University of Nairobi

PREVALENCE OF DEPRESSION, ANXIETY, AND SUICIDALITY AMONG BREAST CANCER PATIENTS AT KENYATTA NATIONAL HOSPITAL, KENYA

A research thesis submitted in the partial fulfillment for the award of the Degree of Master of Medicine in Psychiatry, University of Nairobi

By

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H58/33814/2019

Declaration

The undersigned declares that this thesis is my original work and that it has not been presented in whole or in part to this or any other university for the granting of any degree, to the best of my knowledge.

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Acknowledgement

I would like to express my heart-felt gratitude to all the lecturers in the Department of Psychiatry and particularly my supervisors Dr. Pius Kigamwa and Dr. Catherine Gitau for their patience, support and guidance towards formulation of this research work.

List of Abbreviations

BC	Breast Cancer
BDI	Beck's Depression Inventory
BSS	Beck's scale for Suicidal Ideation
CESD-R	Centre for Epidemiological Studies – Depression Scale Revised
CTC	Cancer Treatment Centre
DSM-5	Diagnostic and Statistical manual of Mental Disorders, 5th Edition
DT	Distress Thermometer
ERC	Ethics and Research Committee
GAD	Generalised Anxiety Disorder
HADS	Hospital Anxiety Depression Scale
HADS-A	Hospital Anxiety Depression Scale for Anxiety
HADS-D	Hospital Anxiety Depression Scale for Depression
HAM-D	Hamilton Depression Rating Scale
HSCL-25	Hopkins Symptom Checklist
KNH	Kenyatta National Hospital
NACOSTI	National Commission for Science, Technology and Innovation
PHQ 9	Patient Health Questionnaire 9
PI	Principal Investigator
QOL	Quality of life
SCID	Structured Clinical Interview for the DSM-IVTR
SDQ	Socio-Demographic Questionnaire
SPSS	Statistical Package for the Social Sciences
SSI	Scale for Suicidal Ideation
UON	University of Nairobi
WHO	World Health Organization

Operational Definitions of Terms and Phrases

Anxiety -

a generalized anxiety diagnosis requires excessive worrying and restlessness that is difficult to control and impairs functioning. Additionally atleast three of these symptoms in the last six months on most days:
Restlessness or feeling of being on edge, easily fatigued or feeling exhasuted, loss of concentration, easily irritable, feeling tense (muscle tension) and disruptions in sleep pattern.

Depression -

A major depression diagnosis requires at least five of the following symptoms most of the time in the past two weeks:
Sadness, feeling hopeless or empty, or depressed, Loss of interest in most activities, Significant variations in weight or appetite and sleep, psychomotor slowing or agitation, loss of energy, feelings of guilt or worthlessness, or feelings of being a burden, loss of concentration, indecisiveness, thoughts of self-harm or recurrent suicidal thoughts or ideas.

Suicidal Ideation – repeated thoughts/ruminating on killing oneself

Suicidal behavior/attempt – when someone harms themselves with an intent to end their life.

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Abstract

Background: Breast cancer cases are increasing worldwide. Females with BC accounted for 2.1 million (11.6 percent) of the 18.1 million cancer cases reported worldwide in the year, 2018. Many studies indicate low quality of life among patients diagnosed with cancer. Increased risk of depression as well as anxiety in such patients has been associated with higher rate of mortality. In the long run, this may add to the burden on families, communities and might also increase healthcare consumption and costs. Resulting psychiatric morbidities in such patients negatively impact patient well-being and adversely affect prognosis and treatment outcome.

Broad Objective: The over-all objective of the study was to outline the prevalence of Depression, Anxiety, and Suicidality in patients of BC attending CTC at Kenyatta National Hospital.

Methodology: This cross-sectional descriptive study utilized purposive sampling to enroll 100 patients of breast cancer. Data was collected at the KNH, Cancer Treatment Centre (CTC) utilizing questionnaires. The Hospital Anxiety Depression Scale used to determine whether or not a patient is depressed and/or anxious. Suicidality assessed using Beck's scale for Suicidal Ideation. A researcher-designed Socio-Demographic Questionnaire was used to capture other crucial data. SPSS version 22.0 was used for analysis of the data. Frequency tables, charts, and bar graphs used to depict and demonstrate the discrete variables, mean and standard deviation used for analyzing continuous variables. Bivariate analysis employed to analyze links between dependent, independent and moderating variables comprising of correlation and chi-square tests. Multivariate analysis will be performed for correlates, if and where applicable. To obtain adjusted odds ratios for multivariate analysis, regression analysis will be used.

Results: Depression was prevalent in 33% of patients. 7% had mild, 18% had moderate and 8% had severe depression respectively. Overall anxiety noted in 39% patients of which 9% had mild, 17% moderate and 13% had severe anxiety according to HADS scale. Suicidal ideation was seen in 14% of patients. Additional findings from the study showed significant association of socio-demographic factors like, living alone (p-0.019), use of chemotherapy (0.039) with prevalence of depression; surgery (p-0.027), duration of diagnosis (0.047) and recurrence (0.009) of cancer with prevalence of anxiety; chemotherapy (p-0.020) and recurrence (0.005) with suicidal ideation in BC patients.

Conclusion: The prevalence of depression, anxiety and suicidality was substantial in BC patients attending CTC, KNH. This upholds the importance of need for timely psychological interventions and early psychiatric screening, assessment and treatment to equip patients with better mental health and outcome. These measures will enhance treatment adherence in patients and possibly lower healthcare costs.

Chapter 1

1.0: Introduction

1.1: Background

Breast cancer cases are growing worldwide and it has become the most prevalent cancer among women. Kenya has the highest numbers of patients being diagnosed with breast cancer in Sub-Saharan Africa and the highest number of illnesses and deaths related to cancer in East Africa, accounting for 40% of total yearly mortality (Atieno et al., 2018; Joko-Fru et al., 2020). However, it ranks second to cervical cancer in the majority of developing nations, but according to Kenya's National cancer registry, it has scored higher than cervical cancer in the past (Korir et al., 2015). A diagnosis of cancer, can wreak havoc on the patient's mental well-being. The shock, uncertainty, hopelessness following diagnosis can cause a considerable amount of psychological and emotional distress for the patient and their family members. Anger, resentment, and disbelief about the disturbances in their planned life duties and obligations may exacerbate the distress. Furthermore, an added loss of an imagined future with changes in their lifestyle affecting their physical and emotional functioning while contemplating mortality at a young age, could contribute and worsen their stress response. Such practical and existential concerns could overwhelm the patients, rendering their coping mechanisms inadequate. When the stress cannot be countered with the existing coping mechanisms, it may result in psychiatric morbidities like anxiety and depression (Park et al., 2018).

Cancer treatments have undergone advancement improving the life expectancy of half the patients with a minimum of 10 years, making cancer, a burdensome chronic illness. Such a chronic condition may predispose patients to a chronic stress response which could be linked to adverse outcomes, affecting the course of illness and outcome (Sahin & Tan, 2012). Changes in physical appearance (loss of hair, organs), sexual dysfunction inherent to treatment highlights the importance of considering cancer treatment as a direct cause of chronic stress activation. This can activate hypothalamo-pituitary-adrenal axis pathway, resulting in sustained stress, precipitating depression as well as anxiety. Increase in the level of cytokines, post tissue destruction due to surgery, chemotherapy or radiotherapy, is known to elevate the reuptake of serotonin and noradrenaline due to upregulation of reuptake transporters resulting in the increased risk of depression. Higher levels of depression have also been noted in patients with metastases, cancer pain and in those dealing with the side effects of chemotherapy (Smith, 2015).

Depression has been associated with low motivation and patient morale to continue treatment causing poor survival and increased chances of self-harm and suicide. Physical concerns of fatigue and pain, the prolonged financial and emotional burden due to the cost of treatment, fear of facing death could lead to chronic stress making one prone to having suicidal thoughts or ideation. As suicidal acts cannot be predicted, screening patients at risk can help reduce the burden. Severe depression, history of previous suicide attempts, feelings of hopelessness, demoralization, chronic pain, lack of perceived social support, guilt rode with a feeling of being a burden to others, with existential worries of regret, loss of dignity, purpose, affected functioning, along with certain demographic variables and specific cancer types, increase the risk of suicidality. Doctors, including psychiatrists and oncologists, could play a crucial role in screening such high-risk patients (Choi et al., 2017).

Suicidality has been commonly studied both in developed and developing countries for various reasons including those of chronic medical illnesses, like cancer. It remains an unexplored area of study outside of Psychiatric settings, especially in Africa, as the key role of mental health is downplayed in coping and recovery (Hagezom et al., 2021).

1.2: Problem Statement

Depression in cancer patients has been in the estimated range of 10 to 40%, compared to 4.4% of the general population (Pitman et al., 2018). Only 5% of cancer patients with depression sought care from a mental health professional, although 73 % of them had unmet psychiatric requirements (Sahin & Tan, 2012).

Patients experiencing hopelessness, as part of the syndrome of depression may not be motivated to receive cancer treatment altogether (Pitman et al., 2018). Findings in a cohort study reported, only 51% of the study group which had depressed BC patients opted for chemotherapy compared to the control group of 92%, BC patients without depression (Colleoni et al., 2000). Furthermore, certain physical symptoms of depression like loss of appetite, fatigue, poor cognition, alteration in weight, commonly witnessed in cancer patients might be mistakenly overlooked by clinicians leading to lower detection of depression. Comorbidities of cancer, such as anxiety, depression are common yet neglected and under-diagnosed which inadvertently influences mental well-being, treatment adherence, survival and, the outcome for patients (Smith, 2015). Evident from multiple existing studies, depression, and anxiety, not only interfere with the ability to cope but also with the progression of cancer. Owing to the higher prevalence of undetected and untreated cases of depression in African countries, repressed and undealt feelings of sadness and hopelessness not only make one prone to suicidality, but also to non-fatal behaviors of wishing hastened death and repeated suicidal thoughts (Zhong et al., 2017). Many cohort studies have concluded that a new cancer diagnosis heightens the chances of suicide in patients (Choi et al., 2017).

Chapter 2

2.0: Literature Review

2.1: Introduction

A literature review providing an overview of the key findings is outlined in this chapter. A summary of key literary sources, empirical or evidence-based articles, conference proceedings and papers and dissertations, mainly original articles from peer-reviewed indexed journals are discussed. This comprehensive review is being done to evaluate, condense relevant data from various studies to help design the theoretical framework and to also adopt a more appropriate methodology by examining the strengths and weaknesses of existing research in this particular field of study.

2.2: Theoretical Framework

G. L. Engel, (1977) described the most commonly utilized bio-psychosocial model in the field of healthcare. The biopsychosocial approach considers health and illness to be the result of a complex interaction between biological (genes), behavioral (lifestyle, health related beliefs and stress), and social factors (cultural influences, relationships and social support). This model systematically considers the complex interactions between variables that are intended to be explored in this study.

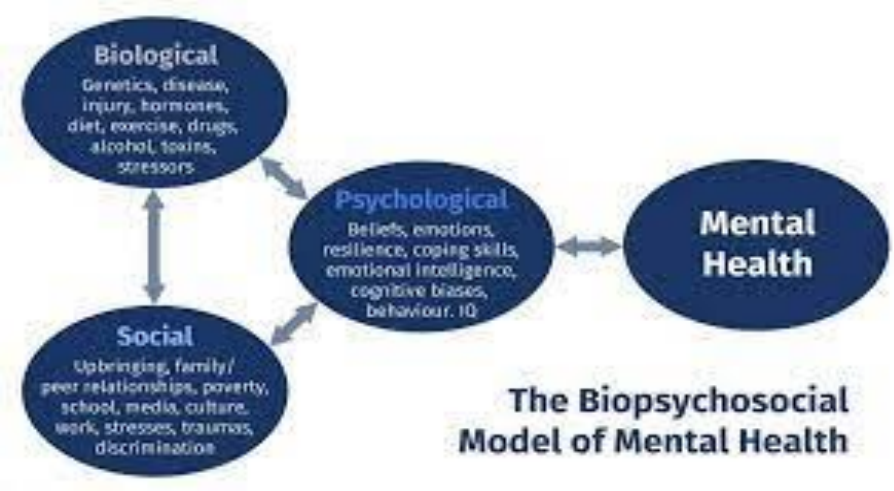


Figure. F.1: Biopsychosocial Model

This model is adopted by many scientists and physicians to explain diseases and their pathogenesis due to the ease of understanding, generalizability and consistent results obtained post-

intervention. Not only does this model aid physicians in better understanding the interaction of biological with psychosocial components of illnesses, but it also strengthens the dyadic clinician-patient relationship and provides an avenue for developing multidisciplinary approaches to patient care (Bolton D et al.,2019).

Havelka et al., (2009), in the author's work on "Biopsychosocial Model-The integrated approach to health and disease" and another study by Lehman et al., (2017), have both noted its relevance and remarked on the domination of this model in current medical practice and health psychology.

2.2.1: Biopsychosocial Factors and BC

The role played by biological/clinical (age, family history of mental disorder, treatment options, duration since diagnosis, metastases, recurrence of cancer) and psychosocial factors (living conditions, employment status, marital status, history of mental illness) will be evaluated by discussing important studies concerning depression, anxiety, and suicidality in BC patients.

Female cancer patients were noted to be more likely than males to get depression in specific types of cancer. Patients with ineffective coping mechanisms, past and family history of mental disorder, minimal or no social support are more prone to developing depression (Smith, 2015). Another reasearch studied the effects of demographic variables and clinical factors such as duration, treatment options on the prevalence of anxiety, depression in BC patients. Moderate to severe anxiety, depression, and stress were noted in patients of advanced stages and in patients who recently underwent surgery. Also, the rate was higher in married patients, patients living in rural areas, unemployed, illiterate, and those with poor financial resources (Alagizy et al., 2020).

Studies have opined that the level of stress anxiety and depression varies throughout the course/stage of illness, noted to be significant in the early stages around the time when the cancer diagnosis is informed to the patient. Although few studies concluded the anxiety did not vary significantly with the course/stages of cancer (Härtl et al., 2010).

Breast cancer survivors who had recurrence showed significant levels of both mild and severe depression than disease-free survivors. The study also concluded that age, education, employment, income, and recurrence were determinants of significance in reporting severe depression (Doege et al., 2020). In another study on 269 women diagnosed with breast cancer, recurrence of the cancer was noted in 61(23%) within a study period of 3 years. Fifty percent were evaluated

to be clinically anxious and/or depressed and this was attributed as a direct response to the recurrence and/or cancer spreading to other areas (Härtl et al., 2010).

Patients with metastases exhibited greater levels of depression (Ciaramella & Poli, 2001). A longitudinal study on metastatic BC patients showed improvement in depressive symptoms with prolonged median survival by 28.5 months in comparison to patients untreated for depression (Giese-Davis et al., 2011). Treatment for depression in breast cancer patients improves their quality of life and may help them live longer. (Reich et al., 2008).

Few other studies reviewed the consequence of different treatment options on patients' mental health. Patients who underwent chemotherapy were assessed for anxiety and depression. The HADS and distress inventory for cancer were utilized. Results showed a mean distress score of 24 and levels of 15.38% for anxiety and 16.23% for depression (Pandey et al., 2006). While another study on patients that had undergone mastectomy concluded a poorer quality of life and poor self-image being present in patients, predisposing them to depression (J. Engel et al., 2004). Depression and stress tended to worsen post chemotherapy, adversely affecting the quality of life amongst patients (Liu et al., 2009). Unresolved depression in patients also affected their likelihood of receiving chemotherapy. Certain cytokines released due to tissue destruction following surgery, chemotherapy or radiotherapy are known to regulate the serotonin reuptake by moderating the transporters and hence play a role in predisposing BC patients to depression and/or anxiety (Smith, 2015).

Many studies have been directed to explore factors associated with suicidal ideation in BC patients. One such study found a significant association between suicidal ideation and key factors like sex, stage of cancer, having depression, anxiety and social support (Araya & Gidey, 2020). Another looked at the risk variables for suicidal ideation and found that suicide attempts were more common in cancer survivors who were diagnosed early in life as well as those who had cancer for more than ten years (Choi et al., 2017).

2.2.2: Psychiatric Morbidity in BC patients

Psychiatric morbidity can be defined as psychological and physical decline that is experienced by a person due to either psychological deficit or mental illness (Armiya'u et al., 2013). Patients with cancer tend to see multiple specialists (for example, surgeons, radiation oncologists,

medical oncologists), and the care is often fragmented. The patient is unable to establish a therapeutic alliance with a single trusted physician. Fragmentation of care is a psychological burden further worsening the distress (Falagas et al., 2007). Most studies investigating BC patients for psychiatric morbidities have concluded anxiety and/or depression to be the most frequently identified disorder with few studies identifying breast cancer as a strong risk factor for developing depression (Caplette-Gingras & Savard, 2008; Chen et al., 2009; Hjerl et al., 2002). Breast cancer survivors have a higher rate of mild to moderate depression, as well as poorer quality of life (Smith, 2015).

A strong link exists between disease progression and psychological factors like social isolation, stress and depression (Steel et al., 2007). A cancer diagnosis has significant adverse effects on mental health affecting the disease outcome and causing poor quality of life in patients (Artherholt & Fann, 2012). Many epidemiological and clinical studies over the last two decades have delineated psychological and social factors such as chronic depression and stress as major risk factors for the progression of cancer. Psychiatric issues in cancer patients are frequently present in the form of symptoms, sub-syndromal conditions, or syndromal diseases, according to the analysis of relevant literature on psychological morbidity in cancer patients (Smith, 2015). Majority of the studies have utilized instruments such as HADS, HAM-D, and BDI to estimate the prevalence of psychiatric illnesses including depression and anxiety.

As the studies are conducted on a diverse population of cancer patients at various stages of their illness or with various treatment options, the prevalence rates of depression and anxiety tend to vary with some studies indicating higher prevalence in the early stages. It is crucial to screen for psychiatric illnesses and implementation of treatment strategies in the early stages of the disease (Wang et al., 2020). A longitudinal study investigated changes in the levels of anxiety in women with a primary diagnosis of breast cancer or carcinoma -in-situ after surgical treatment, at 6 months, and 12 months post-surgery. Although quality of life had improved, the anxiety levels showed no improvement, irrespective of the stage of illness and duration post-surgery (Härtl et al., 2010).

Multiple studies have concluded that cancer patients are increasingly prone to contemplating suicide and self-harm. Breast cancer mortality was significantly higher in women with psychiatric diagnoses (Lawrence et al., 2000). A study aimed at outlining the effect of patients' suicidality on the nursing staff noted deterioration in the nursing care among those who witnessed cases of patient suicide. Suicide not only has adverse effects on patients and their family members but also

on healthcare professionals (Zhong et al., 2017). Risk of suicide is known to be highest within one year after diagnosis. Significant links exist between a cancer diagnosis and suicide which are understudied and often overlooked (van Oers & Schlebusch, 2021).

2.3: Review of Studies

2.3.1: Global Studies

Thirty one research studies looked at the relationship between various psychosocial factors and overall breast cancer disease-free survival, and further six studies at whether the psychological intervention affected the disease outcome. Twenty-five (80.6 %) of the total studies found a statistically significant link between at least one psychosocial characteristic and the outcome. Social support, marriage, minimization and denial are all connected with a better breast cancer prognosis, whereas depression and emotional restraint are linked to a lower breast cancer survival rate (Falagas et al., 2007).

Sahin & Tan, (2012) laid emphasis on the degree of loneliness experienced in caregivers of cancer patients in comparison with the cancer patients in their work. A sample of 60 patients and 60 caregivers were enrolled in the study. Data was collected using a demographic questionnaire, Perceived Social Support Family Scale, Beck Depression Inventory and Los Angeles Loneliness Scale, University of California. The loneliness score was reported to be greater in patients when compared with the caregivers. The degree of loneliness increased with decreasing level of perceived social/family support. Like many other studies, social support and certain demographic variables such as age, education, cancer stage, cancer recurrence were considered significant predictors for the prevalence of distress, anxiety and depression. Understanding these associations can immensely affect patient well-being in reducing the disease burden.

Study was conducted on cancer patients from two tertiary hospitals located in Northern China, to determine the prevalence of suicidal ideation among them. A total of 517 patients were subjected to standardized questionnaires on mental health and cancer history including demographic details. This study utilized the Hospital Anxiety and Depression Scale to determine the mental health among participants. Suicidal ideation was evaluated with a single self-report question, if the patient had thoughts of not wanting to live in the past one month. This study was done to gain insights on the epidemiology of suicidality for early identification and intervention and to

determine the psychological, cancer-related characteristics and demographic factors associated with its prevalence. Findings of one-month prevalence were noted to be at 15.3%, which differed with cancer site and was observed to be highest in patients with breast cancer. Positive associations were recorded with accompanying factors such as moderate to severe pain, poor performance and metastatic cancer along with the diagnosis of depression and anxiety among the studied patients (Zhong et al., 2017).

Park et al., (2018) studied the prevalence and associated factors in patients diagnosed with *de novo* metastatic breast cancer from nine academic and community hospitals. Another study by Srivastava & Ahmad Ansari, (2015) studied the prevalence of anxiety and depression in patients of breast cancer after a one-year follow-up at a hospital in Varanasi, India. Both the studies examined demographic variables and clinical characteristics strongly associated with depression and anxiety. Patients in the younger age group, earning low income, unmarried/single, uneducated, patients of low socio-economic status were evidently more prone to developing anxiety and/or depression.

Diagnostic tools add immense value in screening and studying the prevalence of mental health conditions. Civilotti et al., (2020) attempted to evaluate one such tool, the Distress thermometer, to appraise its usefulness and define an optimal cut-off score among the population studied. This study included 436 patients, newly diagnosed with breast cancer awaiting surgery. As per the results, depression was present among 33% and anxiety among 52.1% of participants recruited.

Hajj et al., (2021) based their research on evaluating the degree of depression and anxiety in breast cancer patients undergoing chemotherapy and studying the association of psychological

disorders with sociodemographic as well as genetic factors. This study was done on patients at the out-patient unit of the hospital located in France. Gene polymorphisms were detected by Genotyping. Depression and anxiety were seen in 43.4%, and 56.2% of the patients respectively. PER2 AA variant genotype and COMT Met/Met genotype as per the study were increasingly associated with higher scores for depression and anxiety respectively. In conclusion, the importance of identifying clinical and genetic risk factors to lower the disease burden to improve quality of life in patients was highlighted by the research.

2.3.2: Regional Studies

Research was conducted by Popoola & Adewuya, (2012) at Lagos State University Teaching Hospital, Nigeria, to calculate the rate of depressive disorder in breast cancer survivors. Mini International Neuropsychiatric Interview administered on 530 patients recruited for the study, aided in the diagnosis of depression. Further sociodemographic details, perceived level of support, clinical details of cancer such as staging, treatment type and duration since diagnosis were recorded. Forty percent of the patients were diagnosed with depression of which 16.9% fell under major depressive disorder, and 23.4% under the minor depressive disorder category. A higher correlation with depression was seen among unmarried patients with minimal family and social support in patients with advanced stages of cancer. This study also strongly advocated for screening measures and emphasized the psychological care to be included in the standardized cancer care, especially for patients with breast cancer.

Another study by Kugbey et al., (2020) examined both indirect and direct effects of anxiety and depression on quality of life amongst patients of breast cancer, receiving care at Korle-Bu Teaching Hospital located in Accra, Ghana. Recruitment of 205 participants was followed by administering questionnaires to evaluate religiosity, anxiety, depression, social support and quality of life. Depression, anxiety and low social support had a substantial negative impact on quality of life according to study results. However, no such significant relationship between anxiety and depression on quality of life was discovered through religiosity, emphasizing the need for social support for the patient's well-being.

Addressing the issue of increasing cases of breast cancer in Egypt, Alagizy et al., (2020) performed a study focusing on psychosocial factors and stress prevalent among breast cancer patients in Menoufia university hospital. Sixty patients were given questionnaires to collect data along with a structured psychiatric clinical interview for assessing mental health. Other instruments used included the Manifest Anxiety Scale, Beck‘s Depression Inventory (BDI-II), and also Perceived Stress scale. Results indicated the prevalence of depression, anxiety and stress at 68.6%, 73.3% and 78.1% respectively. Factors directly associated with depression and anxiety included lower socio-economic status and high treatment expenses over a prolonged duration since cancer is a chronic condition.

Van Oers & Schlebusch, (2021) sought to study the mental health characteristics of breast cancer patients in comparison with cancer of other sites. The study included 80 breast cancer patients and 80 patients with cancer of other sites attending the oncology clinic in Durban, Kwa-Zulu Natal, South Africa. Participants were selected using the convenience sampling method. The following battery of questionnaires, *inter alia*, Rosenberg Self-Esteem Scale, body image scale, stress symptom checklist and the BDI were administered. The study noted higher degrees of hopelessness and suicidal thoughts in patients with breast cancer and the author provided increased irritability, fearfulness, anxiety and frequent emotional outbursts as the probable cause. This study highlighted and confirmed the strong association between higher rates of hopelessness, distress with suicidal behavior in patients with breast cancer.

An institutional-based cross-sectional study was conducted by Araya & Gidey, (2020) at Ayder comprehensive specialized hospital to assess suicidal ideation and attempt among 297 cancer patients. The study period extended from March 2019 to June 2019. Interviews were conducted with the participants by psychiatric nurses by administering the semi-structured questionnaires along with the clinical history of the illness. Suicidal ideation and suicidal attempt, determined using the suicide module of the World Mental Health survey, were found to be, 27.9% and 8.4% respectively. This study also emphasized the strong association between suicidal behavior and features such as poor social support and performance status along with concurrent issues of anxiety and depression.

In Ethiopia, a study was conducted by Wondimagegnehu et al., (2019) at seven health facilities which included 428 breast cancer patients. As cancer diagnosis is known to cause significant functional impairment, this research was carried out to outline the role, social support played in coping, and its association with depression among participants. The instruments used for assessing social support were the Multidimensional Scale of Perceived Social Support and Patient Health Questionnaire-9 for depression. Depression was seen among 25%; further categorized into moderate, moderately severe and severe at 16.4%, 7.01%, and 1.64% respectively. Depression was also strongly associated with severity of pain, problems with employer/family, age, occupation and the type of health facility chosen for treatment. The severity of depression worsened with decreasing social support, hence its importance was highlighted in the study.

A study by Hagezom et al., (2021) at a specialized hospital in Mekelle, Ethiopia, was done to determine the magnitude and factors commonly associated with suicidal ideation in patients of cancer. This institution-based study adopted a cross-sectional design. A sample size of 410 patients was selected utilizing the systematic random sampling technique by the researcher. Cancer patients attending the oncology clinic in the study period aged 18 years and above were chosen for the study. Suicidal ideation was studied with the help of the Suicide Manual Composite International Diagnostic Interview questionnaire. The Oslo-3 social support scale was used to determine social support, whereas the HADS was used to determine anxiety and depression. Prevalence as per the study findings was as follows; suicidal ideation at 28.5%, depression at 40.5% and anxiety at 27.8%. This study found a positive association between suicidal ideation and factors such as being female, cancer of advanced stage, stigma, and significant anxiety.

2.3.3: Local Studies

Ndetei et al., (2018) remarked that studies on over-all care in cancer patients have primarily given attention to management of physical symptoms, with only a few studies examining mental health and well-being throughout the duration of the illness. The mental health, well-being and social functioning of 389 adult cancer patients receiving treatment at cancer clinic, at a public referral hospital in Kenya were investigated in this cross-sectional study. Cancer status was found to be negatively affect social and vocational functioning, as well as psychological well-being. The severity of a person's cancer sickness increased their likelihood of disability and mental distress, according to the findings. Routine care addressing mental health throughout the continuum of cancer was advised to counter this risk.

Limited data on the prevalence of depression in patients with breast cancer at Moi Teaching and Referral Hospital encouraged Saina et al., (2021) to explore the factors associated with depression at their institute. A cross-sectional study was performed on 79 patients who were interviewed for demographic details and then subjected to the HADS scale to measure the severity of depression. Sixty percent were diagnosed with depression. A statistically significant association was seen with factors such as employment, patients in the late stages of cancer and patients receiving chemotherapy. Other key factors that were evaluated with the prevalence of depression included age, marital status, level of education, hormonal therapy and surgical treatment.

2.3.4: Review of Study Instruments

HADS, study instrument utilized in this study is a self-reported questionnaire, developed in 1983 by Zigmond and Snaith, consisting of 14 items to identify symptoms of anxiety as well as depression in patients (Zigmond & Snaith, 1983). The HADS as a screening tool was found to be valid in non-psychiatric facilities, as well as valid for use in community settings, as a screen for mental illness (Abiodun, 1994). It has adequate internal consistency with reliability exceeding 0.70 among undiagnosed individuals, psychiatric and medical patients compared to that of Beck's Depression and Beck's Anxiety Inventory and also the Hamilton Depression Scale (Boxley et al., 2016). It has also been found to be effective for assessing degrees of affectivity and aids in follow-up at subsequent visits giving the health worker important information on patient progress (Zigmond & Snaith, 1983). Cronbach's alpha for the HADS-A spans from 0.6 to 0.9, while between the two subscales, the correlations vary from 0.40 to 0.74 (Bjelland et al., 2002).

Beck's Scale for Suicidal Ideation is frequently used by healthcare practitioners as a supporting tool for clinical assessment because it includes features that successfully evaluate the suicide scenario. Widely used and regarded as a reliable tool for assessing patients at risk of suicide based on their desire to die, suicidal thoughts, and suicide attempts (Batterham et al., 2015; Beck et al., 1979). Internal reliability of the BSS with Cronbach alpha coefficient ranges from 0.87 to 0.97 (Esfahani et al., 2015). With moderate test-retest reliability within psychiatric settings and correlation coefficients ranging from 0.90 for mental inpatients to 0.94 for outpatients, the BSS is substantially linked with the clinically evaluated SSI. Alongside the criteria enlisted in the BSS are consistent with Gould et al., (1990) concept of suicide ideation, due to which it has been widely used in Kenyan research (Muriungi & Ndetei, 2013).

2.4: Justification for the study

Due to limited studies available on the prevalence of depression, anxiety, and suicidality in breast cancer patients, this study is being carried out at Kenyatta National Hospital to add to the body of knowledge. Addressing gaps in the psychological needs of patients could help build appropriate intervention strategies. Such strategies could help build better coping mechanisms increasing a patient's potential to overcome, increasing acceptance, help in a positive reframing of the illness aiding in recovery and better mental health. The stigma attached to seeking mental health care among cancer patients can discourage them from admitting the need for help, which could misrepresent the true burden of depression and anxiety among cancer patients. According to

a survey, more than 70% of oncologists and 85% of patients strongly believe the improvement in mood and mental well-being can positively impact the progression of cancer (Smith HR., 2015).

2.5: Significance for the study

This study may provide information to the clinical staff, and policymakers on the importance of psychosocial interventions among patients with breast cancer. The findings of the study intend to motivate the development of future strategies centered on distress reduction, timely management of depression and anxiety, raising awareness among clinicians and oncologists about the importance of addressing the psychiatric consequences of cancer. For risk assessment and intervention development, it is necessary to raise awareness of demographic, clinical, and psychological linkages. The study findings could also play a pivotal role in integrating psychiatric care into the multidisciplinary approach to routine cancer care. The KNH hospital administration will be assisted in better understanding the types of morbidities within this group of patients to better prepare for human resource mobilization, allocating financial resources, and necessities essential for patient management. Gaps in referral will be discovered and reported to the appropriate policymakers for resolution. The development of therapies to improve quality of life could result in treatment adherence with higher emotional well-being and a positive outlook among cancer patients.

The study may also create more awareness so that further relevant studies to identify newer upcoming challenges in this field of research can be executed in cancer patients at KNH to provide better holistic medical care.

2.6: Hypotheses

Null Hypothesis

BC patients do not have depression, anxiety, suicidal ideation and behavior.

2.7: Research Questions

What is the prevalence of depression, anxiety, suicidal ideation, and behavior across BC patients at Kenyatta National Hospital?

2.8: Objectives

2.8.1: Broad Objectives

To study the prevalence of depression, anxiety, suicidal ideation and behavior in BC patients attending CTC at Kenyatta National Hospital, Nairobi, Kenya.

2.8.2: Specific Objectives

1.To assess the prevalence of depression in patients of BC.

2.To assess the prevalence of anxiety in patients of BC.

3.To determine the prevalence of suicidal ideation and behavior in patients of BC.

4.To study the association of socio-demographic and other factors with the prevalence of depression, anxiety, suicidal ideation and behavior in patients of BC.

2.9: Conceptual Framework:

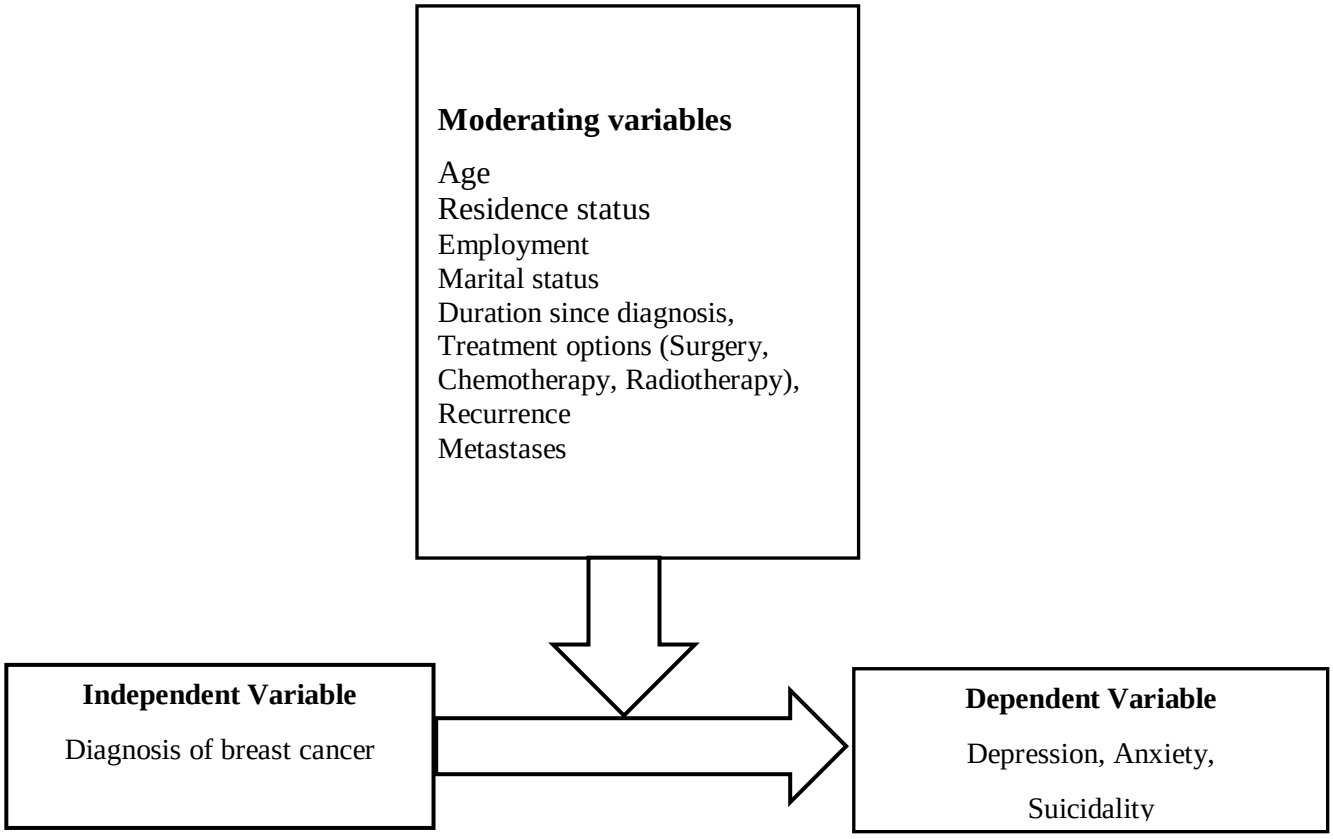


Figure. F.2: Conceptual framework

The independent variable in this study is the diagnosis of breast cancer, the cause of an outcome being studied. Also called the predictor variable.

Dependent variables in this study include depression, anxiety and suicidality which are the expected outcome of the independent variable in this study. Also called as response or outcome variable.

Age, marital status, employment, living alone or with family, duration since diagnosis (< than 1 year or > 1 year), surgery/ chemotherapy/radiotherapy in the last one month, recurrence of cancer, and metastases, constitute the moderating variables. These variables are noted to have significant correlation with the prevalence of depression, anxiety and suicidality in BC patients, thus altering the association between the independent and dependent variables, as elaborated by the various studies presented in sections 2.2.1 and 2.3 in the literature review.

Chapter 3

3.0: Methodology

3.1: Study Design

The researcher used a descriptive, quantitative, cross-sectional study design to estimate the prevalence of anxiety, depression and suicidality in BC patients at KNH.

3.2: Study Area Description

The research took place at Kenyatta National Hospital's Cancer Treatment Centre (CTC) in Nairobi, Kenya. This study region was chosen because it is currently Kenya's main referral and teaching hospital, run in association with the University of Nairobi (UON), College of Health Sciences, and gets the country's largest number of cancer patients. It treats 70,000 inpatients and 500,000 outpatients every year. KNH is located just west of Upper Hill in Nairobi, and about 2.5 kilometres west of Nairobi's core business district. CTC is located on the first floor of KNH and provides both outpatient and inpatient care to cancer patients.

3.3: Study Population

BC patients receiving care at KNH's CTC made up the study population. CTC sees an estimated 4000-4500 cancer patients each year, with 350-400 persons attending the out-patient clinic every month. (KNH, Medical Records and Information 2020).

Inclusion Criteria

1. All patients with breast cancer aged 18 and older, regardless of disease stage, who were receiving care at KNH's CTC and who consent to participate in the investigation.
2. All patients who had breast cancer and had no history of previous psychiatric disorders.
3. Patients who had breast cancer with the capability to speak English or Swahili.

Exclusion Criteria

1. All patients who had breast cancer but below 18years of age.
2. Patients who had breast cancer and were not able to speak English or Swahili, and those who refused to provide consent for the study.
3. All patients of breast cancer with a history of previous psychiatric disorders.
4. Patients who were too sick and unable to participate.

3.4: Sample Size

The sample size was calculated using Yamane Tore formula (1967). It is a standard formula for a cross-sectional study for known population size.

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

Where: - n is the sample size

N - population size

e - acceptable degree of error with alpha as 0.05.

Based on the statistical information from the hospital health records, the approximate number of patients diagnosed with breast cancer per month is 30-40 patients. Replacing this number into the above formula, a sample size of 99 is got as shown below.

Calculation of sample size: $n = 35/1+35(0.05)^2$

$n = 35/1+0.09$

$n = 33 \text{ X } 3 = 99$ (sample size for 3 months)

A final sample size of 99 patients, rounded to 100.

3.5: Sampling Procedure

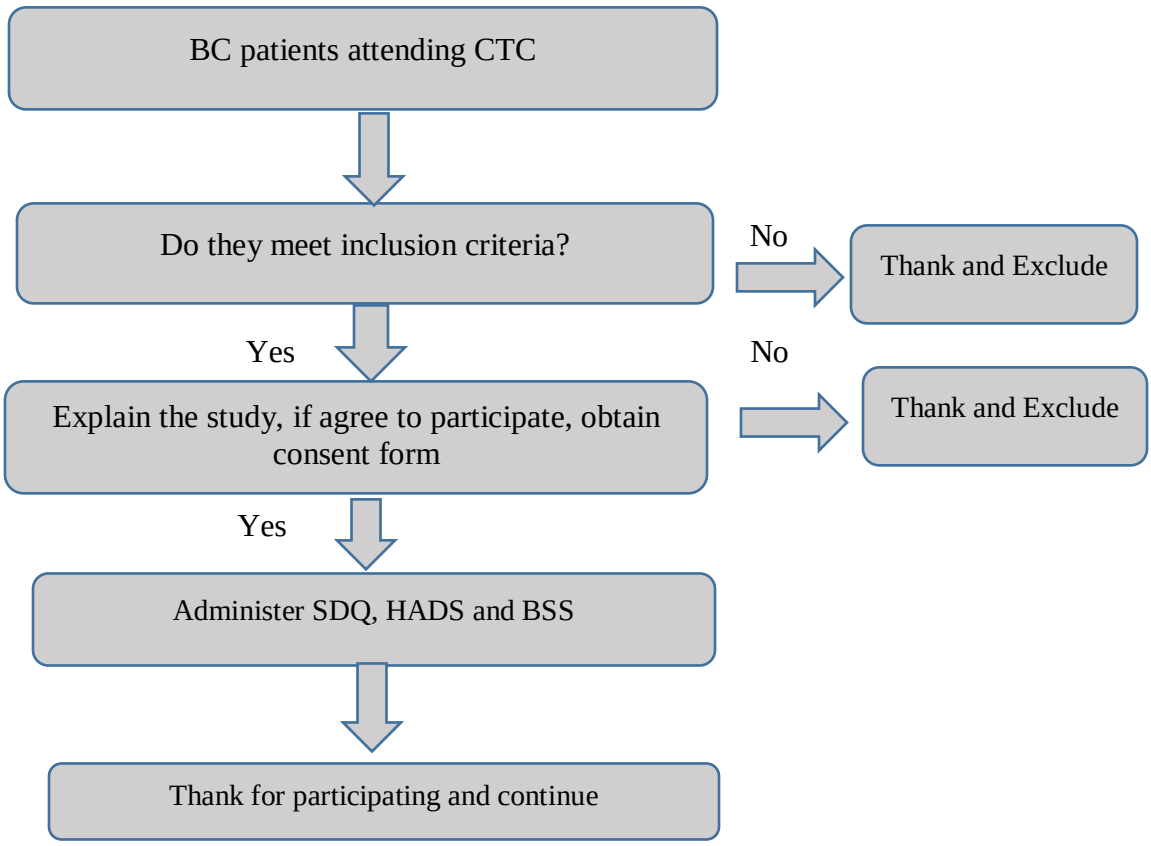
Recruitment of study participants was done using purposive sampling. This strategy is restricted to a small group of people who can supply the desired information, either because they are the only ones who have it or because they meet the researcher's requirements. Only first-time adult patients receiving care at the cancer treatment centre, KNH, who consent to take part in the research, were recruited. This process was continued until the target population was reached.

3.6: Recruitment and Consenting Procedure

Study participants recruited at the Cancer Treatment Centre at the Kenyatta National Hospital. The researcher was stationed from Monday to Thursday during the out-patient clinic hours i.e, 8am-2pm at the out-patient department at CTC. Using purposive sampling, all the willing BC patients were approached by the researcher with the help of a nurse. Selection of patients was done using the daily patient registration list based on the exclusion/inclusion criteria. The researcher explained to each, the details of the study and answer any questions or clarifications requested, following which consent was sought from the patients. Those who agreed to participate in the

study were given an informed consent form to sign. Those who declined to give consent were thanked and excluded from the study and replaced with the next patient on the list. On obtaining written consent, the socio-demographic questionnaire, the study tools HADS and BSS were administered. Participants were thanked for participating in the study.

Figure.F.3: Data Recruitment flowchart



3.7: Data Collection Procedure

The socio-demographic questionnaire and the study instruments, HADS and BSS were self-administered. Before the start, all participants received instructions on all the components/instrument tools of the study.

Data was collected by the principal investigator (PI). The data collection tools HADS and BSS, take approximately 5-10 minutes each to complete. Similarly, the Socio-demographic questionnaire, a short researcher-designed questionnaire took approximately 5-10 minutes to complete. A total of 20-30 minutes was utilized for the entire data collection procedure. The researcher ensured each data collection tool is complete from each patient.

3.7.1: Section I: Socio-Demographic Questionnaire

This was developed by the researcher to obtain personal socio-demographic information such as the age, living alone or with family, marital status, employment and other details such as, duration since diagnosis, treatment details, recurrence and metastases for cancer.

3.7.2: Section II: Hospital Anxiety and Depression Scale

It comprises two subscales, HADS-A for anxiety, and HADS-D for depression. Each subscale contains seven statements on a 4 point Likert scale from 0-3 and is scored by adding up the ratings for the 14 items to get a total score along with ratings for 7 items of each subscale to get individual scores for anxiety and depression. The HADS is a self-administered questionnaire that the interviewer can also deliver. Each subscale's total score ranges from 0 to 21, with 0-7 suggesting minimal anxiety/depression, 8-10 mild anxiety/depression, 11-14 moderate anxiety/depression, and 15-21 indicating severe anxiety/depression (Lisspers et al., 1997).

3.7.3: Section III: Beck Scale for Suicidal Ideation

The BSS was divided into three sections, each of which aims to determine the degree of suicidal ideation. The scale was developed in the United States and consists of 21 items, each of which presents three possibilities that are graded in intensity from 0 to 2; the total score can vary from 0 to 38, with rising values indicating greater suicidal ideation. The BSS's first section asks five questions about death wishes: 1) want to live, 2) desire to die, 3) factors to live, 4) desire to commit suicide, and 5) willingness to self-protect faced with a life-threatening situation. When questions 4 and 5 scores zero in this first segment, the participant should skip section 2 and go straight to section 3. Section 2 extends from question 6 to question 19, addressing various aspects of suicidal ideation; measures taken, accessibility towards executing, and any preparations done for the same. Section 3 has two questions, regarding suicide attempts (Esfahani et al., 2015).

3.8: Materials

1. Stationery
2. Consent form
3. Socio-demographic questionnaire (SDQ)
4. Hospital Anxiety and Depression Scale (HADS)
5. Beck’s Scale for Suicidal Ideation (BSS)
6. Cabinet (with Lock and key)

3.9: Training Procedures :

Not applicable as no research assistants are involved in the study.

3.10: Quality Assurance

The researcher strictly adhered to research ethics during the study. The PI was responsible for explaining the details, including aims and objectives, the collection procedure, risks, benefits and also for administering the questionnaires to the participants. The researcher ensured completeness of information from each participant. A checklist was utilized to ensure all the information is gathered. To safeguard secrecy and privacy, the interview guides were tagged with codes/serial numbers. Biostatistician was involved to guarantee that data is properly entered, handled, and analyzed. All data collection instruments was kept secure, and the computer that was used to enter and analyze data, was password protected. The data gathering tools were accessible only to the primary investigator, biostatistician, and supervisors.

3.11: Covid-19 Measures:

Participants were interviewed and tested for evidence of any respiratory symptoms such as fever, cough, shortness of breath and other Covid 19 disease symptoms. If a participant needs further evaluation, they were directed to a health facility of their choice. Before any interview, both researcher and study participants had their temperatures checked. The data collection took place in a well-ventilated room and a minimum social distance of 1.5 meters was maintained throughout the study. Masks and sanitisers were provided when necessary to minimize the risk of infection when required by the participants.

3.12: Ethical Consideration:

Ethical approval and permission to conduct the research was approved from Kenyatta National Hospital, University of Nairobi- Ethics and Research Committee, Kenyatta Hospital Medical Research Department and University of Nairobi- Department of Oncology. Eligible volunteers were guided through the consent process, which outlined the study's goals and objectives. This was done by the researcher, and participation in the study began with a completed informed consent form from each participant. Only those participants who volunteered to engage in the study proceeded to sign the consent form. Participants were informed that the information acquired was used solely for research purposes. No one was threatened or penalized if they chose to opt-out at any moment, withdraw, or even refuse to answer any question for any reason. All data gathered for this study was kept private. On the questionnaires and interview guides, serial numbers were

used instead of names. Soft copies were maintained in password-protected systems and the physical copies kept under lock and key.

3.13: Data Management and Analysis:

The information from the data collection sheet was verified on a daily basis. The soft data from the data collection sheet was coded using SPSS version 22.0, before being placed in a Microsoft Access Database which is password-protected, available only to the researcher and biostatistician. After data collection, the hard data is being stored in a lockable cabinet every day. Data was cleansed, categorized, and coded before being entered into the computerized software. To describe the prevalence and socio-demographic features of the participants, univariate analysis was performed. To study the significance of the association between the independent (breast cancer), dependent (depression, anxiety, suicidality) and the moderating variables and also to represent the nature of depression, anxiety, suicidality, bivariate analysis (Chi-square, graphs and logistic regression) was performed. With a confidence interval of 95% and p value of significance set at 0.05, odds ratio was employed for associations between depression, anxiety, suicidality, socio-demographic and other factors. We intend to keep the data obtained for at least five years, during which time we plan to publish the findings. Data will be discarded after the five-year period by deleting the soft copy and mechanically destroying the hard drive, and hard copy papers will be shredded.

3.14: Study Dissemination Plan:

The results from this study are intended to be disseminated to the University of Nairobi Department of Psychiatry, Kenyatta National Medical Research Department and Hospital administration/ Records department, Department of Oncology and published in peer-reviewed journals.

3.15: Potential Benefits of the Study:

The results will enable clinicians, especially oncologists to understand the importance of mental health among breast cancer patients, to actively screen them for depression and other psychiatric comorbidities, provide timely interventions, also for planning and management directed towards recovery and well-being.

3.16: Potential Risks of the Study:

As the study is non-invasive, there are no potential risks expected for the patients. In case of any psychological or emotional distress noted among the study participants, the researcher is a

trainee psychiatrist who could handle an emergency and duly refer the patient to Mental Health Department at KNH for further care and management.

3.17: Privacy and Confidentiality:

To avoid causing social or psychological harm, the researcher did not provide identifiable information and maintained confidentiality. In the data collecting sheet, serial numbers was utilized instead of names. The information gathered was kept under lock and key in a cabinet, and only the researcher and statistician had access to it. Following data entry into the computer, the researcher stored the data in a password-protected folder, and the supervisors were given access upon request.

Chapter 4

4.0: Results

This chapter will focus on presenting the findings of the study in greater detail. It offers the participants' socio-demographic information as well as research conclusions in alignment with the objectives of the study. To analyze the data, descriptive and inferential statistics are being used where necessary to form the association and correlation between variables and to assess their significance.

The findings of the study are presented under the following major sections:

1. Socio-demographic characteristics of BC patients attending the CTC
2. Prevalence of depression, anxiety and suicidality in BC patients
3. Association of socio-demographic factors with the prevalence of anxiety, depression and socio-demographic factors in BC patients

The socio-demographic and clinical characteristics of the 100 patients are summarized in Table 1 below.

Table 1: Sociodemographic and related factors of the participants

VARIABLE	**CATEGORY**	**FREQUENCY**	**PERCENTAGE (%)**
Age	1) 18– 35 yrs	17	17
	2) 36– 60 yrs	70	70
	3) >60 yrs	13	13
Resident status	1) Living alone	19	19
	2) With family	81	81
Marital status	1) Single	21	21
	2) Married	43	43
	3) Divorced/ separated	31	31
	4) Widowed	5	5
Education level	1) No formal education	4	4
	2) Primary level	45	45
	3) Secondary level	39	39
	4) Tertiary level	12	12
Employment status	1) Unemployed	31	31
	2) Employed	69	69
Treatment history	1) None	46	46
	2) Surgery	23	23
	3) Chemotherapy	28	28
	4) Radiotherapy	3	3
Recurrence	1) Yes	57	57
	2) No	43	43
	1) <1 year	29	29

Duration since diagnosis	2) >1year	71	71
Metastases	1) Yes	17	17
	2) No	83	83

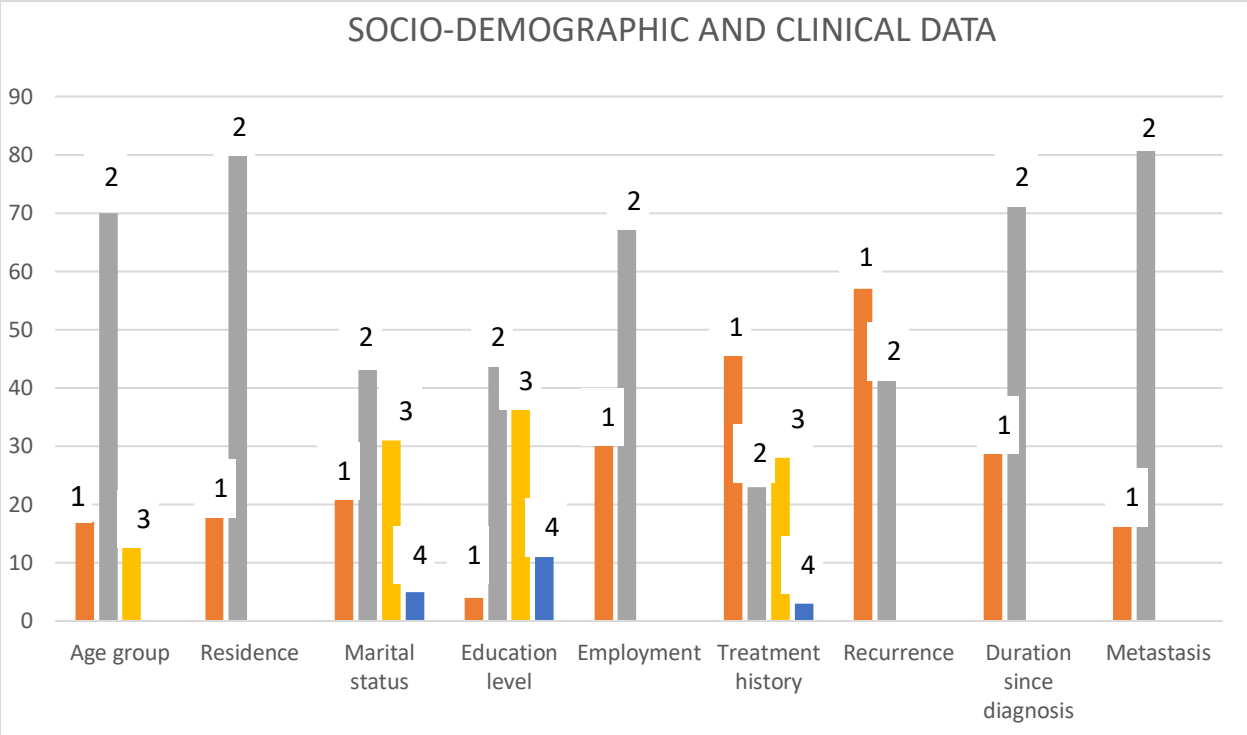


Figure 4: Distribution of Socio-demographic factors among BC patients

The mean age was 48.5 years, and the median age was 44.5 years. Most participants were middle aged, with 17% and 70% of patients in the age groups of 18-35 years, and 36-60 years and the rest (13%) above 60 years respectively (Table 1). A cumulative proportion of 96% of patients reported having had some formal education. Only 4% of patients did not have any formal education. Most (45%) patients had achieved primary school level of education. The next most frequently reported levels of education were secondary education at 39% and tertiary at 12%.

The married patients constituted 43% of the participants and represented the most common marital status; followed by 21% of patients who were single, widowed, and separated/divorced patients accounted for 5% and 31% of the sample, respectively. With regards to employment status, 29% of the patients were partially employed, 40% were fully employed and the remaining 31% comprised of patients with no form of employment. Among the participants, most (81%) of them lived with others, while 19% of the patients claimed to be living alone. Treatment history of all the patients revealed, 23% had undergone surgery, 28% had received chemotherapy and 3%

underwent radiotherapy in the last month. Duration since diagnosis of breast cancer was less than 1 year for 29 out of 100 patients. Fifty-seven patients had experienced a recurrence of cancer since their diagnosis, and 17% gave history of metastases, cancer having to spread to other sites.

Table 2: Prevalence of depression, anxiety and suicidality in breast cancer patients

VARIABLE	FREQUENCY	PERCENTAGE
DEPRESSION HADS Mean- 13.38± 4.75	33 Mild-7 Moderate-18 Severe-8	33% Mild-7% Moderate-18% Severe-8%
ANXIETY HADS Mean-14.78± 4.5	39 Mild-9 Moderate-17 Severe-13	39% Mild-9% Moderate-17% Severe-13%
SUICIDALITY BSS Mean-9.6±7.57	14	14%

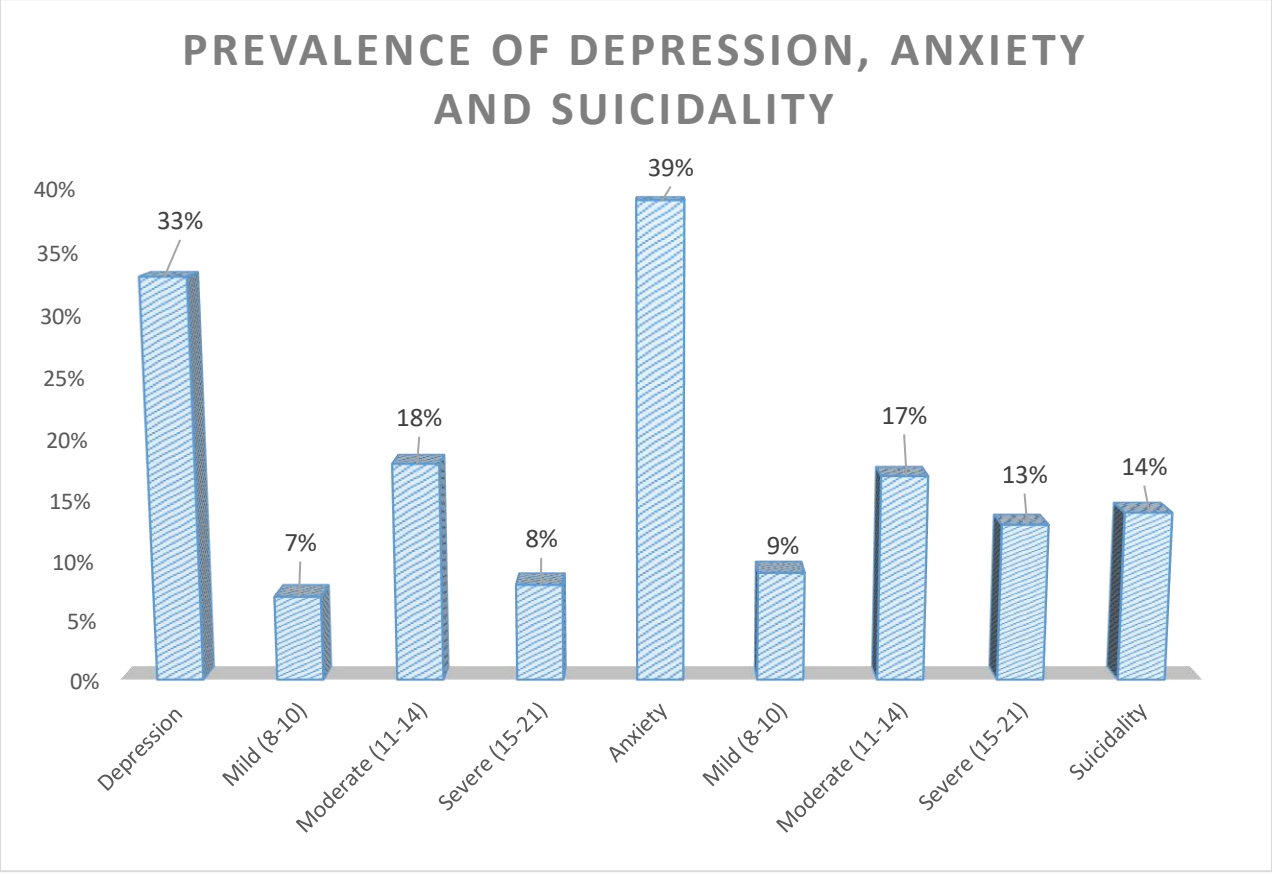


Figure 5: Prevalence of depression, anxiety and suicidality in breast cancer patients

The prevalence of depression and anxiety was assessed using the Hospital Anxiety and Depression Scale (HADS). The overall prevalence of depression was 33% (Table 2). Of the 33 depressed BC patients, 7 (7%) had mild depression (scores 8-10), 18 (18%) had moderate depression (11-14) and 8 (8%) had severe depression (15-21). The overall prevalence of anxiety was 39%. Of the 39 BC patients with anxiety, 9(9%) had mild (8-10), 17(17%) had moderate (11-14), and 13(13%) had severe anxiety (15-21) respectively.

On BSS for suicidality (Table 3), 14(14%) out of the 100 patients claimed to have had suicidal ideation while none reported having taken any action/suicidal attempts post BC diagnosis.

Table 3: Prevalence of active suicidal ideation

Item	**N**	**Mean**	**SD**	**Proportion of Endorsed items**		
				0	1	2
1 Wishes to live	100	0.07	0.29	86(86%)	11(11%)	3(3%)
2 Wishes to die	100	0.08	0.31	86(86%)	10(10%)	4(4%)
3 Cause for living or dying	100	0.06	0.31	86(86%)	9(9%)	3(3%)
4 Active suicidal attempt	100	0.07	0.29	86(88%)	10(10%)	4(4%)
5 Passive suicidal attempt	100	0.08	0.35	86(88%)	7(7%)	7(7%)
6 Duration:suicidalideation	14	0.77	0.65	8(57.1%)	5(35.7%)	1(7.1%)
7 Frequency	14	0.45	0.65	3(21.4%)	7(50.0%)	4(28.6%)
8 Attitude towards ideation	14	0.90	0.73	7(50.0%)	6(42.9%)	1(7.1%)
9 Control over ideation	14	1.79	0.58	3(28.6%)	9(64.3%)	2(7.1%)
10 Deterrents	14	0.78	0.70	5(35.7%)	7(50.0%)	2(14.3%)
11 Reasons for attempt	14	1.01	0.58	1(7.1%)	9(64.3%)	4(28.6%)
12 Specifics of planning	14	0.61	0.73	6(42.9%)	6(42.9%)	2(14.3%)
13 Opportunity	14	0.39	0.47	10(71.4%)	4(28.6%)	0(0.0%)
14 Capability to carry outattempt	14	0.73	0.62	3(21.4%)	9(64.3%)	2(14.3%)
15 Expectancy of attempt	14	0.70	0.52	7(50.0%)	7(50.0%)	0(0.0%)
16 Extent of preparation	14	0.07	0.27	13(92.9%)	1(7.1%)	0(0.0%)
17 If any suicide notes	14	0.08	0.27	13(92.9%)	1(7.1%)	0(0.0%)
18 Final acts	14	0.59	0.61	11(78.6%)	2(14.3%)	1(7.1%)
19 Deception or concealment	14	0.87	0.76	8(57.1%)	4(28.6%)	2(14.3%)

Table 4: Association between depression, anxiety and suicidality

VARIABLE	**FREQUENCY**	**%**	**Odds Ratio**	**95% CI**		**P VALUE**
				Lower	Upper	

Depression(yes) +anxiety(yes)	24	24%	12.222	4.549	32.839	0.001
Depression(yes) +suicidality(yes)	8	8%	0.962	0.081	3.176	0.101
Anxiety(yes) +suicidality(yes)	10	10%	2.302	0.117	4.783	0.011

As shown by the findings of Table 4, anxiety was significantly associated with depression (OR 12.222; p value - 0.001), patients with anxiety were more likely to have depression compared to those without anxiety. Twenty-four percent depressed patients also had anxiety compared to 9% without depression who had anxiety. Anxiety was also significantly associated with suicidality (OR 2.302; p value - 0.011), patients who were anxious (10%) were more likely to have suicidality. Eight patients (57.1%) out of 14 that had suicidal ideation, also had both depression and anxiety.

We used logistic regression for multivariate analysis to demonstrate the association of socio-demographic and clinical factors with prevalence of depression, anxiety and suicidality. The statistical significance associations are presented below.

Depression was most prevalent in the age group of 36-60 yrs at 78.8% (Table 5). Among the 17 patients who lived alone, 12 patients (63.1%) had depression. Higher scores were noted for depression among patients who were either single (66.6%) or divorced/separated (67.7%). Forty-two percent of the unemployed patients, those with no formal education (50%) and those with primary level of education (38%) comprised the highest proportion for depression as per HADS. Depression was noted among 19 (67.8%) of the 28 patients who had received chemotherapy in the last month. Recurrence, duration since diagnosis and history of metastases were not significantly associated with the prevalence of depression. Factors significantly associated with depression included resident status, patients who lived with others were 31% less likely to have depression with AOR 0.06 (95% CI, 0.02- 0.88; p-0.019) and those who underwent chemotherapy with AOR 7.69 (95% CI, 1.54-11.91; p-0.018) in the last month.

VARIABLE	CATEGORY	N (%)	DEPRESSION		Adjusted odds ratio	P value
			YES	NO		
Age	18 – 35 yrs	17	4 (12)	13 (19.4)	Ref	
	36 – 60yrs	70	26(78.7)	44 (65.6)	1.25(0.34; 5.27)	0.621
	>60 yrs	13	3 (23)	11 (16.4)	1.42 (0.09; 13.62)	0.805
Resident status	living alone	19	12 (63.1)	7 (10.4)	Ref	
	with family	81	20 (60.6)	61 (91)	0.06 (0.02; 0.88)	0.019
Marital status	Single	21	14 (66.6)	7 (33.4)	Ref	
	Married	43	7 (16.2)	36 (83.8)	0.26 (0.04; 0.98)	0.059
	divorced/ separated	31	21 (67.7)	10 (32.3)	1.51 (0.10;21.65)	0.341
	Widowed	5	2 (40)	3 (60)	0.95 (0.04;3.54)	0.453
Education level	no formal education	4	2 (50)	2 (50)	Ref	
	primary level	45	17 (37.7)	28 (62.3)	1.77 (0.21; 3.79)	0.179
	secondary level	39	11 (28.2)	28 (71.8)	1.14 (0.78;3.87)	0.127
	tertiary level	12	3 (25)	9 (75)	0.31 (0.09;1.63)	0.223
Employment status	Unemployed	31	13 (41.9)	18 (59.1)	Ref	
	Employed	69	20 (28.9)	49 (72.1)	1.24 (0.53; 5.37)	0.227
Treatment history	None	46	5 (10.8)	41 (89.2)	Ref	
	Surgery	23	9 (39.1)	14 (60.9)	0.23 (0.04; 2.21)	0.357
	Chemotherapy	28	19 (67.8)	9 (32.2)	7.69 (1.54; 11.91)	0.039
	Radiotherapy	3	0 0	3 (100)	-	
Recurrence	Yes	57	23 (40.3)	34 (59.7)	Ref	
	No	43	10 (23.2)	33 (76.8)	1.57 (0.18; 11.40)	0.457
Duration since diagnosis	<1 year	29	9 (31)	20 (69)	Ref	
	>1year	71	24 (33.8)	47 (66.2)	0.19 (0.02; 1.31)	0.361
Metastasis	Yes	17	7 (41.1)	10 (58.9)	Ref	
	No	83	26 (31.3)	57 (68.7)	0.24 (0.01; 1.62)	0.887

Table 5: Association of socio-demographic and clinical factors with depression

Patients who underwent surgery (Table 6) in the last month were at increased odds of having anxiety with AOR of 10.28 (95% CI, 5.64-22.21; p-0.027) which was statistically significant along with two others factors of recurrence and duration since diagnosis. Patients who had no recurrence of cancer were 43% less likely to have anxiety (with AOR – 0.57, 95% CI 0.18-5.40; p-0.009) compared to the patients with recurrence. Similar to the prevalence of depression, greater

proportion of patients exhibiting anxiety belonged to the 36-60 yrs age group. Fifty-three percent of patients who lived alone showed anxiety compared to 36% of patients who lived with others. Also higher degrees of anxiety were noted among patients who were single (43%) or separated/divorced (45%) from their spouse compared to those that were married (32.5%). Patients with no formal education (50%) and those with primary level of education (40%) showed higher anxiety prevalence in the category. Anxiety was seen in 45.1% of unemployed patients compared to 36.2% among those that were employed. Anxiety was highest in patients who were diagnosed recently (83%) and in those who had undergone surgery (82.6%). Fifty-three of patients with metastases had anxiety compared to 36% with no metastases.

Table 6: Association of socio-demographic and clinical factors with anxiety

VARIABLE	CATEGORY	N(%)	ANXIETY		Adjusted Odds Ratio	P value
			YES	NO		
Age	18 – 35 yrs	17	5 (29.4)	12 (70.6)	Ref	
	36 – 60 yrs	70	30 (42.8)	40 (57.2)	1.05(0.39; 7.27)	0.671
	>60 yrs	13	4 (30.7)	9 (69.3)	1.42 (0.59, 17.62)	0.805
Resident status	living alone	19	10 (52.7)	9 (47.3)	Ref	
	with family	81	29 (35.8)	52 (64.2)	0.91 (0.21; 5.88)	0.219
Marital status	Single	21	9 (42.8)	12 (57.2)	Ref	
	Married	43	14 (32.5)	29 (67.5)	1.26 (0.49; 2.68)	0.549
	divorced/ separated	31	14 (45.1)	17 (54.8)	1.51 (0.60;5.65)	0.341
	Widowed	5	2 (40)	3 (60)	1.05 (0.08;2.54)	0.453
Education level	no formal education	4	2 (50)	2 (50)	Ref	
	primary level	45	18 (40)	27 (60)	2.77 (0.21; 3.79)	0.091
	secondary level	39	9 (23)	31 (77)	1.141 (0.78;3.87)	0.127
	tertiary level	12	3 (25)	9 (75)	0.314 (0.09;1.63)	0.223
Employment status	Unemployed	31	14 (45.1)	17 (54.9)	Ref	
	Employed	69	25 (36.2)	44 (63.8)	1.24 (0.33; 5.37)	0.227
Treatment history	None	46	8 (17.3)	38 (82.7)	Ref	
	Surgery	23	19 (82.6)	4 (17.4)	10.28 (5.64; 22.21)	0.027
	Chemotherapy	28	12 (42.8)	16 (57.2)	2.69 (1.54; 7.91)	0.139
	Radiotherapy	3	0 0	3 (100)	-	
Recurrence	Yes	57	32 (56.1)	25 (43.9)	Ref	
	No	43	7 (16.2)	36 (83.8)	0.57 (0.18; 5.40)	0.009
Duration since diagnosis	<1 year	29	25 (86.2)	4 (13.7)	Ref	
	>1year	71	14 (19.7)	57 (80.3)	0.69 (0.02; 1.31)	0.047
Metastasis	Yes	17	9 (52.9)	8 (47.1)	Ref	
	No	83	30 (36.1)	53 (63.9)	1.04 (0.21; 3.62)	0.877

Table 7: Association of socio-demographic and clinical factors with suicidality

VARIABLE	CATEGORY	N(%)	SUICIDALITY		Adjusted Odds Ratio	P Value
			YES	NO		
Age	18 – 35 yrs	17	8 (23.5)	12 (76.5)	Ref	
	36 – 60 yrs	70	6 (10)	65 (90)	1.45(0.33, 6.37)	0.626
	>60 yrs	13	0 0	13 (100)	-	
Resident status	living alone	19	10 (52.6)	9 (47.4)	Ref	
	with family	81	4 (4.9)	77 (95.1)	0.27 (0.05-0.99)	0.055
Marital status	Single	21	3 (14.3)	18 (85.7)	Ref	
	Married	43	2 (4.6)	41 (95.4)	0.58 (0.09, 1.93)	0.717
	divorced/ separated	31	8 (25.8)	23 (74.2)	1.09 (0.21,3.59)	0.950
	Widowed	5	1 (20)	4 (80)	0.13(0.01, 1.33)	0.086
Education level	no formal education	4	1 (25)	3 (75)	Ref	
	primary level	45	6 (13.3)	39 (86.7)		
	secondary level	39	6 (15.3)	33 (84.7)	0.57(0.05, 3.48)	0.485
	tertiary level	12	1 (8.3)	11 (91.7)	0.27 (0.07, 3.63)	0.431
Employment status	Unemployed	31	4 (13)	27 (87)	Ref	
	Employed	69	10 (14.4)	59 (85.6)	0.52 (0.13, 1.70)	0.781
Treatment history	None	46	3 (6.5)	43 (93.5)	Ref	
	Surgery	23	2 (8.6)	21 (91.4)	1.37 (0.34, 4.61)	0.469
	Chemotherapy	28	9 (32.1)	19 (68.9)	7.01(2.19, 11.17)	0.020
	Radiotherapy	3	0 0	3 (100)		
Recurrence	Yes	57	11 (19.2)	46 (80.8)	Ref	
	No	43	3 (7)	40 (93)	0.12 (0.06, 1.66)	0.005
Duration since diagnosis	<1 year	29	5 (17.2)	24 (82.8)	Ref	
	>1year	71	9 (12.6)	62 (87.4)	0.92 (0.09, 3.46)	0.441
Metastasis	Yes	17	6 (35.2)	11 (64.8)	Ref	
	No	83	8 (9.6)	75 (90.4)	2.06 (0.63, 6.57)	0.291

Suicidal ideation (Table 7) was found to be of significance in patients who were on or had received chemotherapy in the last month with AOR-7.01 (95%CI, 2.19-11.17; p-0.020) and those with recurrence of cancer. Patients without recurrence were at 88% (AOR-0.12, 95% CI, 0.06-1.66;p-0.005) reduced odds of developing suicidal ideation. Marital status, level of education, duration since diagnosis, employment status did not show any predominant increasing or decreasing trend of association with suicidality. Higher suicidal ideation was observed in patients who had metastases (35.2%), compared to those without no history of metastases (9.6%).

Chapter 5

5.0:Discussion

This chapter discusses the study's results in relation to the objectives and makes relevant comparisons with findings from different studies in literature. This discussion is categorized according to the study's specific objectives. Finally, conclusions and recommendations are summarized and areas of future research proposed.

The findings of this study, which was conducted at Kenyatta National Hospital, underline the importance of anxiety, depression and suicidality as significant co-morbidities in BC patients in Kenya. According to the findings, a considerable number of BC patients at CTC may be underdiagnosed, hence not receiving treatment. Previous African research and studies in other low-income contexts have shown similar findings of substantial anxiety, depression and suicidality in cancer, with some focusing on BC patients due to factors that will be discussed in this section.

Prevalence of depression, anxiety, and suicidality:

In this study, the prevalence of depression was 33% and that of anxiety was 39%, which was comparable with a study by Srivastava & Ahmad Ansari, (2015) that showed a prevalence of depression at 28% and anxiety at 37%. Another study by Zabora et al., (2001) on cancer patients reported similar levels of depression in breast cancer survivors at 32.8%. Multiple studies have identified a prevalence for anxiety and depression ranging from 2.0-60% (Civilotti et al., 2020; Hajj et al., 2021; Park et al., 2018; Popoola & Adewuya, 2012; Sahin & Tan, 2012; Saina et al., 2021; Wondimagegnehu et al., 2019). In breast cancer patients, long and fatal course of cancer, treatment side effects, financial burden, self-esteem tied to body image and the effect of mastectomy on it, are identified as few of the reasons responsible for the higher frequency of anxiety and depression. Suicidal ideation was identified in 14(14%) patients with no suicidal attempts post BC diagnosis. Similar prevalence rate of 15.3% was noted by a study in China by Zhong et al., (2017) and 11% in a study conducted in Korea Choi et al., (2017), while higher levels were noted by Araya & Gidey, (2020) and Hagezom et al., (2021) at 27.9% and at 28.5%, respectively. The varied range of prevalence gathered may be due to the different assessment tools, types of patients interviewed/patient heterogeneity factors, disparities in sampling methods, varying age groups, patients in varying stages of illness, study settings and other contributory factors. In the current study, we further found that the significant contributing factor to suicidal ideation and depression was anxi-

ety, which was also noted by Zhong et al., (2017). Srivastava & Ahmad Ansari, (2015) also supported these findings by noting that breast cancer patients suffering from anxiety were 12 times at increased odds of having depression. Depression and anxiety comorbidity has been linked to all-cause and cancer-specific mortality. (Wang et al., 2020).

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 highest number of patients were in age group (36-60 years; 70%). This finding is consistent with what has been found in cancer epidemiological studies where the risk for certain cancers especially reproductive cancers increases with age (Bashir, 2015; Kresovich et al., 2019). Depression and anxiety were most prevalent in the participants of this age group in our study as well. Hassan et al., (2015) also reported the age group of 40-49 yrs to be the most common for a diagnosis of breast cancer. This was supported by a study executed in north India which also reported mean age in cases and controls to be in the range of 35- 80 years which was also similar to findings of previous studies (Srivastava & Ahmad Ansari, 2015). A study conducted for affective disorder among cancer patients observed older patients to be more at risk to experience depression than patients in the younger age group (Saina et al., 2021). Another explanation for this involves the study reporting age distribution of BC patients in a select population i.e. patients accessing and utilizing CTC services as opposed to prevalence studies that report patient distribution in general population.

A study by Aass et al., (1997), remarked that both patient's marital status (married, widowed, single) and living situation (living alone or living with spouse), did not correlate with the prevalence of anxiety and depression, while many studies have found significant association with regard to marital status, social support, socio-economic status and living conditions (Falagas et al., 2007; Kugbey et al., 2020; Popoola & Adewuya, 2012). In our study, significant correlation was seen between living alone and the prevalence of depression. Married patients had lower levels of anxiety (32.5%) and depression (16.3%) compared to patients who were single (42.8%/66.6%), divorced/separated (45.1%/67.7%) and widowed (40%/40%), respectively. A higher correlation with depression was seen among unmarried patients with minimal family and social support according to Hassan et al.,(2015) and Popoola & Adewuya, (2012). A study done in Lagos Nigeria by Fatiregun et al., (2019) reported marriage as a protective factor and married patients to be at lower odds of developing depression. Increased burden of responsibility, lack of financial and social support are noted to be possible contributing factors among unmarried patients..

In the present study, a clear trend of increased prevalence of depression (50%), anxiety (50%) and suicidality (25%) was noted with lower levels of education. This was in accordance with few studies that indicated low levels of education to be a risk factor associated with psychiatric co -morbidity in patients of breast cancer (Saina et al., 2021). This could be because patients with higher educational levels have a better chance of being aware of their disease, having greater access to information about their health condition, and fully comprehend the treatment plan and what to expect from it, giving them a sense of control over their condition. In a study in South Africa, Kagee et al., (2018) reported lower the level of education to increase the risk of depression in breast cancer patients. Our findings corroborate previous research, indicating that education may be a protective factor in the development of depression and anxiety in breast cancer survivors.

Low socio-economic status has been listed as an impediment to receiving cancer treatment which predisposes them to psychiatric co-morbities which remain untreated and undetected due to lack of resources to seek help. The patients are already burdened by cancer treatment and continued expenses which elevate the risk of chronic stress and feelings of hopelessness (Hassan et al., 2015). This was in keeping with our study findings that unemployed patients attending CTC revealed a higher degree of depression (41.9%) and anxiety (45.1%) when compared to patients that were employed (depression-29%, anxiety- 36.2%). Emotional stress and depression levels fluctuate throughout the length of cancer, peaking when the diagnosis is made. The initial six months following a diagnosis of cancer are deemed the most stressful, owing to severe emotional and mental distress in cancer patients. Previous research has revealed the levels of anxiety rise dramatically in the early stages of cancer, especially post diagnosis (Du et al., 2020; Kagee et al., 2018; Smith, 2015). As early stage following cancer diagnosis is critical, and our review validated this finding since a statistically significant correlation was noted linking higher prevalence of anxiety with duration since cancer diagnosis of less than one year (p-0.047). In our study, anxiety and depression had significant association with the type of treatment received. Higher levels of depression was found in patients receiving chemotherapy (67.8%) and higher levels of anxiety in patients who had undergone surgery(82.6%). This high frequency of anxiety and depression can be due to low self-esteem due to poor body image, scars/disfigurement post-mastectomy, poor prognosis corresponding to the stage of illness that causes the selection of chemotherapy and/or surgery as the route of treatment. Many breast cancer patients feel tiredness, depression, and/or anxiety months to years following their diagnosis, and these symptoms are linked to increased disability and a lower quality of life. Adjuvant chemotherapy may raise the chance of depression, anxiety, or both, as these side effects compound the distress caused by the cancer's very protracted course (Saina et

al., 2021). Many studies affirm that chemotherapy has negative side effects and psychosocial effects on patients' overall-health. Similar studies conducted in California and Iran found a link between chemotherapy and depression in breast cancer patients (Eversley et al., 2005; Saina et al., 2021).

Few studies have shown that being younger and living alone are both predictors of significant distress. According to several research, younger patients have a harder time psychologically adjusting to their breast cancer diagnosis because they may experience financial hurdles and stress related to their body image, relationships, and future responsibilities (Lan et al., 2020). Our findings show that cancer survivors who were diagnosed at an early age had a higher risk of suicidal ideation. The statistically significant association revealed in this study between recurrence (p-0.005), chemotherapy (p-0.020), and suicidal ideation is in alliance with prior studies that found cancer patients with a poor prognosis had the highest risk of suicide (Zhong et al., 2017). This is not surprising, considering that late-stage cancer is more lethal and less treatable than early-stage cancer, and studies have shown that patients with terminal cancer and patients with recurrence to have the highest level of hopelessness, which is a major predictor of suicidality in cancer patients. Patients who are having difficulties with vital activities such as feeding and self-care may feel hopeless and helpless, putting them at a higher risk of suicide ideation (Choi et al., 2017; Van Oers & Schlebusch, 2021).

Study limitations:

As this being a cross-sectional study, with exposure and outcome assessed at the same time, causal relationship could not be ascertained.

The study relied on self-reported study instruments, it was difficult to ascertain if the information given was accurate.

Conclusion:

This study outlined the prevalence of depression, anxiety and suicidality which was substantial in BC patients attending KNH, noted at 33%, 39% and 14% respectively. Patients with anxiety were more likely to have depression (p-0.001) and suicidal ideation (p-0.011), which was noted to be statistically significant. Association noted between socio-demographic factors, living alone, use of chemotherapy with depression; surgery, duration of diagnosis and recurrence of cancer with anxiety; and recurrence, chemotherapy with suicidal ideation were also of statistical significance.

Despite the fact that our study participants had a substantial level of depression, anxiety, and suicidality several of the associated risk variables identified are modifiable and treatable with suitable intervention strategies. In addition, majority of the patients had mild to moderate depression and anxiety which if detected and managed early will facilitate good outcome, improve prognosis and treatment adherence among BC patients.

Recommendations:

- The findings of this study have important clinical implications, especially in terms of developing guidelines for early diagnosis of psychiatric co-morbidities in breast cancer patients at KNH.
- Psychological care is advised to be included in comprehensive cancer care of patients especially in stages wherein increased stress is expected i.e, recent diagnosis, recurrence/metastases of cancer.
- Healthcare personnel (nurses) coming in contact with chronic cancer patients could be made aware of the importance of detecting psychiatric co-morbities, to encourage patients to seek appropriate care.
- Timely and thorough psychosocial screening, assessments, diagnosis, treatment(s) of mental diseases, and follow-up to provide the greatest outcome throughout the course of the disease.
- Research to be directed towards the development of early detection models that are effective and efficient at detecting psychiatric morbidity in the early stages of cancer to help adapt to treatment challenges, to reduce disease burden, reduce healthcare costs and improve treatment adherence.
- Although a number of researchers have looked into screening approaches, little progress has been made in developing a prospective model of psychosocial care with defined outcomes such as reduced distress and improved quality of life. More studies could be directed towards that cause which could address mental health in other chronic conditions as well.

Study Time Frame

Number	Tasks	Time Frame
1.	Development of Proposal and presentation	June to October 2021
2.	Proposal submission for ethical approval	November 2021-March 2022
3.	Data Collection	April 2022-June 2022
4.	Data Analysis	June-July 2022
5.	Thesis Writing	July-August 2022
6.	Thesis Submission	August 2022

Study Budget Estimates

Category	Remarks	Units	Unit Cost	Total (Ksh.)
Proposal Development	Printing drafts Proposal copies	1000 pages 5 copies	5 1000	5000 5000
Data Collection	Stationery	400	50	25000
Data Entry & Analysis	Statistician	1	40000	40000
Thesis	Printing drafts & Thesis	1000 10	5 1500	5000 15000
Extra				5000
Total				100,000

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Appendices

Appendix 1: Consent Explanation Document (English Version)

Title: Prevalence of depression, anxiety and suicidality among breast cancer patients at Kenyatta national hospital, Kenya.

Participant Study Identification Number …….

Date …….

Dear Madam/Sir,

Introduction

My name is Dr. Suma Kulkarni, and I am a psychiatry postgraduate student at the University of Nairobi. We are conducting a study with the University of Nairobi on the prevalence of depression, anxiety, suicidal ideation and behaviour among breast cancer patients attending the Kenyatta National Hospital's CTC clinic. To do so, we'll need 100 patients to help us fill out surveys about themselves, which will aid us in meeting our goal. With that objective we respectfully request your participation and kind cooperation in the research.

Requirements

For one to participate in the study you need to:

1. Age is 18 years and above
2. Diagnosed with breast cancer
3. No previous history of mood disorder/anxiety disorder

Procedure

If you accept to participate in the study, you will be asked to provide your consent and sign a consent form stating your voluntary involvement. You will also be asked questions about your socio-demographic information and other specific symptoms you may have had. This will take the form of a questionnaire, which should take no more than 20-25 minutes to complete.

There are no monetary benefits or otherwise for participating in this study. However, results from this study can help patients and clinicians to better understand the mental health needs of patients with breast cancer.

Risks:

It's probable that you'll feel uncomfortable or uneasy as you share information regarding your socio-demographic features or cancer.

You will be referred for psychological support if there is a psychological issue.

Your participation in this study is completely voluntary, and you can opt out at any time. You may also opt out of the study at any moment by refusing to answer particular questions. Any treatment needs you may have at the Kenyatta National Hospital now or in the future will be unaffected by your decision to not participate or withdraw.

Confidentiality:

Your personal information will be kept private. Any reports or publications resulting from this study will not include your name or any other personal information. Instead, a unique research number will be provided to you to secure your identity. The questionnaires you will fill out will be kept in a secure location, with only the investigators having access to them. This study's data will be entered into password-protected systems and kept out of the hands of the general public.

Additional Information:

Please ask any questions you have regarding the study that aren't answered in the consent information. In addition, you may contact the following if you have any questions in the future:

1. Researcher:
    a. Dr. Suma Kulkarni
       Tel: 0782952590
       Email: suma.krni@gmail.com

2. Supervisors:
    a. Dr. Pius Kigamwa
       Email: kigamwa@uonbi.ac.ke
    b. Dr. Catherine Wanja Gitau
       Email: cwanjagitau@gmail.com

3. Kenyatta National Hospital / University of Nairobi Ethics & Research committee
   P. O Box 19676 – 00202 Nairobi
   Tel: (254 – 020) 2726300-9, Ext 44355
   Email: uonknh_erc@uonbi.ac.ke

Appendix 2: Consent explanation Document (Swahili Version)

Hatiya Ridhaa:Utangulizi wa unyogovu, wasiwasi na tabia ya kujiua kati ya wagonjwa wa saratani ya matiti katika hospitali ya kitaifa ya Kenyatta, Kenya.

Nambari ya Utambulisho ya mshiriki----------

Tarehe ----------

Utangulizi

Jina langu ni Dk. Suma Kulkarni, na mimi ni mwanafunzi wa shahada ya kwanza katika Chuo Kikuu cha Nairobi. Tunafanya utafiti na Chuo Kikuu cha Nairobi juu ya kuongezeka kwa unyogovu, wasiwasi, na tabia ya kujiua kati ya wagonjwa wa saratani ya matiti wanaohudhuria kliniki ya kitaifa ya Kennatta Hospital's CTC. Kwa kufanya hivyo, tutahitaji wagonjwa 100 kutusaidia kujaza uchunguzi juu yao wenyewe, ambao utatusaidia kufikia lengo letu. Kwa kusudi hilo tunaomba kwa heshima ushiriki wako na ushirikiano wa fadhili katika utafiti.

Utaratibu

Ikiwa unakubali kushiriki katika utafiti, utaulizwa kutoa idhini yako na saini fomu ya idhini inayoelezea kuhusika kwako kwa hiari. Pia utaulizwa maswali juu ya habari yako ya kijamii na idadi ya watu na dalili zingine za saratani ambazo unaweza kuwa nazo. Hii itachukua fomu ya dodoso, ambayo haifai kuchukua zaidi ya dakika 20-25 kukamilisha.

Hakuna faida za kifedha au vinginevyo kwa kushiriki katika utafiti huu

Walakini, matokeo kutoka kwa utafiti huu yanaweza kusaidia wagonjwa na madaktari kuelewa vizuri mahitaji ya afya ya akili ya wagonjwa wenye saratani ya matiti.

Hatari Ya Usumbufu

Inawezekana kwamba utasikia wasiwasi unaposhiriki habari kuhusu sifa zako za kijamii na saratani. Utapewa msaada wa kisaikolojia ikiwa kuna suala la kisaikolojia. Ushiriki wako katika utafiti huu ni wa hiari kabisa, na unaweza kuchagua wakati wowote. Unaweza pia kuchagua kutoka kwa masomo wakati wowote kwa kukataa kujibu maswali fulani. Tiba yoyote ya matibabu ambayo unaweza kuwa nayo katika Hospitali ya Kitaifa ya Kenyatta sasa au siku zijazo haitafutwa na uamuzi wako wa kutoshiriki au kujiondoa.

Usiri

Habari yako ya kibinafsi itahifadhiwa. Ripoti yoyote au machapisho yanayotokana na utafiti huu hayatajumuisha jina lako au habari nyingine yoyote ya kibinafsi. Badala yake, nambari ya kipekee ya utafiti itatolewa kwako ili kupata kitambulisho chako. Dodoso utakazojaza zitahifadhiwa katika eneo salama, na wachunguzi tu ndio wanaoweza kupata. Takwimu za utafiti huu zitaingizwa kwenye mifumo iliyolindwa na nywila na kuwekwa mbali na mikononi mwa umma.

Kwa maswali ya ziada:

Tafadhali uliza maswali yoyote unayo kuhusu utafiti ambao haujajibiwa katika habari ya idhini. Kwa kuongezea, unaweza kuwasiliana na yafuatayo ikiwa una maswali yoyote katika siku zijazo

1. Mtafiti:
    a. Dr. Suma Kulkarni
       Tel: 0782952590
       Email: suma.krni@gmail.com
2. <u>Wasimamizi:</u>
    a. Dr. Pius Kigamwa
       Email: kigamwa@uonbi.ac.ke
    b. Dr. Catherine Wanja Gitau
       Email:cwanjagitau@gmail.com
3. Kenyatta National Hospital/ University of Nairobi Ethics & Research committee
   P. O Box 19676 – 00202 Nairobi
   Tel: (254 – 020) 2726300-9, Ext 44355
   Email: uonknh_erc@uonbi.ac.ke

Appendix 3: Consent Form (Statement of Consent)

Participant's statement

I have read this consent form or had the information read to me. 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.

By signing this consent form, I have not given up any of the legal rights that I have as a participant in a research study.

I agree to participate in this study Yes [ ] No [ ]

Participant name _____

Participant signature/thumb stamp _____ Date _____

Principal Investigator's Statement

I, the undersigned, have fully explained the relevant details of this research study to the participant named above and believe that the participant has understood and has willingly given his/her consent.

Principal Investigator's name _____

Principal Investigator's signature_____ Date _____

Appendix 4.1: Socio-Demographic Questionnaire (English Version)

In the space provided, please answer each question as accurately as possible.

Sociodemographic Data: Prevalence Of Depression, Anxiety And Suicidality Among Breast Cancer Patients At Kenyatta National Hospital

1.What is the residence status?

1=Living Alone [ ] 2 = With Family [ ]

2.What is your age? ……. Years

3.What is your marital status?

1=Single [ ] 2= Married [ ]

3=Separated/divorced [ ]

4.What is your status of employment?

1=Not employed [ ]

2= Employed [ ]

5.Any treatment received in the last month?

1=surgery [ ] 2=chemotherapy [ ]

3=Radiotherapy [ ] 4=none [ ]

6. Were you diagnosed with depression or anxiety after the diagnosis of breast cancer?

1=yes [ ] 2=no [ ]

If yes, are you on treatment for the same?

1=yes [ ] 2=no [ ]

7. What is the duration since your diagnosis of breast cancer?

1= less than 1 year [ ] 2= more than 1 year [ ]

8. Has your cancer recurred ?

1= Yes [ ] 2= No [ ]

9. Has your cancer spread to other parts of the body ?

1=yes [ ] 2=no [ ]

Appendix 4.2: Socio-Demographic Questionnaire (Swahili Version)

Tafadhali jibu kila swali kwa usahihi iwezekanavyo katika nafasi iliyotolewa

1. Hali yako ya makazi ni nini?

   1=Kuishi peke yako [ ] 2= Na Familia [ ]

2. Umri wako ni nini? ……. Miaka

3. Je! Hali yako ya ndoa ni nini?

   1=sio ndoa [ ] 3= ndoa [ ]

   3=Ndoa iliyotengwa /talaka [ ]

4. Kazi yako ni nini?

   1=Hujaajiriwa [ ] 2= kuajiriwa [ ]

5. Tiba yoyote iliyopokelewa katika mwezi uliopita?

   1=surgery [ ] 2=chemotherapy [ ]

   3=Radiotherapy [ ] 4=none [ ]

6. Uligunduliwa na unyogovu au wasiwasi kufuatia utambuzi wa Saratani ya Matiti?

   1=ndio [ ] 2= hapana [ ]

   ikiwa ndio, uko kwenye matibabu

   1=ndio [ ] 2=hapana [ ]

7. Je! Ni muda upi tangu utambuzi wako wa saratani ya matiti?

   1= chini ya mwaka mmoja [ ] 2= zaidi ya mwaka mmoja [ ]

8. Je! Saratani yako imejirudia?

   1=ndio [ ] 2=hapana [ ]

9. Je! Saratani yako imeenea sehemu zingine za mwili?

   1=ndio [ ] 2=hapana [ ]

Appendix 5.1: Hospital Anxiety and Depression Scale (English Version)

Hospital Anxiety and Depression Scale (HADS)

Tick the box beside the reply that is closest to how you have been feeling in the past week.
Don't take too long over you replies: your immediate is best.

D	A		D	A	
		I feel tense or 'wound up':			**I feel as if I am slowed down:**
	3	Most of the time	3		Nearly all the time
	2	A lot of the time	2		Very often
	1	From time to time, occasionally	1		Sometimes
	0	Not at all	0		Not at all
		I still enjoy the things I used to enjoy:			**I get a sort of frightened feeling like 'butterflies' in the stomach:**
0		Definitely as much		0	Not at all
1		Not quite so much		1	Occasionally
2		Only a little		2	Quite Often
3		Hardly at all		3	Very Often
		I get a sort of frightened feeling as if something awful is about to happen:			**I have lost interest in my appearance:**
	3	Very definitely and quite badly	3		Definitely
	2	Yes, but not too badly	2		I don't take as much care as I should
	1	A little, but it doesn't worry me	1		I may not take quite as much care
	0	Not at all	0		I take just as much care as ever
		I can laugh and see the funny side of things:			**I feel restless as I have to be on the move:**
0		As much as I always could		3	Very much indeed
1		Not quite so much now		2	Quite a lot
2		Definitely not so much now		1	Not very much
3		Not at all		0	Not at all
		Worrying thoughts go through my mind:			**I look forward with enjoyment to things:**
	3	A great deal of the time	0		As much as I ever did
	2	A lot of the time	1		Rather less than I used to
	1	From time to time, but not too often	2		Definitely less than I used to
	0	Only occasionally	3		Hardly at all
		I feel cheerful:			**I get sudden feelings of panic:**
3		Not at all		3	Very often indeed
2		Not often		2	Quite often
1		Sometimes		1	Not very often
0		Most of the time		0	Not at all
		I can sit at ease and feel relaxed:			**I can enjoy a good book or radio or TV program:**
	0	Definitely	0		Often
	1	Usually	1		Sometimes
	2	Not Often	2		Not often
	3	Not at all	3		Very seldom

Please check you have answered all the questions

Scoring:
Total score: Depression (D) _____ Anxiety (A) _____

Appendix 5.2: Hospital Anxiety and Depression Scale (Swahili version)

Tafadhali soma kwa uangalifu na uchague chaguo hapa chini ambayo inakaribia hali yako ya akili kwa wiki iliyopita pamoja na leo.

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

Appendix 6.1: Beck's Scale for Suicidal Ideation (English Version)

Please read carefully and select the option below that comes close to your mental state for the past week including today.

1.	0. I have a moderate/average to strong wish to live. 1. I have a weak wish to live. 2. I have no wish to live.	9.	0. I can keep (prevent) myself from committing suicide. 1. I am unsure that I can keep (prevent) myself from committing suicide. 2. I cannot keep (prevent) myself from committing suicide.
2.	0. I have no wish to die. 1. I have a weak wish to die. 2. I have a moderate to strong wish to die.	10.	0. I would not kill myself because of my family, friends, religion, possible injury from an unsuccessful attempt, etc. 1. I am somewhat concerned about killing myself because of my family, friends, religion, possible injury from an unsuccessful (failed) attempt, etc. 2. I am not or I am only a little concerned about killing myself because of my family, friends, religion, possible injury from an unsuccessful (failed) attempt, etc.
3.	0. My reasons for living outweigh (are more than) my reasons for dying. 1. My reasons for living or dying are about equal. 2. My reasons for dying outweigh (are more than) my reasons for living.	11.	0. My reasons for wanting to commit suicide are primarily (mainly) aimed at influencing other people, such as getting even (revenge) with people, making people happier, making people pay attention to me, etc. 1. My reasons for wanting to commit suicide are not only aimed at influencing other people, but also represent a way of solving my problems. 2. My reasons for wanting to commit suicide are primarily (mainly) based upon escaping (running away) from my problems.
4	0. I have no desire to kill myself. 1. I have a weak desire to kill myself. 2. I have a moderate to strong desire to kill myself.	12.	0. I have no clear plan about how to kill myself. 1. I have considered ways of killing myself, but have not worked out the details. 2. I have a clear plan for killing myself.
5	0. I would make a choice to live or die if I found myself in a life-threatening situation. 1. I would take a chance on life or death if I found myself in a life-threatening situation. 2. I would not take the steps necessary to avoid death if I found myself in a life-threatening situation.	13.	0. I do not have access to a method or a chance to kill myself. 1. The method that I would use for committing suicide takes time, and I really do not have a good chance to use this method. 2. I have access or I expect having access to the method that I would choose for killing myself and also have or shall have the chance to use it.
	If you have circled the <u>zero</u> (0) statements in both Groups 4 and 5 above, then skip down to Group 20. If you have marked a<u>1 or 2</u> in either Group 4 or 5, then open here and go to Group 6.	14.	0. I do not have the courage or the ability to commit suicide. 1. I am unsure that I have the courage or the ability to commit suicide. 2. I have the courage and the ability to commit suicide.
6.	0. I have short periods of thinking about killing myself which pass quickly. 1. I have periods of thinking about killing myself which last for moderate amounts of time. 2. I have long periods of thinking about killing myself.	15.	0. I do not expect to make a suicide attempt. 1. I am not sure that I shall make a suicide attempt. 2. I am sure that I shall make a suicide attempt.
7.	0. I rarely or only sometimes think about	16.	0. I have made no preparations for committing suicide.

	killing myself. 1. I have frequent thoughts about killing myself, 2. I continuously think about killing myself.		1. I have made some preparations for committing suicide. 2. I have almost finished or completed my preparations for committing suicide.
8.	0. I do not accept the idea of killing myself. 1. I neither accept nor reject the idea of killing myself. 2. I accept the idea of killing myself.	17.	0. I have not written a suicide note. 1. I have thought about writing a suicide note or have started to write one, but have not completed it. 2. I have completed a suicide note:
18.	0. I have made no arrangements for what will happen after I have committed suicide. 1. I have thought about making some arrangements for what will happen after I have committed suicide. 2. I have made clear arrangements for what will happen after I have committed suicide.	20.	0. I have never attempted suicide. 1. I have attempted suicide once. 2. I have attempted suicide two or more times. **If you have previously <u>attempted suicide</u>, please continue with the next statement group.**
19.	0. I have not hidden my desire to kill myself from people. 1. I have delayed back telling people about wanting to kill myself. 2. I have attempted to hide, conceal, or lie about wanting to commit suicide.	21 22 23	0. My wish to die during the last suicide attempt was low. 1. My wish to die during the last suicide attempt was moderate. 2. My wish to die during the last suicide attempt was high. The method I tried to use was? _____ I have attempted_____number of time

Appendix 6.2: Beck's Scale for Suicidal Ideation (Swahili version)

Tafadhali soma kwa uangalifu na uchague chaguo hapa chini ambayo inakaribia hali yako ya akili kwa wiki iliyopita pamoja na leo.

1.	0. Nina nia kadiri ama dhabiti ya kuishi. 1. Nina nia dhaifu ya kuishi. 2. Sina nia ya kuishi.	9.	0. Ninaweza kujizuia kufanya tendo la kujiua. 1. Sina uhakika kuwa ninaweza kujizuia kufanya tendo la kujiua. 2. Siwezi kujizuia kufanya tendo la kujiua.
2.	0. Sina nia ya kufa. 1. Nina nia dhaifu ya kufa. 2. Nina nia kadiri ama dhabitiya kuishi.	10.	0. Sitajiua kwa sababu ya familia yangu, marafiki, dini, uwezekano wa jeraha linalotokana na jaribio lisilofanikiwa n.k. 1. Nitahangaika kidogo kuhusu kujiua kwa sababu ya familia yangu, marafiki, dini, jeraha linalotokana na jaribio lisilofanikiwa n.k. 2. Sitahangaika hata kidogo kuhusu kujiua kwa sababu ya familia yangu, marafiki, dini, jeraha linalotokana na jaribio lisilofanikiwa n.k.
3.	0. Sababu zangu za kuishi zina uzito kuliko za kufa. 1. Sababu zangu za kuishi au kufa karibu ni sawa. 2. Sababu zangu za kufa zina uzito kuliko za kuishi.	11.	0. Sababu zangu za kutaka kujiua zinalenga kuathiri wengine kama, kuwa sawa na watu, kuwafanya watu kuwa na furaha, kuwafanya watu wanihudumie n.k. 1. Sababu zangu za kutaka kujiua hazilengi kuathiri wengine pekee, lakini pia kuleta njia nyingine ya kusuluhisha matatizo yangu. 2. Sababu zangu za kutaka kujiua zina msingi wake juu ya kuyaepuka matatizo yangu.
4.	0. Sina haja ya kujiua. 1. Nina haja dhaifu ya kujiua. 2. Nina haja ya kadiri ama dhabiti ya kujiua.	12.	0. Sina mpango maalum kuhusu namna ya kujiua. 1. Nimefikiria njia za kujiua lakini sijatekeleza kila kitu. 2. Nina mpango maalum wa kujiua.
5.	0. Ninaeza amua nife au niwe hai iwapo nitajipata katika hali ya kutisha maisha. 1. Nitachukua hatua kuhusu maisha au kifo iwapo nitajipata katika hali ya kutisha maisha. 2. Sitachukua hatua zinazohitajika kuepuka kifo iwapo nitajipata katika hali ya kutisha maisha.	13.	0. Sijapata njia, mbinu au nafasi ya kujiua. 1. Mbinu nitakayotumia kujiua inachukua muda, na sina nafasi nzuri ya kutumia mbinu hii. 2. Nimefikia au ninatamania kufikia mbinu ambayo nitachagua kujiua na ninayo au nitakuwa na nafasi ya kuitumia.
	Iwapo umezingira kauli ya <u>sufuri</u> (0) katika makundi yoye 4 na 5 hapo juu, ruka hadi kundi la 20. Iwapo umeviringisha <u>1 au 2</u> katika ama kundi 4 au 5, basi fungua hapa na uelekee kundi 6.	14.	0. Sina ujasiri au uwezo wa kujiua. 1. Sina uhakika kama nina ujasiri au uwezo wa kujiua. 2. Ninao ujasiri na uwezo wa kujiua.
6.	0. Nina vipindi vifupi vinavyopita haraka kufikiria kuhusu kujiua. 1. Nina vipindi vifupi vinavyodumu kwa muda wa kadri kuhusu kujiua. 2. Nina vipindi virefu vya kufikiria kuhusu kujiua.	15.	0. Sitarajii kufanya jaribio la kujiua. 1. Sina uhakika kuwa nitafanya jaribio la kujiua. 2. Nina uhakika kuwa nitafanya jaribio la kujiua.
7.	0. Nimewaza mara chache au mara moja moja kuhusu kujiua. 1. Nimewaza mara kwa mara kuhusu kujiua. 2. Nina mfululizo wa mawazo kuhusu kujiua.	16.	0. Sina maandalizi ya kujiua. 1. Nimefanya maandalizi ya kujiua. 2. Ninakaribia sana kumaliza au nimekamilisha maandalizi yangu ya kujiua.
8.	0. Sikubali wazo la kujiua. 1. Sikubali wala sikani wazo la kujiua. 2. Nakubali wazo la kujiua.	17.	0. Sijaandika barua ya kujiua. 1. Nimefikiria kuhusu kuandika barua ya kujiua au nimeanza kuandika moja, lakini sijaimaliza. 2.Nimemaliza barua ya kujiua..

18.	0. Sijaficha haja yangu ya kujiua. 1. Nimechelea kuwaeleza watu kuhusu kutaka kujiua. 2. Nimejaribu kuficha au kusema uwongo kuhusu kutaka kujiua.	20.	0. Sijawahi jaribu kujiua. 1. Nimewahi jaribu kujiua. 2. Nimewahi jaribu kujiua mara mbili au zaidi. **(Kama umewahi kujaribu kujiua, tafadhali endelea kujibu maswali yafuatayo.)**
19.	3. Sijawahi jaribu kujiua. 4. Nimewahi jaribu kujiua. 5. Nimewahi jaribu kujiua mara mbili au zaidi. **(Kama umewahi kujaribu kujiua, tafadhali endelea kujibu maswali yafuatayo.)**	21.	0. Matumaini yangu ya kufa wakati wa jaribio lililopita la kujiua yalikuwa dhaifu. 1. Matumaini yangu ya kufa wakati wa jaribio lililopita la kujiua yalikuwa ya kadiri. 2. Matumaini yangu ya kufa wakati wa jaribio lililopita la kujiua yalikuwa juu.
		22.	Mbinu ambayo nimejaribu kutumia ilikuwa ……
		23.	Nimejaribu mara …… kujiua.

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16th March, 2022

Dr. Suma Kulkarni
Reg. No. H58/33814/2019
Dept. of Psychiatry
Faculty of Health Sciences
University of Nairobi

Dear Dr. Kulkarni,

RESEARCH PROPOSAL: PREVALENCE OF DEPRESSION, ANXIETY AND SUICIDALITY AMONG BREAST CANCER PATIENTS AT KENYATTA NATIONAL HOSPITAL (P861/11/2021)

This is to inform you that KNH-UoN ERC has reviewed and approved your above research proposal. Your application approval number is **P861/11/2021.** The approval period is 16th March 2022 – 15th March 2023.

This approval is subject to compliance with the following requirements;

i. Only approved documents including (informed consents, study instruments, MTA) will be used.
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by KNH-UoN ERC.
iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to KNH-UoN ERC 72 hours of notification.
iv. Any changes, anticipated or otherwise that may increase the risks or affected 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.
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to KNH-UoN ERC.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://research-portal.nacosti.go.ke and also obtain other clearances needed.

Yours sincerely,

DR. BEATRICE K.M. AMUGUNE
SECRETARY, KNH-UoN ERC

c.c. The Dean, Faculty of Health Sciences, UoN
The Senior Director, CS, KNH
The Chairperson, KNH- UoN ERC
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