45.3±9.5	
	20,0001-50,000	32	46.2±12.7	
	Above 50,000	3	48.0±2.3	
Cancer type	Breast Cancer	66	39.2±13.3	*F(2, 185)*=0.4; P=0.672
	Cervical Cancer	60	40.7±14.2	
	Prostrate	62	38.6±13.3	
Type of treatment	Brachytherapy	12	37.9±12.9	*F(2, 168)*=0.4; P=0.649
	Chemotherapy	129	40.2±12.8	
	Radiotherapy	30	38.0±15.4	
Cancer Stage	1	9	59.7±9.4	*F(3, 175)*=17.9; **P<0.001**
	2	101	41.7±11.8	
	3	57	34.0±10.2	
	4	12	28.2±18.0	
Social Support-Significant Other Levels	Low Support	40	33.5±13.0	*F(2, 185)*=9.3; **P<0.001**
	Moderate Support	62	37.6±13.5	
	High Support	86	43.6±12.6	
Social SupportFamily Levels	Low Support	7	28.9±9.9	*F(2, 185)*=3.0; **P=0.053**
	Moderate Support	58	38.2±12.7	
	High Support	123	40.7±13.9	
Social SupportFriends Levels	Low Support	53	30.5±10.5	*F(2, 184)*=20.5**; P<0.001**
	Moderate Support	97	42.2±11.9	
	High Support	37	45.3±15.5	
Social SupportTotal Levels	Low Support	24	32.0±13.4	*F(2, 181)*=10.6; **P<0.001**
	Moderate Support	84	37.4±12.7	
	High Support	76	44.4±13.1	

4.2.4 Factors Associated with Psychological Quality of Life

Association between psychological quality of life and participant’s characteristics (sociodemographics, cancer stage and type, social support) were assessed. Higher education, single status, a higher income, being in lower cancer stage and receiving social support was significantly associated with a higher psychological quality of life (p<0.005). These findings are summarised in table 7 below.

Table 7: Factors associated with Psychological Quality of Life of cancer patients

Variable	**Category**	**N**	**Mean±SD**	**Significance**
Sex	Female	121	43.0±12.9	$t_{(185)}$=0.4; P=0.689
	Male	66	42.3±12.3	
Religion	Christian	176	43.1±12.7	$t_{(184)}$=1.5; P=0.128
	Muslim	10	36.8±11.8	
Education Level	None	31	38.8±11.7	*F(3, 188)*=3.2**; P=0.025**
	Primary	53	41.4±12.8	
	Secondary	37	47.6±13.1	
	Tertiary	66	43.0±12.1	
Employment status	Self-employed	109	43.1±12.5	*F(3, 184)*=2.7**; P=0.067**
	Employed	42	45.3±11.5	
	Others	36	38.7±13.7	
Marital Status	Never married	10	42.4±13.7	*F(3, 183)*=3.7; **P=0.004**
	Married	128	44.8±12.2	
	Separated/Divorced	25	40.2±12.9	
	Widowed	24	35.0±11.5	
Income	10,000 and Below	130	41.2±12.8	*F(3, 183)*=3.4**; P=0.019**
	10,001-20,000	22	47.0±12.1	
	20,0001-50,000	32	44.6±11.6	
	Above 50,000	3	58.7±2.7	
Cancer type	Breast Cancer	65	42.2±13.2	*F(3, 184)*=2.3; P=0.772
	Cervical Cancer	60	43.7±12.7	
	Prostrate	62	42.4±12.2	
Type of treatment	Brachytherapy	12	45.3±11.4	*F(3, 168)*=2.2; P=0.306
	Chemotherapy	129	42.0±12.1	
	Radiotherapy	30	45.5±14.4	
Cancer Stage	1	9	60.7±10.5	*F(3, 175)*=3.5; **P<0.001**
	2	101	42.3±11.7	
	3	57	40.7±11.8	
	4	12	41.1±15.1	
Social Support-Significant Other Levels	Low Support	39	33.5±8.2	*F(3, 184)*=2.2; **P<0.001**
	Moderate Support	62	41.1±10.6	
	High Support	86	48.2±13.0	
Social Support-Family Levels	Low Support	7	31.2±12.5	*F(3, 184)*=2.4; **P<0.001**
	Moderate Support	57	37.1±9.3	

	High Support	123	46.0±12.8	
Social Support-Friends Levels	Low Support	52	33.2±6.9	*F(3, 183)*=2.3; **P<0.001**
	Moderate Support	97	44.0±10.6	
	High Support	37	53.2±14.6	
Social Support-Total Levels	Low Support	24	31.9±6.3	*F(3, 180)*=2.2; **P<0.001**
	Moderate Support	83	39.1±10.4	
	High Support	76	50.5±12.4	

4.2.5 Factors Associated with Social Quality of Life

Association between participant's social quality of life and socio-demographics were assessed. Not being married, having a higher income, being in lower cancer stage and receiving higher social support was significantly associated with a higher social quality of life (p<0.005). These findings are summarised in table 8.

Table 8: Factors associated with Social Quality of Life of cancer patients

Variable	**Category**	**N**	**Mean±SD**	**Significance**
Sex	Female	122	42.2±13.9	$t_{(186)}$=1.6; P=0.118
	Male	66	38.7±15.6	
Religion	Christian	177	41.3±14.5	$t_{(185)}$=1.4; P=0.160
	Muslim	10	34.7±16.3	
Education Level	None	31	38.5±11.7	*F(3, 184)*=1.7; P=0.178
	Primary	53	38.2±13.5	
	Secondary	38	43.2±15.8	
	Tertiary	66	43.0±15.6	
Employment status	Self-employed	109	41.1±14.6	*F(2, 185)*=1.6; P=0.212
	Employed	43	43.4±14.6	
	Others	36	37.6±14.3	
Marital Status	Never married	11	45.8±16.3	*F(3, 184)*=4.2; **P=0.006**
	Married	128	42.9±14.1	
	Separated/Divorced	25	35.4±16.7	
	Widowed	24	34.3±10.5	
Income	10,000 and Below	131	39.1±14.3	*F(3, 184)*=3.1; **P=0.029**
	10,001-20,000	22	44.6±14.0	

	20,0001-50,000	32	44.5±15.2	
	Above 50,000	3	56.9±3.1	
Cancer type	Breast Cancer	66	42.1±14.6	*F(2, 185)*=1.2; P=0.304
	Cervical Cancer	60	42.2±13.2	
	Prostrate	62	38.6±15.6	
Type of treatment	Brachytherapy	12	45.3±11.7	*F(2, 168)*=1.5; P=0.224
	Chemotherapy	129	41.6±14.3	
	Radiotherapy	30	37.7±13.9	
Cancer Stage	1	9	56.3±11.7	*F(3, 175)*=5.0; **P=0.002**
	2	101	41.8±15.1	
	3	57	39.0±11.6	
	4	12	34.2±16.3	
Social Support-Significant Other Levels	Low Support	40	28.3±9.2	*F(2, 185)*=45.2; **P=0.000**
	Moderate Support	62	37.7±12.1	
	High Support	86	49.2±13.1	
Social SupportFamily Levels	Low Support	7	30.5±12.2	*F(2, 185)*=17.3; **P=0.000**
	Moderate Support	58	33.4±10.2	
	High Support	123	45.1±14.8	
Social SupportFriends Levels	Low Support	53	29.4±9.9	*F(2, 184)*=39.3; **P=0.000**
	Moderate Support	97	43.3±13.1	
	High Support	37	51.6±13.1	
Social SupportTotal Levels	Low Support	24	25.9±7.9	*F(2, 181)*=52.4; **P=0.000**
	Moderate Support	84	36.7±11.8	
	High Support	76	50.8±12.5	

4.2.6 Factors Associated with Environmental Quality of Life

Association between environmental quality of life and participant's characteristics (sociodemographics, cancer stage and type, social support) were assessed. A higher level of education, having formal employment, not being married, having a higher income, being in lower cancer and receiving moderate to high social support were significantly associated with a higher environmental quality of life (p<0.005). These findings are summarised in table 9 below.

Table 9: Factors associated with Environmental Quality of Life of cancer patients

Variable	**Category**	**N**	**Mean±SD**	**Significance**
Sex	Female	122	42.1±11.2	$t_{(186)}$=0.6; P=0.534
	Male	66	41.0±10.5	
Religion	Christian	177	42.1±10.9	$t_{(185)}$=1.8; P=0.067
	Muslim	10	35.6±10.1	
Education Level	None	31	35.3±8.4	*F(3, 184)*=21.5**; P<0.001**
	Primary	53	36.2±10.5	
	Secondary	38	43.1±9.0	
	Tertiary	66	48.3±9.4	
Employment status	Self-employed	109	41.1±10.2	*F(2, 185)*=15.9**; P<0.001**
	Employed	43	48.3±10.4	
	Others	36	35.5±10.0	
Marital Status	Never married	11	49.3±13.5	*F(3, 184)*=6.5; **P<0.001**
	Married	128	42.0±10.3	
	Separated/Divorced	25	43.8±10.9	
	Widowed	24	34.1±9.7	
Income	10,000 and Below	131	39.8±10.8	*F(3, 184)*=5.8; **P<0.001**
	10,001-20,000	22	44.7±9.8	
	20,0001-50,000	32	46.1±10.2	
	Above 50,000	3	56.0±3.5	
Cancer type	Breast Cancer	66	42.1±11.7	*F(2, 185)*=0.1; P=0.885
	Cervical Cancer	60	41.8±11.0	
	Prostrate	62	41.1±10.2	
Type of treatment	Brachytherapy	12	41.7±10.8	*F(2, 168)*=2.4; **P=0.098**

	Chemotherapy	129	42.8±10.8	
	Radiotherapy	30	38.1±10.9	
Cancer Stage	1	9	53.8±10.1	*F(3, 175)*=7.5; **P<0.001**
	2	101	42.9±10.2	
	3	57	39.1±9.7	
	4	12	34.7±14.8	
Social Support-Significant Other Levels	Low Support	40	36.0±10.7	*F(2, 185)*=27.8; **P<0.001**
	Moderate Support	62	37.5±8.3	
	High Support	86	47.4±10.0	
Social SupportFamily Levels	Low Support	7	30.6±7.4	*F(2, 185)*=9.4**; P<0.001**
	Moderate Support	58	38.4±10.6	
	High Support	123	43.9±10.6	
Social SupportFriends Levels	Low Support	53	34.8±9.8	*F(2, 184)*=20.3; **P<0.001**
	Moderate Support	97	43.2±9.7	
	High Support	37	47.6±11.0	
Social SupportTotal Levels	Low Support	24	34.3±10.8	*F(2, 181)*=19.0; **P<0.001**
	Moderate Support	84	39.3±10.0	
	High Support	76	46.9±9.9	

4.2.7 Correlations between psychological wellbeing, QoL and social support

Correlations between depression and anxiety scores, quality of life and social support was assessed. Depression was found to be positively correlated with anxiety. All domains for quality of life and social support were negatively correlated with depression and anxiety. Age was positively correlated with depression and anxiety. These findings are summarised in table 10 below.

Table 10: Correlations between Psychological wellbeing, QoL and Social Support

Correlations	1	2	3	4	5	6	7	8	9	10	11
1. Depression Scores	1										
2. Anxiety Scores	**0.801****	1									
3. Physical quality of Life	-0.719**	-0.695**	1								
4. Psychosocial quality of Life	-0.750**	-0.689**	0.685**	1							
5. Social Quality of Life	-0.575**	-0.549**	0.570**	0.649**	1						
6. Environmental quality of life	-0.627**	-0.629**	0.727**	0.631**	0.628**	1					
7. Significant Other Scores	-0.430**	-0.401**	0.327**	0.462**	0.597**	0.461**	1				

8. Family Scores	-0.291**	-0.253**	0.183*	0.426**	0.414**	0.352**	0.596**	1			
9. Friends Scores	-0.543**	-0.470**	0.423**	0.628**	0.618**	0.460**	0.694**	0.547**	1		
10. Total Scores	-0.498**	-0.444**	0.372**	0.588**	0.644**	0.499**	0.911**	0.794**	0.872**	1	
11. Age (Years)	**0.199****	0.107	-0.317**	-0.152*	-0.170*	-0.159*	-0.045	-0.019	-0.074	-0.053	1

****. Correlation is significant at the 0.01 level (2-tailed); *. Correlation is significant at the 0.05 level (2tailed).**

4.3 Multivariate Analyses

4.3.1 Independent Predictors of Depression among cancer patients

Generalized linear models were used to determine independent predictors of depression by entering factors that were significantly associated with it at the bivariate level**.** Respondents with lower education level had a significantly higher scores of depression as compared to those who had tertiary education (β=2.28, 95% C.I 0.89 to 3.67, P=0.001 and β=1.79, 95% C.I 0.65 to 2.93, P=0.002 for those with primary education), however no significant differences were found between those with tertiary level of education and those with secondary level of education (p=0.599). Respondents who had stage 1 cancer had significantly lower depression scores (β=-2.97, 95% C.I -5.16 to –0.79, P=0.008) as compared to those with stage 4 cancer. No significant differences were found between stage 2, 3 and stage 4 (P>0.05).

Respondents with high scores of anxiety had significantly high scores of depression; for every unit increase in anxiety score the level of depression increased by 0.42 points (β=0.42, 95% C.I 0.32 to 0.52, P<0.001). Respondents with a higher scores of social support had significantly lower depression scores, for every unit increase in social support from friends, depression score decreased by 0.40 units (β=-0.40, 95% C.I -0.74 to -0.05, P=0.025). Respondents with high scores psychological quality of life had a significantly lower depression scores, for every unit in psychological quality of life depression scores decreased by 0.11 points (β=-0.11, 95% C.I -0.16 to -0.06, P<0.001). No significant differences were found between depression and marital status, income and age (P>0.05).

These findings are summarised in table 11 below.

Table 11: Independent Predictors of Depression among patients with Cancer

Parameter	**Category**	**β**	**S.E**	**95% C.I of β**		**Sig.**
				Lower	**Upper**	
Education Level	None	2.28	0.71	0.89	3.67	**0.001**
	Primary	1.79	0.58	0.65	2.93	**0.002**
	Secondary	0.30	0.56	-0.81	1.40	0.599
	Tertiary	Ref.				
Employment status	Self-employed	0.34	0.48	-0.60	1.27	0.482
	Employed	1.17	0.63	-0.07	2.42	0.065
	Others	Ref.				
Marital Status	Never married	-0.31	0.97	-2.22	1.59	0.747
	Married	-0.40	0.57	-1.51	0.71	0.481
	Separated/Divorced	-0.63	0.73	-2.05	0.80	0.389
	Widowed	Ref.				
Income	10,000 and Below	0.18	1.42	-2.60	2.96	0.900
	10,001-20,000	1.21	1.47	-1.67	4.08	0.411
	20,0001-50,000	1.07	1.41	-1.70	3.83	0.449
	Above 50,000	Ref.				
Cancer Stage	Stage 1	-2.97	1.12	-5.16	-0.79	**0.008**
	Stage 2	-1.33	0.74	-2.78	0.12	0.072
	Stage 3	-0.62	0.73	-2.06	0.81	0.393
	Stage 4	Ref.				
Anxiety	(HADS Scores)	0.42	0.05		0.52	
Social Support-Significant Other	MSPSS Scores	-0.08	0.15	-0.37	0.22	0.604
				-0.02		0.673
Age In Years	Years	0.01		0.32 0.01	0.04	**<0.001**

Social Support-Family MSPSS Scores 0.21 0.19 0.264 Social Support-Friends MSPSS Scores -0.16 -0.5940 0.18 **0.025**

Physical Quality of Life	WHOQoL Scores	-0.01	0.0	-0.74	-0.05	
Psychological Quality of	WHOQoL Scores	-0.11	0.03	-0.06	0.04	0.579
Life				-0.16	-0.06	**<0.001**
Social Quality of Life	WHOQoL Scores	0.00	0.02		0.03	0.844
Environmental Quality of	WHOQoL Scores	0.02	0.03	-0.04	0.08	0.390
Life				-0.03		

4.3.2 Independent Predictors of Anxiety among cancer patients

Generalized linear models were used to determine independent predictors of anxiety by entering factors that were significantly associated with anxiety at the bivariate level. Respondents who had stage 1 cancer had significantly higher scores of anxiety as compared to those with stage 4 (β=3.04, 95% C.I 0.28 to 5.80, P=0.031). No significant differences were observed between stage 1, 2 and 4. Respondents with higher depression scores had significantly higher anxiety scores (β=0.66, 95% C.I 0.50 to 0.82, P<0.001), for every unit increase in depression score, anxiety scores increased by 0.66 units. Participants with high physical quality of life had a significantly lower anxiety scores (β=-0.09, 95% C.I -0.15 to -0.03, P=0.004), for every unit increase in physical quality of life anxiety scores decrease by 0.09 units. No significant differences were found between anxiety and level of education, employment status, marital status, income and social support (P>0.05).

These findings are summarised in table12.

Table 12: Independent Predictors of Anxiety among patients with Cancer

Parameter	Category	β	S.E	95% C.I of β		Sig.
				Lower	Upper	
Education Level	None	-1.32	0.90	-3.08	0.44	0.142
	Primary	-0.67	0.75	-2.14	0.79	0.366
	Secondary	0.50	0.70	-0.88	1.87	0.480
	Tertiary	Ref.				
Employment status	Self-employed	0.15	0.60	-1.02	1.33	0.796
	Employed	0.23	0.80	-1.33	1.78	0.777
	Others	Ref.				
Marital Status	Never married	1.04	1.16	-1.23	3.31	0.370
	Married	0.53	0.70	-0.85	1.91	0.454
	Separated/Divorced	-0.03	0.91	-1.80	1.75	0.977
	Widowed	Ref.				
Income	10,000 and Below	-0.99	1.77	-4.45	2.48	0.577

	10,001-20,000	-2.01	1.83	-5.59	1.57	0.271
	20,0001-50,000	-1.15	1.76	-4.61	2.31	0.515
	Above 50,000	Ref.				
Cancer Stage	Stage 1	3.04	1.41	0.28	5.80	**0.031**
	Stage 2	1.03	0.93	-0.79	2.85	0.267
	Stage 3	0.76	0.92	-1.04	2.55	0.409
	Stage 4	Ref.				
Depression	(HADS Scores)	0.66	0.08	0.50	0.82	**<0.001**
Social Support-Significant Other	MSPSS Scores	-0.20	0.19	-0.57	0.17	0.288
Social Support-Family MSPSS Scores 0.13 0.24 0.599 Social Support-Friends MSPSS Scores 0.08 0.22 0.413				-0.35	0.61	
Physical Quality of Life WHOQoL Scores -0.09 0.03 **0.004**				-0.25	0.62	
Psychological Quality of Life	WHOQoL Scores	-0.04	0.03	-0.10 -0.15	-0.03 0.03	0.266
Social Quality of Life	WHOQoL Scores	0.00	0.02		0.04	0.833
Environmental Quality of Life	WHOQoL Scores	-0.05	0.03	-0.05	0.01	0.119
				-0.12		

4.3.3 Independent Predictors of Physical Quality Life

Generalized linear models were used to determine independent predictors of physical quality of life domain by entering factors that were significantly associated with it at bivariate level. Respondents who were Christians had higher scores of physical quality of life (β=5.28, 95% C.I 0.88 to 9.69, P=0.019) as compared to their Muslim counterparts. Respondents with lower education level had a significantly lower scores for quality of life as compared to those who had tertiary education (β=-7.66, 95% C.I -11.67 to -3.65, P<0.001 and β=-4.15, 95% C.I -7.47 to –0.82, P=0.015 for those with primary education), however no significant differences were found between those with tertiary level of education and those with secondary level of education (p=0.482). Participants who were never married had a significantly higher physical quality life as compared to those who were widowed (β=6.10, 95% C.I 0.70 to 11.50, P=0.027). No significant differences were found between those who were either married or separated/divorced and those who were widowed (P>0.05). Respondents who were earning a lower income had significantly higher scores of physical quality of life as compared to those who were earning above 50,000ksh. (β=8.35, 95% C.I

0.45 to 16.26, P=0.038, for those earning 10,000 and below; β=9.11, 95% C.I 1.26 to 16.96, P=0.023 for those earning between 20,001 and 50,000ksh). Participants with lower stages of cancer had significantly higher physical quality of life as compared to those with stage 4 cancer (β=13.26, 95% C.I 9.62 to 19.59, P<0.001 for stage 1: β=8.21, 95% C.I 3.96 to 12.46, P<0.001 for those with stage 2: β=4.56, 95% C.I 0.35 to 8.77, P<0.001 for those with stage 3). Participants with a higher anxiety scores had a significantly lower level of physical quality of life (β=-0.55, 95% C.I -0.88 to -0.22, P=0.001). Participants with a higher scores of psychological and environmental quality of life had a significantly higher physical quality of life (β=0.32, 95% C.I 0.18 to 0.46, P<0.001 and β=0.25, 95% C.I 0.08 to 0.09, P=0.002 respectively).These findings are summarised in table 13.

Table 13: Independent Predictors of Physical QoL among patients with Cancer

Parameter	**Category**	**β**	**S.E**	**95% C.I of β** **Lower**	 **Upper**	**Sig.**
Religion	Christian	5.28	2.25	0.88	9.69	**0.019**
	Muslim	Ref.				
Education Level	None	-7.66	2.05	-11.67	-3.65	**<0.001**
	Primary	-4.15	1.70	-7.47	-0.82	**0.015**
	Secondary	-1.13	1.61	-4.30	2.03	0.482
	Tertiary	Ref.				
Employment status	Self-employed	2.25	1.37	-0.43	4.93	0.100
	Employed	1.54	1.88	-2.14	5.22	0.411
	Others	Ref.				
Marital Status	Never married	6.10	2.75	0.70	11.50	**0.027**
	Married	0.22	1.63	-2.98	3.42	0.895
	Separated/Divorced	-1.71	2.09	-5.81	2.39	0.413
	Widowed	Ref.				
Income	10,000 and Below	8.35	4.03	0.45	16.26	**0.038**

	10,001-20,000	7.25	4.19	-0.96	15.46	0.083
	20,0001-50,000	9.11	4.00	1.26	16.96	**0.023**
	Above 50,000	Ref.				
Cancer Stage	Stage 1	13.26	3.23	6.92	19.59	**<0.001**
	Stage 2	8.21	2.17	3.96	12.46	**<0.001**
	Stage 3	4.56	2.15	0.35	8.77	**0.034**
	Stage 4	Ref.				
Age In Years	Years	-0.06	0.04	-0.14	0.02	0.163
Depression	(HADS Scores)	-0.07	0.22	-0.49	0.35	0.742
Anxiety	(HADS Scores)	-0.55	0.17	-0.88	-0.22	**0.001**
Social Support-Significant Other	MSPSS Scores	-0.15	0.43	-0.99	0.70	0.736
Social Support-Family	MSPSS Scores	-1.52	0.55	-2.60	-0.45	**0.006**
Social Support-Friends	MSPSS Scores	0.39	0.52	-0.62	1.41	0.448
Psychological QoL	WHOQoL Scores	0.32	0.07	0.18	0.46	**<0.001**
Social QoL	WHOQoL Scores	0.04	0.05	-0.06	0.14	0.461
Environmental QoL	WHOQoL Scores	0.25	0.08	0.09	0.40	**0.002**

4.3.4 Independent Predictors of Psychological Quality Life

Generalized linear models were used to determine independent predictors of psychological quality of life domain by entering factors that were significantly associated with it at bivariate level. Respondents with lower level of education had significantly higher psychological quality of life as compared to those with tertiary level of education (β=8.05, 95% C.I 4.33 to 11.78, P<0.001; β=6.60, 95% C.I 3.60 to 9.61, P<0.001; β=4.43, 95% C.I 1.53 to 7.33, P<0.001) for those with no education, primary and secondary respectively.

Respondents with lower income had significantly lower scores of psychological quality of life as compared to those who earn above 50,000ksh (β=-10.55% C.I -17.97 to -3.14, P=0.005, for those earning 10,000 and below; β=-9.35, 95% C.I -17.08 to -1.62, P=0.018 for those earning between 10,001 and 20,000ksh and β=-9.45, 95% C.I -16.95 to -1.95, P=0.014 for those earning 20,001-50,000). Participants with stage 2 type of cancer had significantly lower psychological quality of life (β=-5.53, 95% C.I -9.54 to -1.52, P=0.007) as compared to those with stage 4 cancer.

Respondents with higher depression score and those with high significant other social support had significantly lower scores for psychological quality of life ($P<0.05$). Respondents with high scores for family social support, friends social support, and those with high environmental and physical quality of life had significantly higher psychological quality of life ($P<0.05$). These findings are summarised in table 14.

Table 14: Independent Predictors of Psychological QoL among patients with Cancer

Parameter	**Category**	**β**	**S.E**	**95% C.I of β** **Lower**	 **Upper**	**Sig.**
Education Level	None	8.05	1.90	4.33	11.78	**<0.001**
	Primary	6.60	1.53	3.60	9.61	**<0.001**
	Secondary	4.43	1.48	1.53	7.33	**0.003**
	Tertiary	Ref.				
Marital Status	Never married	-4.75	2.67	-10.00	0.49	**0.075**
	Married	1.74	1.58	-1.35	4.83	0.270
	Separated/Divorced	-0.33	2.00	-4.25	3.60	0.870
	Widowed	Ref.				
Income	10,000 and Below	-10.55	3.78	-17.97	-3.14	**0.005**
	10,001-20,000	-9.35	3.94	-17.08	-1.62	**0.018**
	20,0001-50,000	-9.45	3.83	-16.95	-1.95	**0.014**
	Above 50,000	Ref.				
Cancer Stage	Stage 1	-3.34	3.11	-9.43	2.74	0.282
	Stage 2	-5.53	2.05	-9.54	-1.52	**0.007**
	Stage 3	-2.78	2.03	-6.77	1.21	0.172
	Stage 4	Ref.				
Age In Years	Years	-0.04	0.04	-0.12	0.04	0.301
Depression	(HADS Scores)	-0.85	0.20	-1.24	-0.47	**<0.001**
Anxiety	(HADS Scores)	-0.21	0.17	-0.54	0.12	0.215
Social Support-Significant	MSPSS Scores	-0.99	0.41	-1.81	-0.18	**0.016**
				0.39	2.42	**0.007**
				0.09	2.03	**0.032**
				0.16	0.42	**<0.001**
				-0.02	0.18	0.118

Other						
Social Support-Family	MSPSS Scores	1.41	0.52			
Social Support-Friends	MSPSS Scores	1.06	0.49			
Physical QoL	WHOQoL Scores	0.29	0.07			
Social QoL	WHOQoL Scores	0.08	0.05			
Environmental QoL	WHOQoL Scores	0.21	0.08	0.06	0.36	**0.005**

4.3.5 Independent Predictors of Social Quality of Life

Generalized linear models were used to determine independent predictors of social quality of life domain by entering factors that were significantly associated with it at bivariate level. Respondents who were separated/divorced had significantly lower social quality of life as compared to those who were widowed (P<0.05). Participants with high significant other support, friends support, psychological and environmental quality of life had a significantly high score for social quality of life (P<0.05). These findings are summarised in the table 15 below.

Table 15: Independent Predictors of Social QoL among patients with Cancer

Parameter	**Category**	**β**	**S.E**	**95% C.I of β**		**Sig.**
				Lower	**Upper**	
Marital Status	Never married	-1.07	3.96	-8.83	6.68	0.786
	Married	-3.76	2.29	-8.26	0.74	0.101
	Separated/Divorced	-7.89	2.83	-13.44	-2.33	**0.005**
	Widowed	Ref.				
Income	10,000 and Below	-2.61	5.63	-13.64	8.43	0.643
	10,001-20,000	-2.53	5.89	-14.09	9.02	0.667

	20,0001-50,000	-1.11	5.76	-12.40	10.19	0.848
	Above 50,000	Ref.				
Cancer Stage	Stage 1	8.17	4.50	-0.65	17.00	0.069
	Stage 2	4.96	3.04	-1.00	10.91	0.103
	Stage 3	5.06	2.99	-0.80	10.91	0.090
	Stage 4	Ref.				
Age In Years	Years	-0.08	0.06	-0.20	0.04	0.172
Depression	(HADS Scores)	0.03	0.30	-0.55	0.61	0.917
Anxiety	(HADS Scores)	-0.18	0.25	-0.66	0.31	0.477
Social Support-Significant Other	MSPSS Scores	1.90	0.60	0.71	3.08	**0.002**
Social Support-Family	MSPSS Scores	0.04	0.77	-1.47	1.55	0.957
Social Support-Friends	MSPSS Scores	1.62	0.73	0.20	3.05	0.026
Physical QoL	WHOQoL Scores	0.00	0.10	-0.20	0.20	0.974
Psychological QoL	WHOQoL Scores	0.25	0.10	0.05	0.45	**0.015**
Environmental QoL	WHOQoL Scores	0.31	0.10	0.10	0.51	**0.003**

4.3.6 Independent Predictors of Environmental Quality of Life

Generalized linear models were used to determine independent predictors of environmental quality of life domain by entering factors that were significantly associated with environmental quality of life at bivariate level. Respondents with a lower level of education had significantly lower environmental quality of life as compared to those with tertiary education (P<0.05). Respondents who were older had significantly higher environmental quality of life (P<0.05), for every unit increase in age, environmental quality of life increased by 0.08 units. Respondents who had high scores of family social support, physical quality of life, social quality of life and psychological quality of life had significantly higher environmental quality of life (P<0.05). These findings are summarised in table 16.

Table 16: Independent Predictors of Environmental QoL among patients with Cancer

Parameter	**Category**	**β**	**S.E**	**95% C.I of β**		**Sig.**
				Lower	**Upper**	
Education Level	None	-7.53	1.86	-11.17	-3.89	**<0.001**

	Primary	-7.55	1.48	-10.45	-4.65	**<0.001**
	Secondary	-5.19	1.44	-8.01	-2.37	**<0.001**
	Tertiary	Ref.				
Employment status	Self-employed	1.23	1.27	-1.26	3.71	0.333
	Employed	3.16	1.68	-0.14	6.46	0.060
	Others	Ref.				
Marital Status	Never married	2.33	2.57	-2.71	7.37	0.364
	Married	-1.06	1.50	-4.01	1.88	0.479
	Separated/Divorced	1.74	1.93	-2.04	5.52	0.367
	Widowed	Ref.				
Income	10,000 and Below	1.04	3.76	-6.33	8.42	0.781
	10,001-20,000	0.50	3.90	-7.14	8.14	0.898
	20,0001-50,000	-0.04	3.75	-7.39	7.30	0.990
	Above 50,000	Ref.				
Cancer Stage	Stage 1	2.48	3.01	-3.43	8.38	0.411
	Stage 2	1.54	1.98	-2.34	5.41	0.437
	Stage 3	1.93	1.94	-1.87	5.73	0.319
	Stage 4	Ref.				
Age In Years	Years	0.08	0.04	0.00	0.16	0.044
Depression (HADS Scores)		0.17	0.20	-0.22	0.56	0.390
Depression (HADS Scores)		-0.20	0.16	-0.52	0.11	0.201
Social Support-Significant Other	MSPSS Scores	0.59	0.40	-0.19	1.37	0.138
Social SupportFamily	MSPSS Scores	1.11	0.50	0.12	2.10	**0.028**
Social SupportFriends	MSPSS Scores	-0.43	0.47	-1.36	0.49	0.359
Physical QoL	WHOQoL Scores	0.22	0.07	0.09	0.35	**0.001**
Psychological QoL	WHOQoL Scores	0.19	0.07	0.05	0.33	**0.006**
Social QoL	WHOQoL Scores	0.17	0.05	0.08	0.26	**<0.001**

CHAPTER 5.0: DISCUSSION

5.0 Introduction

This chapter discusses the study's results in relation to the objectives as well as relevant comparisons made with findings from different studies in literature. Important to note is that this is the first study in Kenya that has determined the association between social support, psychological wellbeing and quality of life of cancer patients. This discussion is categorized according to the study's specific objectives. Finally, conclusions and recommendations are summarized and areas of future research proposed.

5.1 Socio-Demographic Characteristics

The age distribution in this study reflects the common findings that cancer commonly affects adults, with the explanation that with increasing age, cancer risk increases; this can explain why the least number of patients were in lower age group (18-30 years). This shows that the commonest cancers, (cancer of cervix, breast and prostate) mostly occur after the age of thirty years, majority of the patients being between ages 46 to 60 years. This finding is consistent with what has been found in cancer epidemiological studies where the risk for the three reproductive cancers increase with age (Bashir, 2015; Kresovich *et al.*, 2019).

There were more females than males in the study, a situation which could be attributed to the types of cancer chosen in this study. Breast and cervical cancers are the most prevalent in females and prostate cancer is only found in males. The results could also reflect the fact that more females in the Kenya are screened for breast and cervical cancer and therefore referred for treatment and followed up. This is similar to what has been reported in other countries where men generally underutilize preventive health services like cancer screening services (Smith, Braunack-Mayer and Wittert, 2006; Sale *et al.*, 2016). It could also be as a result of recently enhanced public health education by the Kenyan government of the need for early screening for these cancers (MOH, 2016).

In this study, majority of the respondents were christians (94.7%), a trend reflected among the Kenyan population where the predominant religion is christianity (Mwakimako, 2007). Literacy levels among the cancer patients were high with few patients having no formal education. This can be attributed to the place of residence of the study respondents whose environments are supportive of formal education and also the Kenyan government emphasis and support for formal education in the last two decades. Most of the respondents were self-employed, a reflection of the general commonest type of employment especially with dwindling chances of formal employment and the highly competitive job market in Kenya (Sam, 2016). More than half of the respondents were married, reflecting a socio-cultural environment of the African culture which values, cherishes and upholds family institutions (Logan, 2018). Further, over two thirds the respondent's income was below 10,000 KES, which is a reflection of the general wage levels for most self-employed Kenyans (Awiti and Scott, 2016).

In this present study, breast, cervical and prostate cancers were almost equally distributed, reflecting the general trend of the three commonest cancers in Kenya (MOH, 2016). With majority of patients being in advanced stages of cancer, it then follows that therapeutic interventions (radiotherapy, chemotherapy, surgery), other than preventative therapy, was the main intervention. Generally, majority of Kenyans do not go for cancer screening, but only go to hospital when the disease has reached levels that can only be managed through such interventions, as was found in other studies (Rosser *et al.*, 2015; Mutua, Pertet and Otieno, 2017). This finding could also be due to inadequate screening and diagnostic facilities at primary healthcare facilities, and thus late detection and/or misdiagnosis. This worsened by the cultural barriers associated with screening for prostate cancer in Kenya (Mutua, Pertet and Otieno, 2017), or the fact that KNH is the only public country's treatment centre for cancer cases, and therefore most patients have to travel to KNH for treatment

(MOH, 2016). The other cancer treatment centres are available in private clinics, however the costs involved at such centres may not be unaffordable to the majority of Kenyans.

5.2 Social Support for cancer patients

This study sought to determine the level of social support received by cancer patients. The findings have shown that majority receive above average social support with the highest support coming family and least from friends. This is consistent with what has been found in other studies (Kroenke *et al.*, 2013; Pfaendler *et al.*, 2015). This is expected considering that when a family member is diagnosed to have cancer, the entire family which is the key support system is affected in one way or the other (Edwards and Clarke, 2004). Other studies have reported that family is frontline source of social support for loved ones in almost all crisis situations including the diagnosis of a chronic illness like cancer (Garlo *et al.*, 2010; Muliira, Kizza and Nakitende, 2019). Sometimes friends may disappear but the family remains till the end, hence the possible reason why friends were perceived to be the lowest source of social support. There is need to enhance this social support and consistently bring on board the patient's support system especially immediately after diagnosis, and if possible throughout the cancer care continuum.

5.3 Psychological wellbeing among cancer patients

Our current study sought to determine the psychological status of cancer patients. We found higher prevalence undiagnosed psychological morbidity as depicted by the high prevalence of depression (50.3%) and anxiety (56.2%) disorders among cancer patients. This prevalence is higher than what is found in the general Kenyan population, usually between 12-25% (Ndetei *et al.*, 2009; Jenkins *et al.*, 2012; Aillon *et al.*, 2014; Kwobah *et al.*, 2017). These findings confirm that much of the psychiatric morbidity experienced by cancer patients goes unrecognized, and thus untreated by healthcare providers. A different study found that untreated mental illnesses can affect treatment adherence and hence poor prognosis (Huang *et al.*, 2016). Findings from several studies are comparable to our findings as they have demonstrated that 28% to 50% of cancer patients have high levels of psychosocial and psychological distress (Ichikura *et al.*, 2016; Ndetei *et al.*, 2018). Further evidence from research has consistently demonstrated that people with chronic diseases like cancer are two to three times more likely to experience mental health problems than the general population (Katon *et al.*, 2010; Wilson *et al.*, 2016). Much of the evidence relates to psychosocial morbidities such as depression and anxiety and are comorbid with chronic physical illnesses (Cimpean and Drake, 2011). Sadly, in most cases the attention is on physical symptoms and seldom on the mental problems, the end result being poor prognosis for the physical condition and reduction in the quality of life of the patients.

5.4 Factors associated with psychological wellbeing for cancer patients

This study found that low level of social support whether from family, friends or significant others is associated with higher depression and anxiety scores, which indicates higher psychological morbidity. Similar findings have been reported in other studies where patients without any form of social support reported higher degree of psychological and functional morbidity (Chu, Saucier and Hafner, 2010; Siedlecki *et al.*, 2014). Patients without any education are more likely to have poor literacy levels on management and possible coping mechanisms for cancer and as such, patients with lower level of education had higher levels of depression.

In our current study, patients in cancer stage one had higher anxiety scores compared to those in advanced stages. This may be explained by the fact that those in this stage had not comes to terms with the news of the diagnosis and were still in the early stages of grief

(Spiess *et al.*, 2014). These findings are similar to what was found by Venderbos *et al.*, (2015) where cancer patients stopped active surveillance in latter stages and were not wary of the type of treatment as it increased their level of anxiety.

5.5 Factors associated with quality of life among cancer patients

This study found that being a Christian, earning low income and being single is associated with higher physical quality life. Our explanation to this is that spiritual support, which in mostly referred as the last array of hope for those with low income, is associated with better quality of life as result of contentment (Vallurupalli *et al.*, 2012; Bahreinian *et al.*, 2017; Musyimi *et al.*, 2017). Religion enhances coping especially for patients with chronic illnesses (Al-Natour, Al Momani and Qandil, 2017). This study points towards the fact that many of these cancer patients at KNH seem to have religious beliefs which are sufficiently deep-rooted to have an effect on coping with situations of cancer.

Our findings are consistently with the available literature where socio-economic status and level of education are critical determinants of overall psychological quality of life of cancer patients such that those with higher level of incomes and education had better psychological quality of life (Nielsen *et al.*, 2016). It could be that patients with higher income can afford the basic necessities and needs and hence do not have to worry about them in addition to the disease itself, hence have more psychological contentment and hence better psychological and environmental quality of life.

5.6 Social support and psychological wellbeing for cancer patients

The present study sought to determine the impact of social support on psychological wellbeing for cancer patients. Findings have shown that all forms of social support are positive determinants of psychological wellbeing for cancer patients, with family social support remaining to be the most significant. This is consistent to what has been found in other studies where social support has been found to have significant effects on psychological wellbeing and that it is most important in stressful circumstances such as in cancer illness (Fong *et al.*, 2017). Similar findings were reported in a longitudinal study conducted among breast cancer patients in Malaysia to determine the correlation between depression, anxiety, quality of life and social support of patients over a duration of 6-12 months. This Malaysian study found that anxiety levels significantly reduced over the study period, however depression remained relatively the same with social support from friends and family being significant in improving the quality of life of the patients (Ng *et al.*, 2015). Moreover, another study among breast cancer patients in the united states found that social support platforms like the social media offer higher levels of support as they offer knowledge and outreach programs that are critical in reducing anxiety among the cancer patients (Attai *et al.*, 2015). This underscores the importance of online social support groups in knowledge sharing and anxiety reduction among patients with similar conditions/illnesses.

5.7 **Social support and Quality of life**

The results of the present study showed that social support from friends, significant others and family is associated with better quality of life, with family support being most significant. This is similar to what another by Li *et al.*, (2016) which found family support is linked to an increase in the level of hope, resilience and improvement in physical quality of life among cancer patients. Our study further confirmed that for psychological quality of life, social support from significant other, family and friends is important in cancer patients. This relates to a study conducted by Fong *et al.*, (2017) which revealed that decreased social support from friends leads to deterioration in the psychological quality of life.

In addition, we found that support from significant others was significantly correlated with better social quality of life. This is similar to what was found in China where social quality of life of cancer patients improved with an increase in support from their significant others (Li *et al.*, 2016). Social support from the family is associated with better environmental quality of life as was revealed by this study.

In summary, cancer of the breast, cervix and prostate are the most commonly diagnosed in Kenya (Korir *et al.*, 2015). The latest NCCS (2017-22) outlines strategic and bold areas of action along the cancer continuum which among others includes prevention, screening and early detection, prompt diagnosis, treatment and palliative care and support (MOH, 2016). The strategy has puts emphasis on the three cancers and has called for collaboration and partnerships in financing and heightened health education, mass screening and prompt management of cancer across the country, especially at the county level.

5.8 Conclusions

Social support is very important in the management of patients with cancer. This study found that cancer patients receive substantial amount of social support. Social support from the patient’s family, friends and significant others play a significant role in improving the psychological wellbeing (lower depression and anxiety) and quality of life of patients with cancer.

Depression and anxiety are common occurrences among cancer patients and are largely unnoticed and untreated. Religion, level of education, income, marital status have direct influence on psychological well-being of the cancer patients irrespective of their age, the type of cancer or treatment they are receiving.

5.9 Policy and Practice Recommendations

1. There is need to enhance social support, more importantly from the family and friends to standard intervention packages in cancer treatment centers and palliative care settings. This should be reflected in local and national cancer prevention and treatment standard operating procedures and policies.
2. Health services providers for cancer patients should be trained on the need to involve patient's social support networks especially the immediate family in cancer diagnosis, disclosure and throughout the care continuum.
3. Continuous screening and management of mental health symptoms, especially depression and anxiety, thus the need to involve mental health service providers including counsellors and spiritual healers in care of cancer patients.
4. There is need for enhanced public education on the need for early screening for the commonest cancers, followed be appropriate diagnostics and immediate management, which should not only focus on the physical symptoms but also on mental wellbeing of patients.

5.10 Public Health Implications

In the wake of increasing prevalence and cancer mortality in Kenya, and as psychooncology research takes root in Africa, concerted effort is needed to convince clinicians, educators and policy makers not only that mental-physical comorbidity is not an exception but nearly a rule, but also that it constitutes one of the most urgent challenge for public health care and specifically for patients with chronic illnesses like cancer.

5.11 Recommendations for Future Research

This study was cross-sectional in nature. It determined the association between social support and psychological wellbeing and quality of life but did not determine if social support has any influence on overall treatment outcomes and recovery. Therefore, longitudinal and/or controlled studies to determine the influence of social support on treatment outcomes are recommended.

REFERENCES

Aaronson, N. K. *et al.* (2014) ‘Beyond treatment - Psychosocial and behavioural issues in cancer survivorship research and practice’, *European Journal of Cancer, Supplement*. doi: 10.1016/j.ejcsup.2014.03.005.

Abegunde, D. O. *et al.* (2007) ‘The burden and costs of chronic diseases in low-income and middle-income countries’, *Lancet*. doi: 10.1016/S0140-6736(07)61696-1.

Aillon, J.-L. *et al.* (2014) ‘Prevalence, types and comorbidity of mental disorders in a Kenyan primary health centre’, *Social Psychiatry and Psychiatric Epidemiology*, 49(8), pp. 1257–1268. doi: 10.1007/s00127-013-0755-2.

Akhtar, A. *et al.* (2010) ‘Multidimensional scale of perceived social support: psychometric properties in a South Asian population’, *Journal of Obstetrics and Gynaecology Research*. Wiley Online Library, 36(4), pp. 845–851.

Al-Natour, A., Al Momani, S. M. and Qandil, A. M. (2017) ‘The relationship between spirituality and quality of life of Jordanian women diagnosed with breast cancer’, *Journal of religion and health*. Springer, 56(6), pp. 2096–2108.

American Cancer Society (2015) *Global Cancer Facts & Figures 3rd Edition, American Cancer Society*. doi: 10.1002/ijc.27711.

American Cancer Society (2018) *Cancer Facts and Figures 2018, American Cancer Society*.

Anorlu, R. I. (2008) ‘Cervical cancer: the sub-Saharan African perspective’, *Reproductive Health Matters*. doi: 10.1016/S0968-8080(08)32415-X.

Attai, D. J. *et al.* (2015) ‘Twitter social media is an effective tool for breast cancer patient education and support: patient-reported outcomes by survey’, *Journal of medical Internet research*. JMIR Publications Inc., Toronto, Canada, 17(7), p. e188.

Awiti, A. and Scott, B. (2016) ‘The Kenya youth survey report’.

Ayalu, A. R. (2011) ‘Reliability and Validity of the Ethiopian Version of the Hospital

Anxiety and Depression Scale (HADS) in HIV Infected Patients’, *PLoS One*. Public Library of Science, 6(1), p. e16049.

Bahreinian, A. *et al.* (2017) ‘The effectiveness of the spiritual treatment groupon improving the quality of life and mental health in women with breast cancer’, *Journal of Research on Religion & Health*, 3(1), pp. 64–78.

Bashir, M. N. (2015) ‘Epidemiology of prostate cancer’, *Asian Pac J Cancer Prev*, 16(13), pp. 5137–5141.

Bjelland, I. *et al.* (2002) ‘The validity of the Hospital Anxiety and Depression Scale: an updated literature review’, *Journal of psychosomatic research*, 52(2), pp. 69–77.

Brand, C., Barry, L. and Gallagher, S. (2016) ‘Social support mediates the association between benefit finding and quality of life in caregivers’, *Journal of health psychology*. Sage Publications Sage UK: London, England, 21(6), pp. 1126–1136.

Bray, F. *et al.* (2018) ‘Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries.’, *CA: a cancer journal for clinicians*. United States, 68(6), pp. 394–424. doi: 10.3322/caac.21492.

Breen, L. J. *et al.* (2014) ‘Bridging the gaps in palliative care bereavement support: an international perspective’, *Death studies*, 38(1), pp. 54–61.

Brierley, J. *et al.* (2019) ‘Global Consultation on Cancer Staging: promoting consistent understanding and use’, *Nature Reviews Clinical Oncology*. Nature Publishing Group, pp. 1–9.

Brown, K. F. *et al.* (2018) ‘The fraction of cancer attributable to modifiable risk factors in England, Wales, Scotland, Northern Ireland, and the United Kingdom in 2015’, *British journal of cancer*. Nature Publishing Group, 118(8), p. 1130.

Camara, A. *et al.* (2015) ‘Prevalence of anxiety and depression among diabetic African patients in Guinea: Association with HbA1c levels’, *Diabetes & Metabolism*, 41(1), pp. 62–68. doi: https://doi.org/10.1016/j.diabet.2014.04.007.

Canty-Mitchell, J. and Zimet, G. D. (2000) ‘Psychometric properties of the

Multidimensional Scale of Perceived Social Support in urban adolescents', *American journal of community psychology*. Wiley Online Library, 28(3), pp. 391–400.

Carlsson, S. *et al.* (2012) 'Prostate cancer screening: facts, statistics, and interpretation in response to the US Preventive Services Task Force Review', *Journal of Clinical Oncology*. American Society of Clinical Oncology, 30(21), p. 2581.

Center, M. M. *et al.* (2012) 'International variation in prostate cancer incidence and mortality rates', *European Urology*. doi: 10.1016/j.eururo.2012.02.054.

Chalkidou, K. *et al.* (2014) 'Evidence-informed frameworks for cost-effective cancer care and prevention in low, middle, and high-income countries', *The lancet oncology*, 15(3), pp. e119–e131.

Cheville, A. L. *et al.* (2015) 'Improving Adherence to Cancer Treatment by Addressing Quality of Life in Patients With Advanced Gastrointestinal Cancers', *Journal of Pain and Symptom Management*, 50(3), pp. 321–327. doi: 10.1016/j.jpainsymman.2015.03.005.

Chu, L. W. *et al.* (2011) 'Prostate Cancer Incidence Rates in Africa', *Prostate Cancer*. doi: 10.1155/2011/947870.

Chu, P. Sen, Saucier, D. A. and Hafner, E. (2010) 'Meta-analysis of the relationships between social support and well-being in children and adolescents', *Journal of Social and Clinical Psychology*. Guilford Press, 29(6), pp. 624–645.

Cimpean, D. and Drake, R. E. (2011) 'Treating co-morbid chronic medical conditions and anxiety/depression', *Epidemiology and psychiatric sciences*. Cambridge University Press, 20(2), pp. 141–150.

Coughlin, S. S. and Ekwueme, D. U. (2009) 'Breast cancer as a global health concern', *Cancer epidemiology*. Elsevier, 33(5), pp. 315–318.

Dekker, J. *et al.* (2015) 'One in Three Patients With Cancer Meets the Criteria for Mental Disorders: What Does That Mean?', *Journal of Clinical Oncology*, 33(25), pp. 2826–2828. doi: 10.1200/JCO.2015.61.9460.

Denny, L. and Anorlu, R. (2012) ‘Cervical cancer in Africa’, *Cancer Epidemiology Biomarkers and Prevention*. doi: 10.1158/1055-9965.EPI-12-0334.

Ebrahim, S. *et al.* (2013) ‘Tackling Non-Communicable Diseases In Low- and MiddleIncome Countries: Is the Evidence from High-Income Countries All We Need?’, *PLOS Med*, 10(1), p. e1001377. doi: 10.1371/journal.pmed.1001377.

Edge, S. B. and Compton, C. C. (2010) ‘The American Joint Committee on Cancer: the 7th edition of the AJCC cancer staging manual and the future of TNM’, *Annals of surgical oncology*. Springer, 17(6), pp. 1471–1474.

Edwards, B. and Clarke, V. (2004) ‘The psychological impact of a cancer diagnosis on families: the influence of family functioning and patients’ illness characteristics on depression and anxiety.’, *Psycho-oncology*. England, 13(8), pp. 562–576. doi: 10.1002/pon.773.

Feelemyer, J. P. *et al.* (2014) ‘Changes in quality of life (WHOQOL-BREF) and addiction severity index (ASI) among participants in opioid substitution treatment (OST) in low and middle income countries: An international systematic review’, *Drug and alcohol dependence*. Elsevier, 134, pp. 251–258.

Feeney, B. C. and Collins, N. L. (2015) ‘A new look at social support: A theoretical perspective on thriving through relationships’, *Personality and Social Psychology Review*. Sage Publications Sage CA: Los Angeles, CA, 19(2), pp. 113–147.

Ferlay, J. *et al.* (2015) ‘Cancer incidence and mortality worldwide: Sources, methods and major patterns in GLOBOCAN 2012’, *International Journal of Cancer*, 136(5), pp. E359–E386. doi: 10.1002/ijc.29210.

Fong, A. J. *et al.* (2017) ‘Changes in social support predict emotional well_being in breast cancer survivors’, *Psycho_oncology*. Wiley Online Library, 26(5), pp. 664–671.

Garlo, K. *et al.* (2010) ‘Burden in caregivers of older adults with advanced illness’, *Journal of the American Geriatrics Society*. Wiley Online Library, 58(12), pp. 2315–2322.

Geremew, A. B., Gelagay, A. A. and Azale, T. (2018) ‘Comprehensive knowledge on cervical cancer, attitude towards its screening and associated factors among women aged

30-49 years in Finote Selam town, northwest Ethiopia.', *Reproductive health*. England, 15(1), p. 29. doi: 10.1186/s12978-018-0471-1.

Greene, F. L. *et al.* (2013) *AJCC Cancer Staging Manual*. Springer Science & Business Media.

Harper, A. (1998) 'Development of the World Health Organisation WHOQOL-BREF quality of life assessment', *Psychological medicine*, 28(3), pp. 551–558.

Huang, H. *et al.* (2016) 'A meta-analysis of the benefits of mindfulness-based stress reduction (MBSR) on psychological function among breast cancer (BC) survivors', *Breast Cancer*. Springer, 23(4), pp. 568–576.

IARC (2008) 'GLOBOCAN Cancer Fact Sheets: Prostate Cancer', *Globocan*.

IARC and WHO (2014) *World Cancer Report 2014*. Edited by B. Stewart and C. P. Wild. Available at: http://www.esmo.org/Oncology-News/World-Cancer-Report-2014.

Ichikura, K. *et al.* (2016) 'Persistence of psychological distress and correlated factors among patients with head and neck cancer', *Palliative & supportive care*. Cambridge University Press, 14(1), pp. 42–51.

ICO/IARC Information Centre (2019) *Kenya:Human Papillomavirus and Related Cancers, Fact Sheet 2018*. Available at: https://hpvcentre.net/statistics/reports/KEN_FS.pdf (Accessed: 10 August 2019).

International Agency for Research on Cancer (2016) 'Prostate Cancer Estimated Incidence, Mortality and Prevalence Worldwide in 2012', *World Health Organization*. doi: http://globocan.iarc.fr/Default.aspx.

Jang, Y. *et al.* (2004) 'A validity study of the WHOQOL-BREF assessment in persons with traumatic spinal cord injury', *Archives of Physical Medicine and Rehabilitation*. Elsevier, 85(11), pp. 1890–1895.

Jemal, A. *et al.* (2012) 'Cancer burden in Africa and opportunities for prevention', *Cancer*. Wiley Online Library, 118(18), pp. 4372–4384.

Jenkins, R. *et al.* (2012) ‘Prevalence of common mental disorders in a rural district of Kenya, and socio-demographic risk factors’, *International Journal of Environmental Research and Public Health*, 9(5), pp. 1810–1819.

Kadan‐Lottick, N. S. *et al.* (2005) ‘Psychiatric disorders and mental health service use in patients with advanced cancer: a report from the coping with cancer study’, *Cancer: Interdisciplinary International Journal of the American Cancer Society*. Wiley Online Library, 104(12), pp. 2872–2881.

Kamal, K. M. *et al.* (2017) ‘A systematic review of the effect of cancer treatment on work productivity of patients and caregivers’, *Journal of managed care & specialty pharmacy*. Academy of Managed Care Pharmacy, 23(2), pp. 136–162.

Kangmennaang, J. *et al.* (2018) ‘The next Sub Saharan African epidemic? A case study of the determinants of cervical cancer knowledge and screening in Kenya’, *Social Science & Medicine*, 197, pp. 203–212. doi: 10.1016/j.socscimed.2017.12.013.

Katon, W. J. *et al.* (2010) ‘Collaborative care for patients with depression and chronic illnesses’, *New England Journal of Medicine*. Mass Medical Soc, 363(27), pp. 2611–2620.

Kimani, K. N. *et al.* (2017) ‘Cancer and palliative care in Africa’, *European journal of cancer care*, 26(1), p. e12655.

Kingori, C., Haile, Z. T. and Ngatia, P. (2015) ‘Depression symptoms, social support and overall health among HIV-positive individuals in Kenya.’, *International journal of STD & AIDS*. England, 26(3), pp. 165–172. doi: 10.1177/0956462414531933.

Kirk, R. (2013) ‘Palliative care: Gaps between ideal and reality’, *Nature Reviews Clinical Oncology*, 10(2), pp. 65–65.

Kong, S. X., Wertheimer, A. I. and Myers, M. J. (1994) ‘Effect of Social Support on Role Stress and Organizational Commitment: Tests of Three Theoretical Models’, *Journal of Pharmaceutical Marketing & Management*. Taylor & Francis, 9(2), pp. 93–116.

Korir, A. *et al.* (2015) ‘Incidence of cancer in N airobi, K enya (2004–2008)’, *International journal of cancer*. Wiley Online Library, 137(9), pp. 2053–2059.

Kresovich, J. K. *et al.* (2019) ‘Methylation-based biological age and breast cancer risk’, *JNCI: Journal of the National Cancer Institute*.

Kroenke, C. H. *et al.* (2013) ‘Social networks, social support, and burden in relationships, and mortality after breast cancer diagnosis in the Life After Breast Cancer Epidemiology (LACE) Study’, *Breast Cancer Research and Treatment*, 137(1), pp. 261–271. doi: 10.1007/s10549-012-2253-8.

Kwobah, E. *et al.* (2017) ‘PREVALENCE of psychiatric morbidity in a community sample in Western Kenya’, *BMC psychiatry*. BioMed Central, 17(1), p. 30.

Li, M.-Y. *et al.* (2016) ‘Effects of social support, hope and resilience on quality of life among Chinese bladder cancer patients: a cross-sectional study.’, *Health and quality of life outcomes*. England, 14, p. 73. doi: 10.1186/s12955-016-0481-z.

Lichtenthal, W. G. *et al.* (2009) ‘Do rates of mental disorders and existential distress among advanced stage cancer patients increase as death approaches?’, *Psycho‐Oncology*. Wiley Online Library, 18(1), pp. 50–61.

Linden, W. *et al.* (2012) ‘Anxiety and depression after cancer diagnosis: Prevalence rates by cancer type, gender, and age’, *Journal of affective disorders*, 141(2), pp. 343–351.

Logan, S. (2018) *The Black family: Strengths, self-help, and positive change*. Routledge.

Loon, S. C., Jin, J. and Jin Goh, M. (2015) ‘The relationship between quality of life and adherence to medication in glaucoma patients in Singapore’, *Journal of glaucoma*. Wolters Kluwer, 24(5), pp. e36–e42.

Luszczynska, A. *et al.* (2013) ‘Social support and quality of life among lung cancer patients: a systematic review’, *Psycho-Oncology*, 22(10), pp. 2160–2168. doi: 10.1002/pon.3218.

Makori, R. (2015) *Factors associated with uptake of prostate cancer screening among patients seeking health care services at Kenyatta National Hospital*. University of Nairobi.

Malloy, P. *et al.* (2017) ‘Providing palliative care to patients with cancer: Addressing the needs in Kenya’, *Asia-Pacific journal of oncology nursing*. Wolters Kluwer--Medknow Publications, 4(1), p. 45.

Martínez, Y. V *et al.* (2008) 'Quality of life associated with treatment adherence in patients with type 2 diabetes: a cross-sectional study', *BMC Health Services Research*, 8, p. 164. doi: 10.1186/1472-6963-8-164.

Mehnert, A. *et al.* (2014) 'Four-week prevalence of mental disorders in patients with cancer across major tumor entities', *Journal of Clinical Oncology*. American Society of Clinical Oncology, 32(31), pp. 3540–3546.

Miller, W. C., Anton, H. A. and Townson, A. F. (2008) 'Measurement properties of the CESD scale among individuals with spinal cord injury', *Spinal cord*. Nature Publishing Group, 46(4), pp. 287–292.

MOH (2016) *Kenya National Cancer Control Strategy*. Nairobi. Available at: http://kehpca.org/wp-content/uploads/KENYA-NATIONAL-CANCER-CONTROLSTRATEGY-2017-2022.pdf.

MOH (2019) *Cervical Cancer Vaccine Rollout*. Available at: http://www.health.go.ke/government-to-roll-out-hpv-vaccine-to-prevent-cervical-cancernext-month-nairobi-kenya-wednesday-october-2-2019/ (Accessed: 8 October 2019).

Muliira, J. K., Kizza, I. B. and Nakitende, G. (2019) 'Roles of family caregivers and perceived burden when caring for hospitalized adult cancer patients: perspective from a low-income country', *Cancer nursing*. LWW, 42(3), pp. 208–217.

Musyimi, C. W. *et al.* (2017) 'Quality of life of depressed and suicidal patients seeking services from traditional and faith healers in rural Kenya', *Health and Quality of Life Outcomes*, 15(1), p. 95. doi: 10.1186/s12955-017-0657-1.

Mutiso, V. N. *et al.* (2019) 'Feasibility and effectiveness of nurses and clinical officers in implementing the WHO mhGAP intervention guide: Pilot study in Makueni County, Kenya', *General Hospital Psychiatry*. doi: https://doi.org/10.1016/j.genhosppsych.2019.04.005.

Mutua, K., Pertet, A. M. and Otieno, C. (2017) 'Cultural factors associated with the intent to be screened for prostate cancer among adult men in a rural Kenyan community', *BMC public health*. BioMed Central, 17(1), p. 894.

Mwakimako, H. (2007) ‘Christian–Muslim relations in Kenya: a catalogue of events and meanings’, *Islam–Christian Muslim Relations*. Taylor & Francis, 18(2), pp. 287–307.

Nakash, O. *et al.* (2014) ‘Comorbidity of common mental disorders with cancer and their treatment gap: findings from the World Mental Health Surveys’, *Psycho-Oncology,* 23(1), pp. 40–51. doi: 10.1002/pon.3372.

Naughton, M. J. and Weaver, K. E. (2014) ‘Physical and Mental Health Among Cancer Survivors’, *North Carolina medical journal*, 75(4), pp. 283–286.

Ndetei, D. *et al.* (2018) ‘Psychological Well-Being and Social Functioning Across the Cancer Stages: Implications for Palliative Care’, *Journal of Social Work in End-of-Life & Palliative Care*. Taylor & Francis, 14(2–3), pp. 194–208.

Ndetei, D. M. *et al.* (2009) ‘The prevalence of mental disorders in adults in different level general medical facilities in Kenya: a cross-sectional study.’, *Annals of general psychiatry,* 8, p. 1. doi: 10.1186/1744-859X-8-1.

Ng, C. G. *et al.* (2015) ‘Anxiety, depression, perceived social support and quality of life in Malaysian breast cancer patients: a 1-year prospective study’, *Health and quality of life outcomes*. BioMed Central, 13(1), p. 205.

Nielsen, M. K. *et al.* (2016) ‘Psychological distress, health, and socio-economic factors in caregivers of terminally ill patients: a nationwide population-based cohort study’, *Supportive Care in Cancer*. Springer, 24(7), pp. 3057–3067.

Nipp, R. D. *et al.* (2016) ‘The relationship between coping strategies, quality of life, and mood in patients with incurable cancer’, *Cancer*. Wiley Online Library, 122(13), pp. 2110–2116.

Njuguna, E. *et al.* (2017) ‘Factors influencing cervical cancer screening in a Kenyan Health Facility: A mixed qualitative and quantitative study’, *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*, 6(4), pp. 1180–1185.

Olaleye, O. and Ekrikpo, U. (2017) ‘Epidemiology of Cancers in Sub-Saharan Africa’, in *Cancer in Sub-Saharan Africa*. Springer, pp. 3–19.

Pfaendler, K. S. *et al.* (2015) 'Cervical Cancer Survivorship: Long-term Quality of Life and Social Support', *Clinical Therapeutics*, 37(1), pp. 39–48. doi: 10.1016/j.clinthera.2014.11.013.

Pietrzak, R. H. *et al.* (2015) 'Perceived stigma and barriers to mental health care utilization among OEF-OIF veterans', *Psychiatric services*.

Pilleron, S. *et al.* (2019) 'Cancer incidence in older adults in selected regions of sub-Saharan Africa, 2008–2012', *International journal of cancer*. Wiley Online Library, 144(8), pp. 1824–1833.

Prager, G. W. *et al.* (2018) 'Global cancer control: responding to the growing burden, rising costs and inequalities in access', *ESMO open*. BMJ Publishing Group Limited, 3(2), p. e000285.

Puts, M. T. E. *et al.* (2013) 'Factors influencing adherence to cancer treatment in older adults with cancer: a systematic review', *Annals of Oncology*, p. mdt433. doi: 10.1093/annonc/mdt433.

Revenson, T. A. and Lepore, S. J. (2012) 'Coping in social context', *Handbook of health psychology*. Psychology Press New York, NY, pp. 193–217.

Revenson, T. A. and Singer, J. E. (2012) *Handbook of Health Psychology*. Psychology Press.

Rosner, Bernard, H. U. (2010) *Fundamentals of Biostatistics*, *Fundamentals of biostatistics*. doi: 10.2105/AJPH.59.7.1266-a.

Rosser, J. I. *et al.* (2015) 'Barriers to cervical cancer screening in rural Kenya: perspectives from a provider survey', *Journal of community health*. Springer, 40(4), pp. 756–761.

Sale, J. E. M. *et al.* (2016) 'Men's health-seeking behaviours regarding bone health after a fragility fracture: a secondary analysis of qualitative data', *Osteoporosis International*. Springer, 27(10), pp. 3113–3119.

Sam, S. O. (2016) 'Modelling economic determinants of youth unemployment in Kenya', *Journal of Emerging Trends in Economics and Management Sciences*. Sabinet, 7(1), pp. 31–38.

Sankaranarayanan, R. (2014) ‘Screening for cancer in low- and middle-income countries’, *Annals of Global Health*. doi: 10.1016/j.aogh.2014.09.014.

Siedlecki, K. L. *et al.* (2014) ‘The relationship between social support and subjective wellbeing across age’, *Social indicators research*. Springer, 117(2), pp. 561–576.

Siegel, R. L., Miller, K. D. and Jemal, A. (2016) ‘Cancer statistics, 2016’, *CA: a cancer journal for clinicians*. Wiley Online Library, 66(1), pp. 7–30.

Singer, S. *et al.* (2012) ‘Predictors of emotional distress in patients with head and neck cancer’, *Head & Neck*, 34(2), pp. 180–187. doi: 10.1002/hed.21702.

Skevington, S. M., Lotfy, M. and O’Connell, K. A. (2004) ‘The World Health Organization’s WHOQOL-BREF quality of life assessment: Psychometric properties and results of the international field trial. A Report from the WHOQOL Group’, *Quality of Life Research*. Kluwer Academic Publishers, 13(2), pp. 299–310. doi: 10.1023/B:QURE.0000018486.91360.00.

Smith, B. N. *et al.* (2013) ‘Main and interactive effects of social support in predicting mental health symptoms in men and women following military stressor exposure’, *Anxiety, Stress & Coping*, 26(1), pp. 52–69. doi: 10.1080/10615806.2011.634001.

Smith, J., Braunack-Mayer, A. and Wittert, G. (2006) ‘What do we know about men’s help-seeking and health service use?’ Australasian Med Publ Co Ltd.

Smith, S. M. and Mensah, G. A. (2003) ‘Population aging and implications for epidemic cardiovascular disease in Sub-Saharan Africa’, *Ethnicity and Disease*. International Society on Hypertension in Blacks; 1999, 13(2; SUPP/2), pp. S2-77.

Spiess, K. E. *et al.* (2014) ‘Application of the Five Stages of Grief to Diabetic Limb Loss and Amputation’, *The Journal of Foot and Ankle Surgery*, 53(6), pp. 735–739. doi: https://doi.org/10.1053/j.jfas.2014.06.016.

Stafford, L. *et al.* (2015) ‘Anxiety and depression symptoms in the 2 years following diagnosis of breast or gynaecologic cancer: prevalence, course and determinants of outcome’, *Supportive Care in Cancer*, 23(8), pp. 2215–2224.

Staniute, M., Brozaitiene, J. and Bunevicius, R. (2013) ‘Effects of social support and stressful life events on health-related quality of life in coronary artery disease patients’, *Journal of Cardiovascular Nursing*, 28(1), pp. 83–89.

Theofilou, P. (2013) ‘Quality of Life: Definition and Measurement.’, *Europe’s journal of psychology*. Citeseer, 9(1).

Thompson, T. *et al.* (2017) ‘Perceived social support in African American breast cancer patients: Predictors and effects’, *Social Science & Medicine*. Elsevier, 192, pp. 134–142.

Topazian, H. *et al.* (2016) ‘Joining forces to overcome cancer: The Kenya cancer research and control stakeholder program’, *Journal of Cancer Policy*, 7, pp. 36–41. doi: 10.1016/j.jcpo.2015.12.001.

Twahir, M. *et al.* (2019) ‘Access to care and financial burden for patients with breast cancer in Ghana, Kenya, and Nigeria.’, *Journal of Clinical Oncology*. American Society of Clinical Oncology, 37(15_suppl), p. 6562. doi: 10.1200/JCO.2019.37.15_suppl.6562.

Unsar, S., Erol, O. and Sut, N. (2016) ‘Social Support and Quality of Life Among Older Adults.’, *International Journal of Caring Sciences*, 9(1).

Vallurupalli, M. M. *et al.* (2012) ‘The role of spirituality and religious coping in the quality of life of patients with advanced cancer receiving palliative radiation therapy’, *The journal of supportive oncology*. NIH Public Access, 10(2), p. 81.

Venderbos, L. D. F. *et al.* (2015) ‘A longitudinal study on the impact of active surveillance for prostate cancer on anxiety and distress levels’, *Psycho‐Oncology*. Wiley Online Library, 24(3), pp. 348–354.

W.H.O (2001) *The World Health Report 2001: Mental health: new understanding, new hope*. World Health Organization.

W.H.O (2017) *Cancer fact sheets: Prostrate cancer.* Available at: https://www.who.int/news-room/fact-sheets/detail/cancer (Accessed: 24 June 2019).

Wata, D. (2012) *Determinants of breast cancer treatment outcomes at Kenyatta National Hospital*. Nairobi, Kenya: University of Nairobi.

WHO (2016) *WHO Definition of Palliative Care, World Health Organization*.

WHO (2019a) *Cancer : Key Facts*. Available at: https://www.who.int/news-room/factsheets/detail/cancer (Accessed: 14 August 2019).

WHO (2019b) *Cancer Fact Sheet*. Available at: https://www.who.int/news-room/factsheets/detail/cancer (Accessed: 24 September 2019).

Wiener, L. *et al.* (2015) 'Threading the cloak: palliative care education for care providers of adolescents and young adults with cancer', *Clinical oncology in adolescents and young adults*, 5, p. 1.

Wilcox, S. (2010) 'Multidimensional Scale of Perceived Social Support', *Psychological Trauma: Theory, Research, Practice, and Policy*, 2(3), pp. 175–182.

Wilson, K. G. *et al.* (2007) 'Depression and anxiety disorders in palliative cancer care', *Journal of pain and symptom management*, 33(2), pp. 118–129.

Wilson, K. G. *et al.* (2016) 'Mental disorders and the desire for death in patients receiving palliative care for cancer', *BMJ supportive & palliative care*. British Medical Journal Publishing Group, 6(2), pp. 170–177.

Wongpakaran, T., Wongpakaran, N. and Ruktrakul, R. (2011) 'Reliability and validity of the multidimensional scale of perceived social support (MSPSS): Thai version', *Clinical practice and epidemiology in mental health: CP & EMH*. Bentham Science Publishers, 7, p. 161.

Zigmond, A. S. and Snaith, R. P. (1983) 'The hospital anxiety and depression scale', *Acta psychiatrica scandinavica*. Wiley Online Library, 67(6), pp. 361–370.

APPENDICES

1. PARTICIPANT INFORMATION AND CONSENT FORM

Title of Study: Impact of social support on psychological wellbeing and quality of life of cancer patients attending cancer clinic at Kenyatta national hospital Investigator: Gitonga Isaiah, University of Nairobi.

Introduction:

I would like to tell you about a study being conducted by Gitonga Isaiah, a Masters of Public Health student at the school of Public Health, University of Nairobi. The purpose of this consent form is to give you the information you will need to help you decide whether or not to be a participant in the study. Feel free to ask any questions about the purpose of the research, what happens if you participate in the study, the possible risks and benefits, your rights as a volunteer, and anything else about the research or this form that is not clear. When we have answered all your questions to your satisfaction, you may decide to be in the study or not. This process is called 'informed consent'. Once you understand and agree to be in the study, I will request you to sign your name on this form. You should understand the general principles which apply to all participants in a medical research: i) Your decision to participate is entirely voluntary ii) You may withdraw from the study at any time without necessarily giving a reason for your withdrawal iii) Refusal to participate in the research will not affect the services you are entitled to in this health facility or other facilities. We will give you a copy of this form for your records.

May I continue? YES /NO

This study has approval by The Kenyatta National Hospital-University of Nairobi Ethics and Research Committee protocol **No. P515/07/2018**

WHAT IS THIS STUDY ABOUT

The purpose of this study is to find out the influence of patient's social support in cancer patients on their psychological wellbeing and quality of life. Participants in this study will include patients who have been diagnosed with cervical, breast or prostate cancer. Participants in this research study will be asked questions about their socio-demographic characteristics, cancer status in terms of type and stage, their perceived social support, psychological wellbeing and quality of life using locally validated questionnaire. There will be approximately one hundred sixty participants who will be randomly selected.

WHAT WILL HAPPEN IF YOU DECIDE TO BE IN THIS RESEARCH STUDY?

If you agree to participate in this study, the following things will happen:You will be interviewed by a trained interviewer in a private area where you feel comfortable answering questions. The interview will last approximately 40 Minutes.

ARE THERE ANY RISKS, HARMS DISCOMFORTS ASSOCIATED WITH THIS STUDY?

Medical research has the potential to introduce psychological, social, emotional and physical risks. One potential risk of being in the study is loss of privacy. We will keep everything you tell us as confidential as possible. We will use a code number to identify you in a password-protected computer database and will keep all of our paper records in a locked file cabinet. However, no system of protecting your confidentiality can be absolutely secure, so it is still possible that someone could find out you were in this study and could find out information about you. Also, answering questions in the interview may be uncomfortable for you. If there are any questions you do not want to answer, you can skip them. You have the right to refuse the interview or any questions asked during the interview. If by any chance we notice some psychological distress during the interview, we will stop it immediately and refer you to a psychosocial counselor based at the clinic for appropriate intervention.

We will do everything we can to ensure that this is done in private.

ARE THERE ANY BENEFITS BEING IN THIS STUDY?

There is no direct benefit to you from participating in the study. However, we hope that, in the future, other people might benefit from this study because it will allow us to learn more about the influence of cancer on psychological wellbeing and quality of life. If we find out that social support has a positive impact on the patient's psychological wellbeing and quality of life, we shall work with cancer treatment centres and palliative settings to create awareness on the need to incorporate social support in the cancer management package.

WILL BEING IN THIS STUDY COST YOU ANYTHING?

Participating in this study will not cost you anything apart from the 40 minutes or so of your time.

WILL YOU GET REFUND FOR ANY MONEY SPENT AS PART OF THIS STUDY?

We shall not provide any monetary refund for participating in the study.

CONFIDENTIALITY AND PRIVACY

The information you provide will be treated confidentially and only authorized members of the research team will have access to it. You will be assigned a unique study ID and no names will be written on the interview forms. Your name or other personal information will not be used in any reports or shared with anyone else. We will use the information for research purposes only.

WHAT IF YOU HAVE QUESTIONS IN FUTURE?

If you have further questions or concerns about participating in this study, please call or send a text message to the principal investigator at **+254 722109289 or email at gitongaisaiah0@gmail.com**. For more information about your rights as a research participant you may contact the Secretary/Chairperson, Kenyatta National HospitalUniversity of Nairobi Ethics and Research Committee Telephone No**. 2726300 Ext. 44102 email: uonknh_erc@uonbi.ac.ke.**

WHAT ARE YOUR OTHER CHOICES?

Your decision to participate in research is voluntary. You are free to decline participation in the study and you can withdraw from the study at any time without injustice or loss of any benefits.

CONSENT FORM (STATEMENT OF CONSENT)

Participant’s statement

I have read this consent form or had the information read to me. I have had the chance to discuss this research study with a study counselor. I have had my questions answered in a language that I understand. The risks and benefits have been explained to me. I understand that my participation in this study is voluntary and that I may choose to withdraw any time. I freely agree to participate in this research study.

I understand that all efforts will be made to keep information regarding my personal identity confidential.

(Signature/ Thumb Print of Participant) (Date)

(Participant's name – printed)

Statement of Person Who Obtained Consent

The information in this document has been discussed with the participant or, where appropriate, with the participant’s legally authorized representative. The participant has indicated that he or she understands the risks, benefits, and procedures involved with participation in this research study.

(Signature of Person who Obtained Consent) (Date)

(Name of Person who Obtained Consent - printed)

2. DATA COLLECTION INSTRUMENTS

SOCIODEMOGRAPHIC QUESTIONNAIRE

SECTION 1: SOCIO-DEMOGRAPHIC CHARACTERISTICS			
NO	**Question**	**Response**	**Code**
1	SEX **(SEX)**	F=1 M=2	**[ ]**
2	AGE **(AGE)**	Number	**[ ]**
3	Religion **(RELIG)**	1. Christian 2. Hindu 3. Muslim 4.Other (specify)	**[ ]**
4	Education level **(EDULEV)**	1. None 2. Primary 3. Secondary 4. College 5. University 6. Other (specify)	**[ ]**
5	Occupation **(OCCUP)**	1. Farmer 2. Trader/Business 3. Casual labourer 4. Professional 5. Student 6. Other (specify)	**[ ]**
6	Marital status **(MARST)**	1. Never married 2. Married 3. Separated 4. Divorced 5. Widowed	**[ ]**
7	Sexual Orientation **(SEXORNT)**	1. Heterosexual 2. Homosexual 3. Bisexual	**[ ]**
8	Average income/pocket per month money **(INCM)**	Number	**[ ]**

HISTORY OF ILLNESS:

Information from the file

Type of Cancer--

Treatment being given--

((From the Patient) **Histology**---

------ Staging---

Have you been informed of the following?

11. Site and type of cancer you have ____________________________

12. Do you know the stage of cancer you are suffering from? Yes/ No.

If yes, the cancer is in which stage, Tick the most appropriate

Stage	**Definition**	
Stage 0	Carcinoma in situ (early cancer that is present only in the layer of cells in which it began).	
Stage I, Stage II, and Stage III	Higher numbers indicate more extensive disease: greater tumour size, and/or spread of cancer to nearby lymph nodes and/or organs adjacent to the primary tumour.	
Stage IV	Cancer has spread to another organ.	

THE WORLD HEALTH ORGANIZATION QUALITY OF LIFE (WHOQOL) –BREF

Study ID:______________

The following questions ask how you feel about yourquality of life, health, or other areas of your life. I will read out each question to you, along with the response options. **Pleasechoose the answer that appears most appropriate.**If you are unsure about which response to give to a question, the first response youthink of is often the best one.

Please keep in mind your standards, hopes, pleasures and concerns. We ask that you think about your life **in the last four weeks.**

		Very poor	**Poor**	**Neither poor nor good**	**Good**	**Very good**
1.	Howwouldyouratey our qualityoflife?	1	2	3	4	5

		Very dissatisfied	**Dissatisfied**	**Neither satisfiednor dissatisfied**	**Satisfied**	**Very satisfied**
2.	Howsatisfiedareyouwithy our health?	1	2	3	4	5

The following questions ask about **howmuch** you have experienced certain things in the last four weeks.

		Not at all	**A little**	**Moderate amount**	**Very much**	**An extreme amount**

3.	Towhatextentdoyoufeel that physicalpainpreventsyoufro mdoingwhatyouneedtodo?	5	4	3	2	1
4.	How muchdoyouneedany medical treatment tofunction inyourdaily	5	4	3	2	1
5.	How muchdoyouenjoylife?	1	2	3	4	5
6.	Towhatextentdoyoufeelyour life tobemeaningful?	1	2	3	4	5

		Not at all	**A little**	**Moderate amount**	**Very much**	**Extremely**
7.	Howwellareyouableto concentrate?	1	2	3	4	5
8.	Howsafedoyoufeel inyour dailylife?	1	2	3	4	5
9.	Howhealthyisyourphysical environment?	1	2	3	4	5

The following questions ask about how completely you experience or were able to do certain things in the last four weeks.

		Not at all	**A little**	**Moderately**	**Mostly**	**Completely**
10.	Doyouhaveenoughenergyfor everydaylife?	1	2	3	4	5
11.	Areyouabletoaccept your bodilyappearance?	1	2	3	4	5
12.	Haveyouenoughmoneyto meet yourneeds?	1	2	3	4	5
13.	Howavailable toyouisthe informationthat youneedin yourday-to-	1	2	3	4	5
14.	Towhatextentdoyouhavethe opportunityforleisure activities?	1	2	3	4	5

		Very poor	**Poor**	**Neither poor nor good**	**Good**	**Very good**
15.	Howwellareyouabletoget around?	1	2	3	4	5

		Very dissatisfied	**Dissatisfied**	**Neither satisfiedn or dissatisfied**	**Satisfied**	**Very satisfied**
16.	Howsatisfiedareyouwithyour sleep?	1	2	3	4	5
17.	Howsatisfiedareyouwith yourability to performyour dailylivingactivities?	1	2	3	4	5
18.	Howsatisfiedareyouwith yourcapacityforwork?	1	2	3	4	5
19.	Howsatisfiedareyouwith yourself?	1	2	3	4	5
20.	Howsatisfiedareyouwithyour personalrelationships?	1	2	3	4	5
21.	Howsatisfiedareyouwith yoursexlife?	1	2	3	4	5
22.	Howsatisfiedareyouwiththe supportyougetfromyour friends?	1	2	3	4	5
23.	Howsatisfiedareyouwiththe conditionsofyourlivingplace?	1	2	3	4	5
24.	Howsatisfiedareyouwithyour accesstohealthservices?	1	2	3	4	5
25.	Howsatisfiedareyouwith yourtransport?	1	2	3	4	5

The following question refers to how often you havefelt or experienced certain things in the last four weeks.

		Never	**Seldom**	**Quiteoften**	**Veryoften**	**Always**
26.	Howoftendoyouhave negativefeelingssuchasblue mood,despair,anxiety, depression?	5	4	3	2	1

Do you have any comments about the assessment?

HOSPITALANXIETYANDDEPRESSIONSCALE (HADS)

STUDY ID___________

Ticktheboxbesidethereplythatisclosesttohowyouhavebeenfeelinginthepastweek.
Don’ttaketoolongoveryourreplies:Yourimmediateisbest.

D	A		D	A	
		Ifeeltenseor'woundup':			**IfeelasifIamsloweddown:**
	3	Mostofthetime	3		Nearlyallthetime
	2	Alotofthetime	2		Veryoften
	1	Fromtimetotime,occasionally	1		Sometimes
	0	Notatall	0		Notatall
		IstillenjoythethingsI usedto enjoy:			**Igetasortoffrightenedfeelinglike 'butterflies'inthestomach:**
0		Definitelyasmuch		0	Notatall
1		Notquitesomuch		1	Occasionally
2		Onlyalittle		2	QuiteOften
3		Hardlyatall		3	VeryOften
		Igetasortoffrightenedfeelingasif somethingawfulisaboutto happen:			**Ihavelostinterestinmyappearance:**
	3	Verydefinitelyandquitebadly	3		Definitely
	2	Yes,butnottoobadly	2		Idon'ttakeasmuchcareasIshould
	1	Alittle,butitdoesn'tworryme	1		Imaynottakequiteasmuchcare
	0	Notatall	0		Itakejustasmuchcareasever
		Icanlaughandseethefunnyside ofthings:			**IfeelrestlessasI havetobeonthe move:**
0		AsmuchasIalwayscould		3	Verymuchindeed
1		Notquitesomuchnow		2	Quitealot
2		Definitelynotsomuchnow		1	Notverymuch
3		Notatall		0	Notatall
		Worryingthoughtsgothroughmy mind:			**Ilookforwardwithenjoymentto things:**
	3	Agreatdealofthetime	0		AsmuchasIeverdid
	2	Alotofthetime	1		RatherlessthanIusedto
	1	Fromtimetotime,butnottoooften	2		DefinitelylessthanIusedto
	0	Onlyoccasionally	3		Hardlyatall
		Ifeelcheerful:			**Igetsuddenfeelingsofpanic:**
3		Notatall		3	Veryoftenindeed

2		Notoften		2	Quiteoften
1		Sometimes		1	Notveryoften
0		Mostofthetime		0	Notatall
		Icansitateaseandfeelrelaxed:			**IcanenjoyagoodbookorradioorTV program:**
	0	Definitely	0		Often
	1	Usually	1		Sometimes
	2	NotOften	2		Notoften
	3	Notatall	3		Veryseldom

MULTIDIMENSIONAL SCALEOFPERCEIVEDSOCIAL SUPPORT STUDY ID: _______________

Instructions:Weare interested inhow youfeel about thefollowingstatements. Readeachstatement carefully. Indicatehowyoufeel about eachstatement.

Circle the“1” ifyou**VeryStronglyDisagree**
Circle the“2” ifyou**StronglyDisagree**
Circle the“3” ifyou**MildlyDisagree**
Circle the“4” ifyouare**Neutral**
Circle the“5” ifyou**MildlyAgree**
Circle the“6” ifyou**StronglyAgree**
Circle the“7” i f you**VeryStronglyAgree**

1.	Thereisaspecial personwho isaroundwhenI	1	2	3	4	5	6	7
2.	aminneed. Thereisaspecial personwith whomI canshare joysandsorrows.	1	2	3	4	5	6	7
3.	Myfamilyreallytriestohelpme.	1	2	3	4	5	6	7
4.	I get theemotional help&support Ineedfrom myfamily.	1	2	3	4	5	6	7

5.	Ihaveaspecial personwhois arealsourceofcomfort tome.	1	2	3	4	5	6	7
6.	Myfriendsreallytrytohelp me.	1	2	3	4	5	6	7
7.	Icancountonmyfriendswhen thingsgowrong.	1	2	3	4	5	6	7
8.	Icantalkaboutmyproblemswith myfamily.	1	2	3	4	5	6	7
9.	IhavefriendswithwhomIcan sharemyjoysandsorrows.	1	2	3	4	5	6	7
10.	Thereisaspecial personinmy lifewhocaresabout myfeelings.	1	2	3	4	5	6	7
11.	Myfamily iswillingtohelp me makedecisions.	1	2	3	4	5	6	7
12.	Icantalkaboutmyproblemswith myfriends.	1	2	3	4	5	6	7

PARTICIPANT INFORMATION AND CONSENT FORM- SWAHILI

Title of Study: Impact of social support on psychological wellbeing and quality of life of cancer patients attending cancer clinic at Kenyatta national hospital Investigator: Gitonga Isaiah, University of Nairobi.

DIBAJI

Ningetaka kuwaeleza kuhusu utafiti unaofanywa na Bwana **Gitonga Isaiah**,mwanafunzi wa shahada ya uzamili (MPH) katika chuo kikuu cha Nairobi.Madhumuni ya fomu hii ni kukupa taarifa itakayo kusaidia kufanya uamuzi kama utakuwa au hutakuwa mshiriki katika utafiti huu.Kuwa huru kuuliza swali lolote kuhusu madhumuni ya utafiti huu,kitakachotendeka iwapo utashiriki,hatari na faida za kushiriki,haki zako kama mshiriki na lolote lile linalohusiana na utafiti huu au lolote ambalo alieleweki katika fomu hii.utakaporidhishwa na majibu yetu ndipo utafanya uamuzi kama utashiriki au la.Utaratibu huu ndio unajulikana kama ‘utoaji idhini’. Utakapoelewa na kukubali kuwa mshirika katika utafiti huu utahitajika kuandika jina lako na kutia sahihi katika fomu hii.unapaswa kuelewa kanuni za jumla zinazofuatwa na washirika wote wa utafiti wa matibabu; (i) uamuzi wa kuwa mshiriki ni kwa hiari.(ii)Unaweza kujitoa kwenye tafiti wakati wowote bila kulazimika kupeana sababu yeyote ya kujitoa.(iii)Kutoshiriki katika utafiti huu hutaathiri huduma unazopewa katika kituo cha afya chochote.Tutakupa nakala ya hii fomu kama kumbukumbu yako.

Naweza endelea? NDIO LA

Utafiti huu umeruhusiwa na maadili ya Hospitali kuu ya Kenyatta ikishirikiana na chuo kikuu cha Nairobi na kamati ya utafiti itifaki nambari-**P515/07/2018**

UTAFITI HUU UNAHUSU

Mchunguzi aliyetajwa hapo awali anawahoji watu waliopatikana na ugonjwa wa saratani,hasa walio na saratani ya kibofu,mfuko wa uzazi na matiti. Malengo ya mahojiano ni kujua ushawishi wa wagonjwa msaada wa kijamii katika ustawi wa kisaikolojia na ubora wa maisha.Baadhi ya maswali yatakayoulizwa washirika ni;tabia ya idadi katika jamii,aina ya saratani wanayougua na kiwango/hatua iliyoko,mtazamo wao kuhusu msaada wa kijamii,ustawi wa kisaikolojia na ubora wa maisha kupitia njia ya dodoso zilizothibitishwa hapa nchini.kutakuwa na takriban washirika mia moja sitini watakaochaguliwa kwa nasibu.

KUTATOKEA NINI KAMA UTAAMUA KUSHIRIKI KATIKA UTAFITI HUU?

Kama utakubali kushiriki katika utafiti huu utahojiwa na mtaalamu kwenye chumba binafsi utakapoweza kujibu maswali faraghani. Mahojiano yatachukua muda wa dakika arobaini.

JE KUNA HATARI, MADHARA AMA USUMBUFU UNAOHUSISHWA NA UTAFITI HUU?

Utafiti wa aina hii unao uwezo wa kuanzisha hatari za saikolojia,hisia na kimwili. Mmojawapo ya hatari kuweka siri zako wasi.Habari utakayotoa kwetu tutaiweka kama siri iwezekanavyo.Tutatumia msimbo kukutambulisha katika tarakilishi iliyolindwa na nywila.nakala za kumbukumbu zitahifadhiwa vyema kwenye droo iliyofungwa.Hata hivyo hakuna njia yeyote ya kuhifadhi iliyo bora kwa asilimia mia, kwa hivyo kuna njia mtu anaweza jua ulikuwa mshiriki katika utafiti na kuweza kupata habari uliyopeana.Pia kujibu maswali mengine inaweza kuwa si jambo la kurudhisha kwako, kama kuna swali hautaki kujibu una huru wa kulipita.unao uhuru wa kukataa kuhojiwa au kujibu swali/maswali mengine wakati wa mahojiano. Kama kutakuwa na dalili zozote za dhiki ya ksychologia, basi tutasimamisha mahojiano na tukupeleke kwa daktari anayehusika na ushauri.

Tutafanya juu chini kuhakikisha habari yako utakayotupa haitajulikana.

JE KUNA MANUFAA YA KUSHIRIKI HUU UTAFITI?

Hakuna manufaa ya moja kwa moja kwa kuwa mshirika katika huu utafiti,hata hivyo tunatumaini kuwa habari utakayotupa itatufaidi siku za usoni kwani tutasaidika kujua ushawishi wa saratani katika ustawi wa kisaikolojia na ubora wa maisha kwa wagojwa.

JE KUSHIRIKI HUU UTAFITI UTAKUGHARIMU?

Kushiriki katika huu utafiti hutakugharimu chochote ila tu ule muda utakaotupa kwa mahojiano.

JE KUNA FEDHA UKAYOPEWA KUSHIRIKI HUU UTAFITI?

Hakuna fedha zozote utakazopokea kushiriki huu utafiti.

SIRI:

Tutaweka habari inayokuhusu kwa siri ili kwamba hakuna mtu ataweza kukutambua.

Tutatumia namba ya siri na hatutaandika majina yako kwa fomu yoyote.

JE KAMA KUNA MASWALI YATAKAYOIBUKA USONI?

Kama utakuwa na maswali zaidi au wasiwasi wowote kutokana na kuwa mshiriki katika huu utafiti unaweza wasiliana nasi kwa njia ya kupiga simu au kuandika ujumbe kwa mchunguzi kupitia nambari +254 722109 289 au umwandikie barua pepe kwa gitongaisaia0@gmail.com kwa habari zaidi kuhusu haki zako kama mshirika katika huu utafiti wasiliana na katibu au mwenyekiti wa kamati ya maadili ya utafiti ya hospitali kuu ya Kenyatta wakishirikiana na chuo kikuu cha Nairobi,nambari ya simu 2726300 ext 44102 au kupitia barua pepe kupitia: uonknh_erc@uonbi.ac.ke

UCHAGUZI MWINGINE???

Uamuzi wa kuwa mshirika katika huu utafiti ni wa kujitolea. Una huru wa kukataa kushiriki au kujiondoa katika utafiti bila udhalimu au kupoteza dhamana yoyote.

FOMU YA RIDHAA (KAULI YA RIDHAA)

Kauli ya mshiriki.

Nimesoma hii fomu ya ridhaa/nimesomewa hii fomu ya ridhaa.Nimejadiliana na mshauri wa utafiti kuhusu huu utafiti, nimejibiwa maswali kwa lugha ninayoelewa.Nimeelezwa hatari na manufaa ya kushiriki huu utafiti,nimeelewa kuwa kushiriki huu utafiti ni kwa kujitolea na ninao uhuru wa kujiondoa wakati wowote ule.Nimekubali kwa hiari yangu kushiriki katika huu utafiti.

Nimeelewa kuwa kutafanywa juu chini kuhakikisha habari nitakayotoa au utambulisho wangu utawekea siri.

__________________________ _____________________________

Sahihi / Alama ya Kidole ya mhusika Tarehe

____

Jina la mshiriki

Kauli ya mchunguzi

Ujumbe uliopo katika hii fomu umejadiliwa na mshiriki au mwakilishi wa kisheria wa mshirika.Mshirika amekubali kuwa ameelewa hatari,manufaa na utaratibu unaohusishwa na kushiriki huu utafiti.

____

____

Sahihi ya mchunguzi Tarehe

______________________]

Jina la mchunguzi.

DATA COLLECTION INSTRUMENTS

SOCIODEMOGRAPHIC QUESTIONNAIRE

Study ID:_______________

NAMBARI	**SWALI**	**JIBU**	**CODE**	
1	JINSIA	MWANAMKE( ) MWANAMME( )		
2	UMRI			
3	DINI	MKRISTO( ) MHINDU( ) MHISILAMU( ) NYINGINE(FAFANUA)		
4	KIWANGO CHA ELIMU	HAKUNA( ) MSINGI( ) SEKONDARI( ) CHUO( ) CHUO KIKUU( ) NYINGINE(FAFANUA)		

5	KAZI	MKULIMA( ) MWANABIASHARA( ) KIBARUA( ) MTAALAMU( ) MWANAFUNZI( ) NYINGINE(FAFANUA)		
6	UMEOA/OLEWA	SIJAOLEWA( ) NIMEOLEWA( ) TUMETENGANA( ) NIMETALIKI( ) MJANE( )		
7	MWELEKEO WA KIJINSIA	HETEROSEXUAL SHOGA( ) HUNTHA( )		
8	WASTANI WA KIPATO KWA MWEZI	NAMBARI		

HISTORIA YA UGONJWA

Yaliyomo kwa faili ya mgonjwa.

Aina ya saratani Matibabu anayopata (kutoka kwa mgonjwa) Histolojia Staging

Je umefahamishwa haya?

11. Aina ya saratani uliyonayo na sehemu ya mwili iliyoko?
12. Je unajua hatua ambayo saratani unayougua imefika?Ndio/La Kama jibu lako ni ndio iko kiwango gani? Tia alama kwa jibu sahii.

Stage	**Definition**	
Stage 0	Saratani ambayo haijaenea sana. Iko kwenye safu ya juu ya seli.	
Stage 1,2 and 3	Saratani imeenea kwenye kiungo chote,imeathiri tezi na sehemu za viungo vilivyo karibu.	
Stage 4	Saratani imeenea kwa viungo vingine.	

SHIRIKA LA AFYA DUNIANI HALI YA MAISHA- (Quality of Life – BREF)

Study ID:_______________

Maswali yafuatayo yanahusu jinsi ambavyo unahisi juu ya hali yako ya maisha, afya yako au nyanja zingine katika maisha. Tafadhali chagua jibu ambalo unaona ni sahihi. Kama una uhakika na jibu ambalo unachangua, basi jibu lako la kwanza ndio sahihi.

Tafadhali tilia maanani kiwango chako, matumaini, mahitaji, na matarajio yako. Tunaomba ufikirie juu ya maisha yako katika **wiki nne zilizopita**.

		Mbaya kabisa	**Mbaya**	**Si mbaya na si nzuri**	**Njema**	**Njema kabisa**
1.	Hali ya maisha yako iko aje?	1	2	3	4	5

		Sijaridhika kabisa	**Sijaridhika**	**Niko katikati**	**Nimeridhika**	**Nimeridhika kabisa**
2.	Kwa kuangalia afya yako umeridhika kiasi gani?	1	2	3	4	5

Maswali yafuatayo tunaomba kujua maoni yako juu ya hali tofauti ya **wiki nne zilizopika**.

		Hakuna kabisa	**Kidogo**	**Kiasi**	**Sana**	**Zaidi**
3.	Ni kwa kiasi gani ulihisi maumivu ya mwili yaliyokuzuia kufanya mambo yako?	5	4	3	2	1
4.	Unahitaji matibabu kwa kiasi/kiwango gani ili uweze kufanya kazi za kila siku?	5	4	3	2	1
5.	Ni kwa kiasi gani unafurahia maisha?	1	2	3	4	5
6.	Ni kwa kiasi gani unahisi maana ya maisha yako?	1	2	3	4	5
7.	Unawezaje kuwa makini?	1	2	3	4	5
8.	Katika maisha yako, unahisi uko salama kwa kiasi gani?	1	2	3	4	5
9.	Hali ya afya ya mazingira yako iko aje?	1	2	3	4	5

Maswala yafuatayo, unatakiwa kueleza jinsi ambavyo uliweza kufanya mambo tofauti **wiki nne zilizopita**.

		Hakuna kabisa	**Kidogo**	**Kiasi**	**Sana**	**Zaidi**
10.	Una nguvu ya kutosha kufanya kazi zako za kila siku?					

11.	Unaweza kukubaliana na jinsi maumbile yako yalivyo?	1	2	3	4	5
12.	Una pesa za kutosheleza mahitaji yako?	1	2	3	4	5
13.	Habari yoyote unayotaka inaweza kupatikana kila wakati katika maisha yako?	1	2	3	4	5
14.	Ni kwa kiasi gani unapata muda wa kufanya mambo yako ya ziada wakati wa mapumziko?	1	2	3	4	5

		Vibaya sana	**Vibaya**	**Si vizuri na si vibaya**	**Vizuri**	**Vizuri kabisa**
15.	Kwa kiwango gani inaweza kutoka sehemu moja hadi nyingine?	1	2	3	4	5

		Sitosheki kabisa	**Sitosheki**	**Natosheka na pia sitosheki**	**Natosheka**	**Natosheka kabisa**
16.	Ni kiwango gani unatosheka na usingizi?	1	2	3	4	5
17.	Ni kwa kiwango gani unatosheka na jinsi unavyofanya kazi zako za kila siku?	1	2	3	4	5
18.	Unatosheka na uwezo unao wa kufanya kazi?	1	2	3	4	5
19.	Wewe mwenyewe unahisi umetosheka kwa kiasi gani?					
20.	Ni kwa kiasi gani unatosheka na namna ambavyo unahusiana na watu?	1	2	3	4	5
21.	Kimapenzi unatosheka kwa kiasi gani?	1	2	3	4	5
22.	Ni kwa kiasi gani unatosheka na usaidizi unaopata kwa marafiki?	1	2	3	4	5

23.	Hali ya mazingira yako unatosheka kwa kiasi gani?	1	2	3	4	5
24.	Ni kwa kiasi gani unatosheka na jinsi ambavyo unapata huduma za afya?	1	2	3	4	5
25.	Ni kwa kiasi gani unatosheka na huduma za usafiri?	1	2	3	4	5

Maswali yafuatayo yanahusu namna ulivyojihisi ama ulivyoyaona mambo kwa **wiki nne** **zilizopita**.

		Kamwe	**Mara chache**	**Kiasi mara kwa mara**	**Kabisa mara kwa mara**	**Kila wakati**
26.	Ni kwa mara ngapi umekuwa na hisia kama kuvunjika moyo, wasiwasi, kuhuzunika?	5	4	3	2	1

Una maoni yoyote kuhusu utathmini (assessment) huu

____

____

HOSPITALANXIETYANDDEPRESSIONSCALE (HADS)

STUDY ID___________

Tia alama kwa maelezo yanayokaribiana na unavyohisi wiki moja iliyopita.

D	**A**		**D**	**A**	
		Nahisi wasiwasi			**Najihisi sina hamu ya kufanya chochote**
	3	Kila wakati	3		Kila wakati
	2	Wakati mwingi	2		Wakati mwingine
	1	Mara kwa mara	1		Nadra
	0	Hapana	0		Hapana
		Huwa Napata vitu nivyokuwa nafurahia hapo awali			**Najihisi mwenye woga na kupata tumbo joto**
0		Kama awali		0	Hapana

1		Imepungua		1	Nadra
2		kidogo		2	Wakati mwingine
3		Hakuna kabisa		3	Kila wakati
		Nahisi woga kama kuna jambo mbaya linaenda kutendeka			**Nimepoteza hamu ya kujali ninavyoka sura na umbo**
	3	Ndio na ya kuogofya sana.		3	Ndio
	2	Ndio lakini si ya kuogofya sana		2	Si kama inavyopaswa
	1	Kiasi lakini huwa sina hofu		1	Nadra
	0	Hapana		0	Kila wakati na ninavyopaswa
		Uwa nacheka na naweza kuona kitu cha kuchekesha kwa vitu			**Sina utulivu ata kidogo**
0		Wakati wote		3	Kila wakati
1		Mara kwa mara		2	Mara kwa mara
2		Kiasi		1	Nadra
3		Hapana		0	Hapana
		Huwa Nawaza mambo yanayonitia wasiwasi.			**Nafurahia mambo/vitu kama awali**
	3	Kila wakati	0		Kama awali
	2	Wakati mwingi	1		Imepungua kidogo
	1	Mara kwa mara	2		Imepungua kabisa
	0	Nadra sana	3		hapana
		Najihisi mwenye furaha			**Najihisi mwoga ki-ghafla**
3		hapana		3	Kila wakati
2		nadra		2	Mara kwa mara
1		Wakati mwingine		1	Nadra
0		Kila wakati		0	Hapana
		Naweza keti na nijihisi mtulivu			**Naburudishwa na kitabu/radio/televisheni**
	0	Kila wakati	0		Kila wakati
	1	Wakati mwingine	1		Mara kwa mara
	2	Nadra sana	2		Nadra
	3	Hapana	3		Hapana

MULTIDIMENSIONAL SCALEOFPERCEIVEDSOCIAL SUPPORT STUDY ID: _______________

Maagizo: tungetaka kujua unavyohisi kuhusu kauli hizi: Sisome kwa umakini kisha ujibu.
Tia mviringo kwa nambari 1 kama; Unakataa kabisa
Tia mviringo kwa nambari 2 kama ;Unakataa
Tia mviringo kwa nambari 3 kama;Nakataa lakini si sana
Tia mviringo kwa nambari 4 kama;Upande wowote
Tia mviringo kwa nambari 5 kama;Nakubali kidogo
Tia mviringo kwa nambari 6 kama;Nakubali
Tia mviringo kwa nambari 7 kama;Nakubali kabisa

1 Ninaye rafiki unisaidia wakati wa hitaji 1 2 3 4 5 6 7

2 Ninaye rafiki ninayeambia furaha na hofu yangu 1 2 3 4 5 6 7

3 Familia yangu unisaidia 1 2 3 4 5 6 7

4 Napata usaidizi wa kihisia ninaohitaji kutoka kwa familia yangu 1 2 3 4 5 6 7

5 Nina rafiki ambaye ni chanzo cha faraja yangu 1 2 3 4 5 6 7

6 Marafiki wangu unisaidia 1 2 3 4 5 6 7

7 Naweza tarajia usaidizi kutoka kwa marafika mambo yakienda mrama 1 2 3 4 5 6 7

8 Naweza ambia jamii yangu shida ninazopitia 1 2 3 4 5 6 7

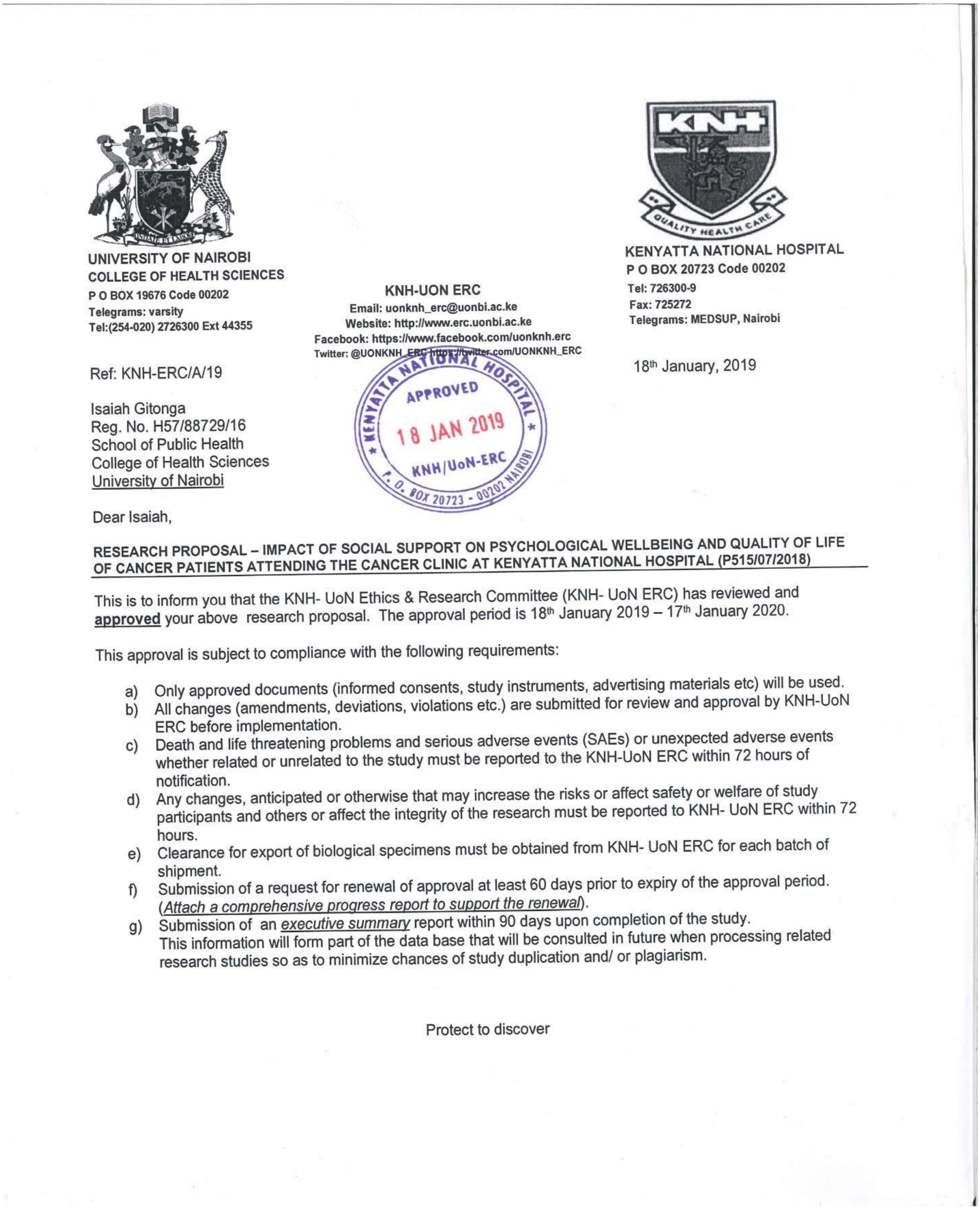
9 Ninao marafiki naweza kuwaambia hofu na furaha yangu 1 2 3 4 5 6 7

10 Kuna rafiki wa dhati anayejali hisia zangu 1 2 3 4 5 6 7

11 Familia ya unisaidia kufanya uamuzi 1 2 3 4 5 6 7

12 Naweza waambia marafiki shinda zangu 1 2 3 4 5 6 7

3. KNH/UoN ERC APPROVAL LETTER



UNIVERSITY OF NAIROBI
COLLEGE OF HEALTH SCIENCES
P O BOX 19676 Code 00202
Telegrams: varsity
Tel:(254-020) 2726300 Ext 44355

KNH-UON ERC
Email: uonknh_erc@uonbi.ac.ke
Website: http://www.erc.uonbi.ac.ke
Facebook: https://www.facebook.com/uonknh.erc
Twitter: @UONKNH_ERC https://twitter.com/UONKNH_ERC

KENYATTA NATIONAL HOSPITAL
P O BOX 20723 Code 00202
Tel: 726300-9
Fax: 725272
Telegrams: MEDSUP, Nairobi

Ref: KNH-ERC/A/19

18th January, 2019

Isaiah Gitonga
Reg. No. H57/88729/16
School of Public Health
College of Health Sciences
University of Nairobi

KENYATTA NATIONAL HOSPITAL
APPROVED
18 JAN 2019
KNH/UoN-ERC
P. O. BOX 20723 - 00202 NAIROBI

Dear Isaiah,

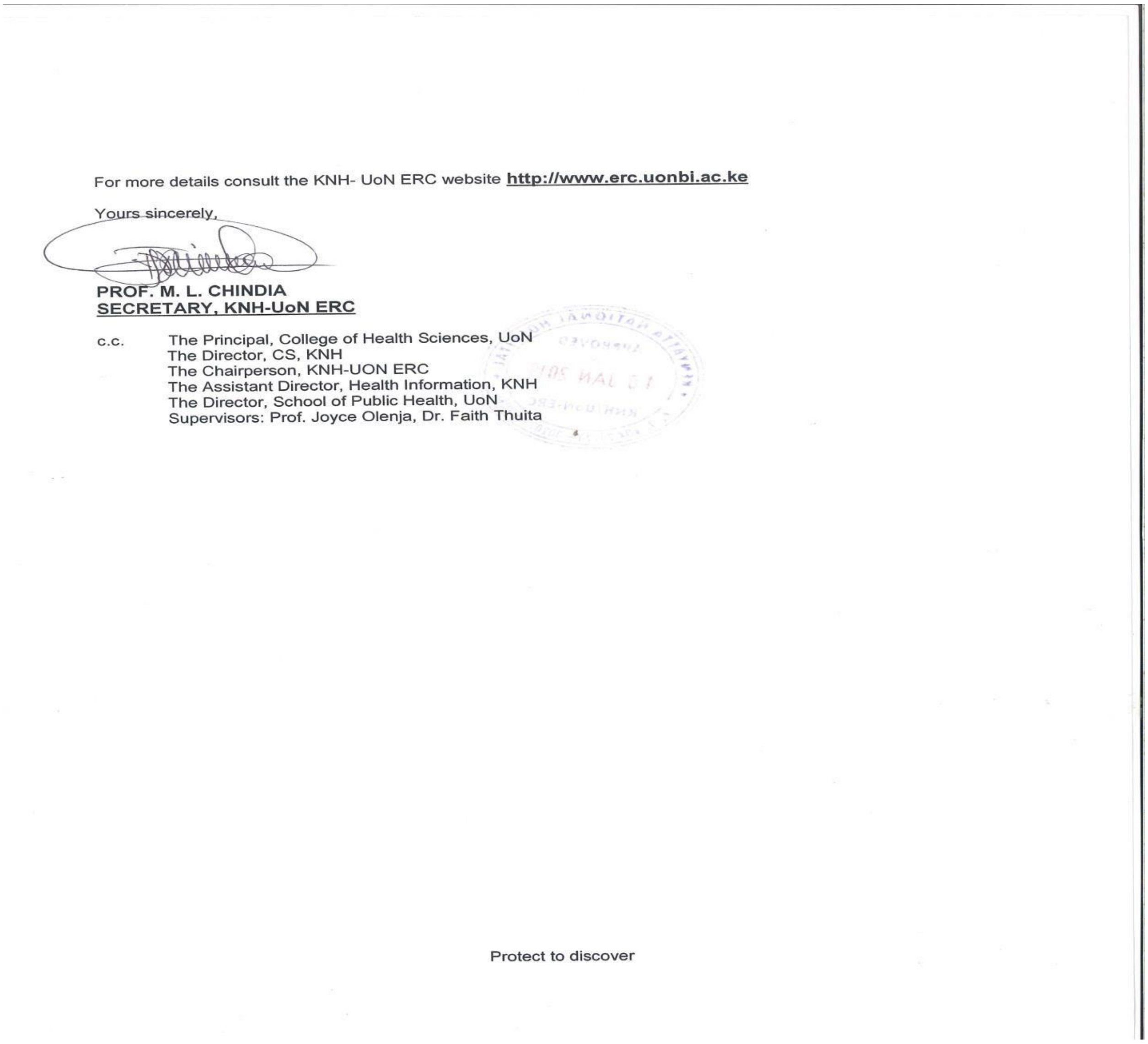
RESEARCH PROPOSAL – IMPACT OF SOCIAL SUPPORT ON PSYCHOLOGICAL WELLBEING AND QUALITY OF LIFE OF CANCER PATIENTS ATTENDING THE CANCER CLINIC AT KENYATTA NATIONAL HOSPITAL (P515/07/2018)

This is to inform you that the KNH- UoN Ethics & Research Committee (KNH- UoN ERC) has reviewed and **approved** your above research proposal. The approval period is 18th January 2019 – 17th January 2020.

This approval is subject to compliance with the following requirements:

a) Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
b) All changes (amendments, deviations, violations etc.) are submitted for review and approval by KNH-UoN ERC before implementation.
c) Death and life threatening problems and serious adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH-UoN ERC within 72 hours of notification.
d) Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH- UoN ERC within 72 hours.
e) Clearance for export of biological specimens must be obtained from KNH- UoN ERC for each batch of shipment.
f) 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*).
g) Submission of an *executive summary* report within 90 days upon completion of the study.
This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/ or plagiarism.

Protect to discover



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

Yours sincerely,

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

c.c. The Principal, College of Health Sciences, UoN
The Director, CS, KNH
The Chairperson, KNH-UON ERC
The Assistant Director, Health Information, KNH
The Director, School of Public Health, UoN
Supervisors: Prof. Joyce Olenja, Dr. Faith Thuita

Protect to discover

4. STUDY REGISTRATION CERTIFICATE

KNH/R&P/FORM/01

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

Tel.: 2726300/2726450/2726565
Research & Programs: Ext. 44705
Fax: 2725272
Email: knhresearch@gmail.com

Study Registration Certificate

1. Name of the Principal Investigator/Researcher GITONGA ISAIAH
2. Email address: gitongaisaiah0@gmail.com Tel No. 0722109289
3. Contact person (if different from PI)
4. Email address: Tel No.
5. Study Title Impact of Social support on psychological wellbeing and quality of life of cancer patients attending the cancer clinic at Kenyatta National hospital
6. Department where the study will be conducted Cancer Treatment Center (CTC)
   (Please attach copy of Abstract)
7. Endorsed by Research Coordinator of the KNH Department where the study will be conducted.
   Name: R. Makori Signature Date 13/2/20
8. Endorsed by KNH Head of Department where study will be conducted.
   Name: Dr C. Nyongesa Signature Date 13/02/1
9. KNH UoN Ethics Research Committee approved study number P515/07/2018
   (Please attach copy of ERC approval)
10. I GITONGA ISAIAH commit to submit a report of my study findings to the Department where the study will be conducted and to the Department of Research and Programs.
    Signature Date 13/02/2019
11. Study Registration number (Dept/Number/Year) [illegible] / 53 / 2019
    (To be completed by Research and Programs Department)
12. Research and Program Stamp 13 FEB 2019

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

Version 2: August. 2014

5. ANTI-PLAGIARISM CERTIFICATE

Turnitin Originality Report

IMPACT OF SOCIAL SUPPORT ON PSYCHOLOGICAL WELLBEING AND QUALITY OF LIFE OF CANCER PATIENTS AT KENYATTA NATIONAL HOSPITAL by Isaiah Gitonga

From MPH (Public Health)

- Processed on 10-Sep-2019 13:46 EAT
- ID: 1170128006
- Word Count: 14118

Similarity Index

15%

Similarity by Source Internet

Sources:

9%

Publications:

6%

Student Papers:

11%

sources:

1

1% match (student papers from 03-Sep-2019)

Submitted to University of Nairobi on 2019-09-03

2

< 1% match (student papers from 08-Dec-2014)

Submitted to Kingston University on 2014-12-08

3

< 1% match (Internet from 09-Mar-2016)
http://eprints.port.ac.uk/13890/1/GDIX_Chemical_Exposure_and_Lung_Function_in_Fragrance_Industry_Empoyees_May2013.pdf

4

< 1% match (Internet from 05-Sep-2019)

https://www.tandfonline.com/doi/full/10.1080/09638288.2018.1534006

5

< 1% match (Internet from 05-Feb-2010)

http://www.uclic.ucl.ac.uk/distinction-projects/2009-Ooi.pdf