PREVALENCE OF ANXIETY AND DEPRESSION AMONG HIV/AIDS PATIENTS ATTENDING THE COMPREHENSIVE CARE CENTRE (CCC), KENYATTA NATIONAL HOSPITAL (KNH)

BY

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DECLARATION

I Dr Pauline W. Ng'ang'a do hereby declare that this dissertation is my original work carried out in partial fulfilment for the requirement of the award of degree in Master of Science in Clinical Psychology at the University of Nairobi. I have not submitted the same to any other university or for the award of any other degree or diploma.

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DEDICATION

This work is dedicated to all persons living with HIV and those who provide caring support for these patients who may be undergoing seemingly insurmountable psychological and physical difficulties, which may never be fully understood.

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ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
AMREF	African Medical Research Foundation
ARV	Antiretroviral
CCC	Comprehensive Care Centre
CHASE	Coping with HIV/AIDS in the Southeast
HCSUS	HIV Costs and Services Utilization Study
HIV	Human Immunodeficiency Virus
KAIS	Kenya Aids Indicator Survey
KDHS	Kenya Demographic Health Survey
KNH	Kenyatta National Hospital
NIMH	National Institute of Mental Health
PLWA	People Living With AIDS
PMTCT	Prevention of Mother to Child Transmission
SPSS	Statistical Package for Social Sciences
UNAIDS	United Nations Programme on HIV/AIDS
USAID	United States International Development Agency
WHO	World Health Organization

DEFINITION OF TERMS

Immunosuppression - Involves an act that reduces the activation or efficacy of the immune system.

Skilled - One who has completed formal training.

Somatization - Conversion of a mental state into physical symptoms.

Symptomatology - Combined symptoms of a disease

Unskilled - One who has not received or completed formal training.

ABSTRACT

Background: Psychiatric morbidity has been associated with HIV disease since the beginning of the AIDS epidemic. Despite the epidemic, minimal research has been done locally on the prevalence of various psychiatric morbidities associated with the infection.

Methods: This was a descriptive cross – sectional study which aimed to investigate prevalence of anxiety and depression among HIV / AIDS patients attending the Comprehensive Care Clinic (CCC) at Kenyatta National Hospital (KNH) who fulfilled the inclusion criteria. The study was carried out between April and August 2010. Patients were recruited through systematic sampling, and a questionnaire using Becks Depression and Anxiety Inventory was administered.
The statistical package for social sciences (SPSS) version 13 for windows was used to analyze the data by applying descriptive and inferential statistics. Ethical approval to conduct the study was granted by KNH and University of Nairobi ethical committee.

Results: Four hundred (n = 400) patients living with HIV of whom 62.2% (248) were female participated in the study. The mean age of the patients was 39 years (SD 8.84). Majority of the patients were married (48.3%), had secondary level education (41.5%), were engaged in skilled occupations (42.5%) and practiced Protestantism (50.1%) while 37% were Catholics. Depression was more prevalent than anxiety among HIV positive patients in the study. The overall prevalence of depression was 47.25%. The prevalence of mild, moderate and severe depression measured on the Becks' Depression Inventory was 9.75%, 25.25% and 12.25%, respectively. Overall, 22.75% of the HIV patients had significant anxiety with 15.5% having moderate levels of anxiety and 7.25% having severe anxiety levels based on the Becks Anxiety Inventory. The factors that showed a statistically significant association with depression were patient's gender ($p = 0.001$), level of education ($p = 0.001$) and income ($p < 0.001$). Anxiety was significantly associated with level of education ($p = 0.035$).

Conclusion: Patients with HIV/AIDS receiving follow up care still experience considerable anxiety and depression levels. These patients can benefit from improved delivery of psychiatric care and sustained counseling during follow up in CCC.

Recommendation: This study recommends screening of HIV/AIDs patients for psychiatric morbidity increased interdisciplinary collaborative care with an aim of increasing the psychiatric and psychological support available to patients.

CHAPTER ONE

1.0 INTRODUCTION

1.1 HIV and Psychiatric Morbidity

Psychiatric morbidity has been associated with HIV disease since the beginning of the AIDS epidemic (1).

A diagnosis of HIV infection or AIDS is a crisis for the infected person, the family and their friends. The PLWA and family experience many losses over a very short period of time and this may cause psychological distress. Examples of the losses are health, mobility, friends, strength, physical beauty, and ability to function in the family and community. The family may be losing its breadwinner and children their parents and security. The losses cause much grief, uncertainty and unhappiness. Anxiety and depression are psychological reactions to such events.

Anxiety has been described as a feeling of nervousness, fear and dread. In anxiety disorders the frequency and intensity of anxiety responses are out of proportion to situations that trigger them. Some of the physical and mental symptoms of anxiety are: Lack of appetite, feeling short of breath, Shaking, sweating, feeling faint, a sensation that the heart is pounding, difficulty in sleeping, rapid pulse, a feeling of being out of control, difficulty in concentrating, irritability and excessive worry (2).

Symptoms of Anxiety in HIV infected patients are related to the uncertainties about the evolution of the disease, its clinical course, fears related to pains, suffering, body decay, treatment and death (3).

Depression is a mood disturbance characterized by feelings of sadness, despair and loss of interest in previously pleasurable activities. Signs and symptoms of depression include: a feeling of hopelessness and helplessness, feeling tired and generally without energy, inability to find pleasure, irritability, changes in appetite, sleep disturbances, restlessness or lethargy and decreased concentration. Thoughts of injuring one's self, death or suicide may also occur (4).

Depression is identified as the most significant mental health problem and has been reported to be prevalent in nearly 50% of People Living with HIV/AIDS (5). The co morbidity of depression with chronic physical diseases such as arthritis and diabetes is well recognized in developed countries. Several studies have shown that there is an increased risk of having major depression in people with one or more chronic diseases. The degree to which these co morbid states exist at the global level has not been shown. But projections indicate that after heart disease, depression is expected to become the second leading cause of disease burden by the year 2020 (6).

Depression is co-morbid of (or rather commonly associated with) chronic diseases and that individuals diagnosed with common chronic diseases such as cancer, heart disease, arthritis, Human Immunodeficiency Virus and Acquired Immune Deficiency Syndromes (HIV/AIDS) as well as chronic lung disease are at increased risk for developing depression. This association is a very important factor in HIV/AIDS patient care since it can lead to increased morbidity, mortality and higher cost in managing the viral disease (7).

The descriptive, longitudinal, genetic, biological, and treatment response data in research done indicate that there is overlap between anxiety and depression making it difficult to separate the two. Thus, anxiety and depression are an important public health problem and one of the leading causes of disease burden in Kenya and the world at large (8). However, few studies have explored the effect of depression, alone or as co-morbidity, on overall health status (6).

1.2 BACKGROUND INFORMATION

1.2.1 Human Immunodeficiency Virus

Human Immunodeficiency Virus (HIV) is a lenti-virus (member of the retrovirus family) that can lead to Acquired Immune Deficiency Syndrome (AIDS), a condition in humans in which the immune system begins to fail, leading to life-threatening opportunistic infections.

Infection with HIV occurs by the transfer of blood, semen, vaginal fluid, pre-ejaculate or breast milk. Within these bodily fluids, HIV is present as both free virus particles and virus within infected immune cells. The four major routes of transmission are unprotected sexual intercourse, contaminated needles, breast milk, and transmission from an infected mother to her baby at birth.

There are two types of HIV: HIV-1 and HIV-2. HIV-1 is the most common. They both have the same routes of transmission and are associated with similar opportunistic infections and AIDS. HIV-2 is less easily transmitted than HIV-1, and the period between initial infection and illness is longer. Mother to Child transmission of HIV-2 is rare (9)

1.2.2 HIV Infections and AIDS Deaths

HIV infection in humans is now pandemic. As of January 2006, the Joint United Nation Programme on HIV/AIDS (UNAIDS) and the World Health Organization (WHO) estimate that AIDS has killed more than 25 million people since it was first recognized on December 1, 1981, making it one of the most destructive pandemics in recorded history. It is estimated that about 0.6 percent of the world's population is infected with HIV. In 2005 alone, AIDS claimed an estimated 2.4-3.3 million lives, of which more than 570,000 were children.

It is estimated that approximately 65,000 adults and 25,000 children became infected with HIV in Kenya in the year 2003. Prevalence data suggest that the majority of non-paediatric infections occur among youth; especially young women aged 15-24 years and young men under 30 (10)

The rate of AIDS deaths has risen dramatically, and it is estimated that there are about 150,000 AIDS deaths per year, double the rate in 1998. This increasing death rate, which exceeds the rate of new infection, tends to reduce overall prevalence as the epidemic in Kenya moves into the "death phase".

AIDS deaths in Kenya have a profound and increasing societal and economic impact. The total death rate from all causes among adults 15-49 years has more than tripled since 1990. It is estimated that 1.7 million children under 18 are orphans, about half due to AIDS. As the cumulative total of AIDS deaths rises, the impact of these deaths on society will become increasingly severe. Already, life expectancy in Kenya has dropped from 60 years in 1993 to about 47 years in 2004 due to HIV/AIDS (10)

1.2.3 Global and regional HIV/AIDS prevalence

According to 2008 report on the global AIDS epidemic an estimated 1.9 million people were newly infected with HIV in sub-Saharan Africa in 2007, bringing to 22 million the number of people living with HIV. Two thirds (67%) of the global total of 32.9 million people with HIV live in this region, and three quarters (75%) of all AIDS deaths in 2007 occurred in sub-Saharan Africa**.** Currently, UNAIDS estimates the number of people living with HIV at over 40 million globally. UNAIDS is the Joint United Nations Programme on HIV and AIDS, that advocates for accelerated, comprehensive and coordinated global action on the HIV epidemic(11).

Both HIV prevalence rates and the numbers of people dying from AIDS vary greatly between African countries.

In Somalia and Senegal the HIV prevalence is under 1% of the adult population, whereas in Namibia, South Africa, Zambia and Zimbabwe around 15-20% of adults are infected with HIV. In three southern African countries, the national adult HIV prevalence rate now exceeds 20%. These countries are Botswana (23.9%), Lesotho (23.2%) and Swaziland (26.1%) (11).

West Africa has been less affected by HIV and AIDS, but some countries are experiencing rising HIV prevalence rates. In Cameroon HIV prevalence is now estimated at 5.1% and in Gabon it stands at 5.9%. In Nigeria, HIV prevalence is low (3.1%) compared to the rest of Africa.

However, because of its large population (it is the most populous country in sub-Saharan Africa), this equates to around 2.6 million people living with HIV (11)

Adult HIV prevalence in East Africa exceeds 5% in Uganda, Kenya and Tanzania.
Overall, rates of new HIV infections in sub-Saharan Africa appear to have peaked in the late 1990s, and HIV prevalence seems to have declined slightly, although it remains at an extremely high level. History of AIDS in Africa has more information about how HIV prevalence has changed over time (11)

In most of the countries in East Africa, adult HIV prevalence is either stable or declining slightly. The latter trend is most evident in Kenya, which is experiencing a slow but steady decline in HIV prevalence amid evidence of changing behavior. Besides behavior change, mortality of people infected several years ago also contributes to the decline in HIV prevalence (12)

1.2.4 The HIV/AIDS Prevalence in Kenya

The first cases of HIV were diagnosed in Kenya in 1980. HIV/AIDS spread rapidly in Kenya during the 1990's reaching prevalence rates of 20-30% in some areas of the country. Prevalence has subsequently declined in some sites in Kenya but has remained stable in others. The national prevalence declined significantly from a peak of about 10% to under 7% in 2004. This trend is supported by data from national surveys that document changes in behavior toward fewer partners, less commercial sex greater condom use and late age of first sex. The Kenya Demographic Health Survey (KDHS) 2003 revealed that 5.7% of adults tested are infected with HIV. Reconciliation of KDHS and sentinel surveillance data gives an adjusted prevalence of 7% (range 6.1-7.5%) implying a total of 1.1 million adult Kenyans infected with HIV, of whom about two thirds are women. In addition there are estimated to be 100,000 children living with HIV. According to the 2007 Kenya AIDS Indicator Survey (KAIS), the provinces with high prevalence included Nyanza (15.3%), Nairobi (8.9%), Coast (7.9%), and Rift Valley (7.0%). North Eastern had the lowest prevalence rate at 1%.

1.3 STATEMENT OF THE PROBLEM

HIV/AIDS remains the single most important health challenge facing the world. From 1981 to 2006, AIDS killed more than 25 million people globally. HIV infects about 0.6% of the world's population (Joint United Nations Programme on HIV/AIDS 2006). In 2005 alone, AIDS claimed an estimated 2.4–3.3 million lives, of which more than 570,000 were children. A third of these deaths are occurring in sub-Saharan Africa, retarding economic growth and increasing poverty (13). According to current estimates, HIV is set to infect 90 million people in Africa, resulting in a minimum estimate of 18 million orphans (Joint United Nations Programme on HIV/AIDS 2005). 7% of Kenyans are infected and each year there are 140,000 AIDS deaths (adults) and 86,000 new infections (Health Sector Strategic Plan, 2005-2010). The high prevalence, combined with the fact that Kenya has a relatively mature epidemic has resulted in extremely high AIDS morbidity and mortality. HIV/AIDS has dramatically increased demand for in-patient, out-patient as well as preventive and rehabilitation health services. In addition, HIV/AIDS has increased the complexity of health service delivery given the myriad of opportunistic infection that are associated with the disease, the large number of people infected and the complex laboratory services that are required to make correct diagnosis and monitor treatment.

Although a lot is being done to address the physical impact of HIV/AIDS including the provision of ARV, the mental health of PLWA has not received adequate attention. This may partly be because mental disorders like depression and anxiety may not be all too obvious as say mouth ulcers, and it is an area that has not been adequately researched. There is however enough evidence to indicate that mental wellbeing is an important factor in the recovery process in many illnesses and in compliance to treatment and adoption of a healthy life style. It is against this background that it is important to focus on AIDS related psychiatric disorders (in this case anxiety and depression) so that intervention programmes /strategies are developed to address the related issues.

1.4 SIGNIFICANCE AND JUSTIFICATION OF THE STUDY

Due to the high prevalence rates of HIV/AIDS in our set up and the challenges associated with coping with the disease, it is expected that psychiatry morbidity may be under diagnosed and may be impacting on quality of holistic care of HIV/AIDS patients.

It is in this regard that the study focused on identifying patients with anxiety and depression as co-morbidity in HIV/AIDS. The study brought out the importance of mental health care in managing HIV/AIDS patients. There is therefore need for early identification of patients with mental disease in HIV/AIDS for appropriate intervention. The study will help clinicians identify patients at risk for a more focused comprehensive approach in their management. At the policy makers' level, it will assist in incorporating Mental Health Care in HIV related programmers which is not common in our set up. In the academic arena, it will added up to the already existing research data base as well as open up fields for further research due to the scarcity of similar studies in our set up.

The completion of the study will also enable the researcher in attaining a Masters Degree in Clinical Psychology at the University of Nairobi.

1.5 AIM AND OBJECTIVES OF THE STUDY

1.5.1 Aim

The main objective of this study was to establish the prevalence of anxiety and depression in HIV/AIDS patients attending the CCC at KNH.

1.5.2 Specific Objectives

i. To determine prevalence of anxiety as co-morbidities in HIV/AIDS patients.
ii. To determine prevalence of depression as co-morbidities in HIV/AIDS patients.
iii. To determine the relationship between anxiety, depression and socio demographic factors in HIV/AIDS patients.

iv. To determine the socio demographic data of patients attending the CCC.

1.6 HYPOTHESIS

Null hypothesis – There are no patients suffering from anxiety and depression attending CCC at KNH.

Alternative hypothesis – There are patients suffering from anxiety and depression attending CCC at KNH.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Causes of Depression

Depression has numerous causes including genetic and family history, medical and psychiatric disorders and the use of certain drugs. It can also occur in the post partum period. In the biopsychosocial model, biological, psychological and social factors play a role in causing depression. There is overlap, and the precise causes vary depending on individual circumstances (14).

2.1.1 Biological causes

Most antidepressants increase synaptic levels of the hormone serotonin, one of a group of neurotransmitters known as monoamines. Some also enhance the levels of two other monoamine neurotransmitters, nor epinephrine and dopamine. This observation gave rise to the monoamine theory of depression. In its contemporary formulation, the monoamine theory postulates that a deficiency of certain neurotransmitters is responsible for the corresponding features of depression (14). It has also been suggested that abnormal functioning of certain hormone systems, particularly involving cortisol and thyroid hormones, may be responsible for episodes of major depression. (4)

2.1.2 Psychological causes

A large body of research has documented the importance of interpersonal factors, including strained or critical personal relationships, in the onset of depressive symptoms and major depression in young and middle-aged adults. Vulnerability factors—such as early maternal loss, lack of a confiding relationship, responsibility for the care of several young children at home, and unemployment—can interact with life stressors to increase the risk of depression (15) For older adults, the factors are often health problems, changes in relationships with a spouse or adult children due to the transition to a care-giving or care-needing role, the death of a significant other, or a change in the availability or quality of social relationships with older friends because

of their own health-related life changes (16).

2.1.3 Social causes

Long-term risks for developing major depression include family disruption and low socioeconomic status in early childhood. The risk is independent of later adult social status and is related to various social inequalities. Childhood emotional, physical, sexual abuse or neglect is also associated with increased risk of developing depressive disorders later in life. Such events are more likely to occur in dysfunctional families, for example, one with an alcoholic parent. Early adverse events and stressful conditions that persist through childhood and adolescence may be linked to the later development of depression. Social rejection also predicts later depression, and adolescents who are victimized by peers are more vulnerable to developing depressive symptoms if it impacts on the development of their identity, although family cohesion and emotional involvement are protective factors (17).

In adulthood, a correlation between stressful life events and the onset of major depressive episodes has been found consistently and is likely causal, although the specific mechanisms are unclear. Negative events such as assault, divorce or separation, legal issues, major problems with work, finances, housing, health, or friends and confidants, have been found to precede episodes if they represent a long-term threat, particularly if the threat is of a loss or humiliation that devalues an individual in a core role. The first episode of major depressive is more likely to be immediately preceded by stressful life events than are recurrent ones. Social isolation has also been found to predict onset of a first episode. There is evidence that neighborhood social disorder, for example, due to crime or illicit drugs, is a risk factor, and that a high neighborhood socioeconomic status, with better amenities, is a protective factor (18). There is some evidence of risk from psychosocial stressors in the workplace, such as working at a job that is demanding but involves little opportunity for decision-making (19).

2.1.4 Personality factors

Clinical experience suggests that those who develop major depressive disorder tend to be; anxious, fearful or insecure in their feelings or rigid, strict, meticulous, orderly and uncompromising in their interpersonal relationships. (4)

Major depression is currently the leading cause of disease burden in North America and Other high-income countries and the fourth leading cause of disease burden worldwide. In the year 2030, it is predicted to be the second leading cause of disease burden worldwide after HIV, according to the World Health Organization (5).

2.2 Causes of Anxiety

Anxiety is a state of tension and apprehension with hyperactivity of the autonomic nervous system as a natural response to perceived threat.

Anxiety may be caused by a mental condition, a physical condition, the effects of drugs, or from a combination of these. Conditions as varied as anemia, asthma attack, infection, drug intoxication or withdrawal, or a number of heart conditions are just a few examples of medical problems that can be associated with anxiety.

"In anxiety disorders the frequency and intensity of anxiety responses are out of proportion to situations that trigger them. Anxiety disorders have three components:

1. Cognitive component: subjective feelings of apprehension, a sense of impending danger and a feeling of inability to cope.
2. Physiological responses: increased heart rate, blood pressure, muscle tension, rapid breathing, nausea, dry mouth, diarrhea and frequent urination.
3. Behavioral responses: avoidance of certain situations and impaired task performance. Anxiety disorders may be classified as:

- Generalized anxiety disorder
- Panic disorder
- Phobic disorders-agoraphobia, specific phobias and social phobia
- Obsessive compulsive disorder
- Post traumatic stress disorder
- Secondary to general medical condition/substances"(4)

2.3 Epidemiology of Anxiety and Depression in HIV/AIDS

International studies

Depressive disorders are common among 20% to 32% of people with HIV disease but are frequently unrecognized. Major depression is a recurring and disabling illness that typically responds to medications, cognitive psychotherapy, education, and social support. A large percentage of the emotional distress and major depression associated with HIV disease results from immunosuppression, treatment, and neuropsychiatry aspects of the disease. Valente asserts that, people with a history of intravenous drug use also have increased rates of depressive disorders. Untreated depression along with other co morbid conditions may tend to increase costs of clinic visits, hospitalizations, substance abuse, and evoke risky behaviours that reduce adherence to treatment and quality of life. Valente averred that the HIV clinicians do not need psychiatric expertise to play a major role in detecting, screening, treating, and preventing a major depression. However, screening tools improve case finding and encourage early treatment. Effective treatment can reduce major depression in 80% to 90% of patients. He asserts that clinicians make error by mistaking depressive signs and symptoms for those of HIV disease and thus, increase the morbidity and mortality (21).

Depression can occur at any age. National Institute of Mental Health (NIMH)-sponsored studies estimate that almost 10 percent of American adults, or about 19 million people aged 18 and older, experience some form of depression every year. Although available therapies alleviate symptoms in over 80 percent of those treated, less than half of the people with depression get the help they need (22).

Depression results from abnormal functioning of the brain. The need to understand depression and its causes are awakening and attracting the attention of researchers. An interaction between genetic predisposition and life history appear to determine a person's level of risk. Anxiety and stress, difficult life events, side effects of medications, or the effects of HIV on the brain may trigger episodes of depression. Whatever its origins, depression can limit the energy needed to

keep focused on staying healthy and proceeding with one's life activities, and research shows that it may accelerate HIV's progression to AIDS (23)

A high prevalence of mental illness has been detected among HIV-infected individuals. Results from HIV Costs and Services Utilization Study indicated that nearly half 48% of these HIV infected individuals had a probable psychiatric disorder. The Coping with HIV/AIDS in the Southeast Study of individuals living with HIV/AIDS in the Southeastern US documented that a majority (54%) of participants had a probable mental disorder. The level of mental health problems detected among HIV positive individuals is substantially higher than that of the general population (24).

HCSUS Study indicated that being unemployed or disabled, having more HIV- related symptoms and drug use were associated with greater risk of psychiatric disorder. A study of the women involved in the HCSUS research indicated that women who are dependent on income assistance were more likely to experience psychiatric co-morbidity. No statistically significant differences in having a probable mental disorder were detected by race or gender in the CHASE study. African-Americans were less likely to present with anxiety and depression and more likely to present with somatization and paranoid ideation. Co-morbid mental illness and substance abuse are also found at higher levels among HIV-infected individuals in comparison with the general population. A study of psychiatric co morbidities among HIV-infected individuals receiving care at infectious diseases clinics in North Carolina (n=1358) found even higher levels of co morbid mental illness and substance abuse, as 23% experienced symptoms of both disorders. HCSUS study findings indicated that Males, Whites and heterosexuals were more likely to have experienced co morbid psychiatry symptoms and substance abuse (24).

Among HIV infected individuals, mental illness has been associated with lower likelihood of receiving antiretroviral medication. Among those who receive antiretroviral medications, mental illness has been consistently related to poorer medication adherence. Mental illness has also been associated with unsafe sexual and drug use behaviors and substantial societal costs including productivity loss, injury, and healthcare expenditures. Emerging research on providing treatment for HIV-infected individuals with mental illness has demonstrated that treatment can be effective in reducing psychiatric symptoms, improving adherence, and reducing costs of care (24).

Anxiety is a common response to extreme stressors, but it can also be a symptom of a more significant underlying anxiety disorder. Anecdotal reports from mental health providers indicate that HIV positive people (and others living with serious medical conditions) are more prone to anxiety symptoms due to the stress of managing a chronic illness. In fact, up to 70% of people with HIV report persistent anxiety symptoms, and up to 40% meet the criteria for an anxiety disorder (25).

Anxiety can be a prominent symptom following initial HIV diagnosis, and anxiety symptoms can frequently recur and escalate in response to disease progression. It is perfectly reasonable for HIV positive individuals to feel anxious about such health indicators as declining CD4 cell counts or the appearance of opportunistic infections; however, anxious feelings that escalate from normal worry to full-blown panic may signal an anxiety disorder, normally referred to as AIDS panic.

It has been shown in research conducted to determine the relationship between the spread of the human immunodeficiency virus (HIV) and sleep disorders, that such disturbances are symptoms often reported at the beginning of the infection by HIV and which continue throughout its changes to AIDS. Symptoms of anxiety in HIV infected patients are related to the uncertainties about the evolution of the disease, its clinical course, fears related to pains, suffering, body decay, treatment and death (3)

HCSUS study findings indicate that 16% of individuals with HIV in this national study had symptoms of generalized anxiety disorder and 10.5% screened positive for a history of panic attacks. The CHASE study of HIV-infected individuals living in the Deep South of the US found that over one quarter (29.5%) had significant levels of anxiety as reported on the Brief Symptom Inventory. In the HCSUS study, symptoms of anxiety were only slightly higher in women and no differences in gender were identified in the chase study (24). However, in the CHASE study, African-Americans were less likely to have symptoms of an anxiety disorder. Several studies have found that anxiety symptoms have been associated with less optimal HIV medication adherence (27).

A study at an HIV primary care clinic found a high prevalence of distress in HIV-infected persons. The authors identified 52% of their participants as having significant depression by using the General Health Questionnaire and the Beck Depression Inventory and found that 65.6% had a history of a substance use disorder. Community samples had identified only 4%–15% of participants as having a current major depressive disorder and 20%–35% as having substance abuse (28)**.**

Patients with psychiatric morbidity are at greater risk for poor adherence to antiretroviral therapy and higher risk for treatment failure. A study found that patients who were depressed had poorer compliance with antiretroviral treatment. Adherence to antiretroviral medications is an important factor in illness outcome. Most antiretroviral therapies require adherence 95% of the time for optimal effectiveness. Patient compliance has become more important because advances in antiretroviral therapy have led to a shift from inpatient care to the outpatient setting. With the shift to ambulatory care and the pressure to see more patients in shorter periods of time, clinicians may have more difficulty recognizing, diagnosing, and treating distress and related psychiatric problems (29).

Regional Studies

There are few studies done on the prevalence of anxiety and depression in HIV/AIDS in Africa. A study done on Anxiety and Depression among South African patients living with Chronic illnesses showed that 38.5% of the study sample scored elevated range in the BDI and 19.8% fell on the moderate range for depression. The results suggested that a considerable proportion of the sample may be experiencing significant Psychiatric difficulty for which they may not be receiving treatment (30).

In another study on Depression and Anxiety in HIV infected individuals attending HIV treatment facilities at various sites in South Africa, over 30% of participants had a current mental disorder and life time prevalence of mental disorder was 40%. Almost 17% of participants had a current depressive disorder and almost 16% had a life time depressive disorder. The occurrence of Major depressive disorder current and life time major depressive disorder had their first onset after

diagnosis of HIV status. The occurrence of current and life time anxiety disorder was almost 4%. Identified significant risk factors for depressive disorder included a history of a life time depressive disorder, moderate or severe psychological stress and feelings of isolation. Being in a support group was found to be a protective factor against depressive disorder. There was a statistically significantly increased occurrence of depressive and anxiety disorders (combined) compared to general population prevalence studies of these disorders in South Africa (31).

Local Studies

In our set up few studies have addressed psychiatric morbidity and HIV/AIDS. A study on Psychological Morbidity and HIV in Kenya found that there were no substantial differences found in Psychiatry Morbidity including depression between HIV positive workers and HIV negative controls. This study involved workers who attended an occupational health clinic in Kenya's Nyanza Province for statutory annual health checks during a 10 week period in 1994. Findings of this study contradicted those of other studies previously that identified presence of substantial psychiatric morbidity and cognitive impairment in HIV infected patients. (32).

Another study on the prevalence of Mental Disorders in adults in different level general medical facilities in Kenya revealed that 42% of subjects had symptoms of mild and severe depression. The study concluded that most psychiatry disorders in general medical facilities remain undiagnosed and thus unmanaged (33).

These findings have several policy and practice implications. There is need for an increased awareness of the prevalence of psychiatric conditions, like anxiety and depression, in patients attending general medical facilities especially in comprehensive care centre.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study site

The study was carried out at the CCC of KNH in Nairobi the capital city of Kenya. KNH is a tertiary care hospital in Nairobi that serves as the teaching hospital for the University of Nairobi medical and nursing schools.

Comprehensive Care Centre concept was an initiative of KNH and was a model for HIV/AIDS Care and programs world over (KNH Annual report 2005/2006). A strategic plan for HIV/AIDS Care and management was developed (2005-2010) to guide the CCC activities.

The CCC was established with the support of the USAID through Family Health International and offers a whole range of HIV care including Nutrition, Counseling, Pharmaceutical Care, PMTCT, Laboratory diagnosis and monitoring to both adults and children. Daily attendance of patients ranges from 150 to 200.

KNH is one of the oldest hospitals in the country having been founded in 1901 as the Native Civil hospital and then King George VI in 1952. It is currently the largest National referral, teaching and research hospital.

3.2 Study population

The study population comprised of HIV/AIDS clinic attendees of CCC at the national referral hospital during the study period.

3.3 Study design

This was a descriptive cross sectional study.

3.4 Sampling method

The patients were selected using systematic sampling method. Every 5th patient in order of arrival who met the inclusion criteria was recruited for the study. The study was carried out until the expected number of 400 patients was achieved. If any of the selected patients declined to sign the informed consent form, then the next patient was picked for the study.

3.4.1 Inclusion criteria

Patients attending CCC KNH who were:

1. Age 18 years and above
2. Willing to participate in the research by giving consent.
3. Those who understood English

3.4.2 Exclusion criteria

1. Age less than 18 years
2. Lack of consent
3. Very sick patients
4. Those who did not understand English.
5. Those who were on treatment for any Psychiatric illness.

3.5 Sample size

The standard statistical approach to determination of sample size for a cross-sectional survey requires specification of an estimate of the proportion (prevalence) in the population (HIV/AIDS patients in a CCC-KNH) to be estimated; the level of confidence desired for the survey prevalence estimates; and a tolerance error margin (a measure precision of the estimate). Specifying the level of confidence as 95% and an error margin of 5% being considered acceptable and for an estimated prevalence of depression among PLWHAs taken to be 50% (5) Then to estimate the true proportion of adherence in a large adult population within ±5%, with

95% confidence sample size formula $n = \frac{z^2}{m^2}\hat{p}(1-\hat{p})$ for descriptive cross-sectional studies(33,34) was used

Where:-

p = Expected prevalence or proportion or estimated proportion of Depression among HIV/AIDS patients.

m = Degree of precision or a tolerance error margin or width of the Confidence Interval (a measure precision of the estimate).

z = Statistic for a level of confidence or is the normal distribution critical value for a probability of $\alpha/2$ in each tail. For a 95% CI, z=1.96.

A sample of $n = \frac{z^2}{m^2}\hat{p}(1-\hat{p}) = \frac{1.96^2}{0.05^2} \times 0.5 \times 0.5 = 384.$ was necessary to achieve the required sufficient precision. Adjusting the sample size upwards by 4% to compensate for refusal to participate, a final minimum sample size of **400** was arrived at.

3.6 Data collection instruments

3.6.1 Researcher Designed Socio demographic questionnaire

All the respondents were subjected to a general socio-demographic questionnaire (appendix C). The socio demographic questionnaire was used to gather socio-demographic data e.g. gender, age, occupation, marital status, number of children, HIV status of partner, presence of other illnesses, religion and income.

3.6.2 Becks Depression Inventory (appendix D).

Definition

The Beck Depression Inventory (BDI) is a series of questions developed to measure the intensity, severity, and depth of depression in patients with psychiatric diagnoses. Its long form is composed of 21 questions, each designed to assess a specific symptom common among people with depression. A shorter form is composed of seven questions and is designed for administration by primary care providers. Aaron T. Beck, a pioneer in cognitive therapy, first designed the BDI.

Purpose

The BDI was originally developed to detect, assess, and monitor changes in depressive symptoms among people in a mental health care setting. It is also used to detect depressive symptoms in a primary care setting. The BDI usually takes between five and ten minutes to complete as part of a psychological or medical examination.

Precautions

The BDI is designed for use by trained professionals. While it should be administered by a knowledgeable mental health professional who is trained in its use and interpretation, it is often self-administered.

Description

The BDI was developed in 1961, adapted in 1969, and copyrighted in 1979. A second version of the inventory (BDI-II) was developed to reflect revisions in the Fourth Edition Text Revision of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR, a handbook that mental health professionals use to diagnose mental disorders).

The long form of the BDI is composed of 21 questions or items, each with four possible responses. Each response is assigned a score ranging from zero to three, indicating the severity of the symptom. A version designed for use by primary care providers (BDI-PC) is composed of

seven self-reported items, each correlating to a symptom of major depressive disorder experienced over the preceding two weeks.

Individual questions of the BDI assess mood, pessimism, sense of failure, self-dissatisfaction, guilt, punishment, self-dislike, self-accusation, suicidal ideas, crying, irritability, social withdrawal, body image, work difficulties, insomnia, fatigue, appetite, weight loss, bodily preoccupation, and loss of libido. Items 1 to 13 assess symptoms that are psychological in nature, while items 14 to 21 assess more physical symptoms.

Scoring

The sum of all BDI item scores indicates the severity of depression. The test is scored differently for the general population and for individuals who have been clinically diagnosed with depression. For people who have been clinically diagnosed, scores from **0 to 9** represent minimal depressive symptoms, scores of **10 to 16** indicate mild depression, scores of **17 to 29** indicate moderate depression, and scores of **30 to 63** indicate severe depression. For the general population a score of **0-12** represents no depression, **13-16** represents mild depression, **17-28** represents moderate depression and **above 28** represents severe depression. The BDI can distinguish between different subtypes of depressive disorders, such as major depression and dysthymia (a less severe form of depression).In this study the general population scoring system will be used.

Becks Anxiety Inventory

The BAI consists of twenty-one questions about how the subject has been feeling in the last week, expressed as common symptoms of anxiety (such as numbness, hot and cold sweats, or feelings of dread). Each question has the same set of four possible answer choices, which are arranged in columns and are answered by marking the appropriate one with a cross. These are:

NOT AT ALL
MILDLY: It did not bother me much.
MODERATELY: It was very unpleasant, but I could stand it.
SEVERELY: I could barely stand it.

The BAI has a maximum score of 63.

0-7 minimal level of anxiety

8-15 mild anxiety

16-25 moderate anxiety

26-63 severe anxiety

Interpretation

A grand sum between **0 – 21** indicates very low anxiety. That is usually a good thing. However, it is possible that one might be unrealistic in either assessment which would be denial or that the patient has learnt to "mask" the symptoms commonly associated with anxiety. Too little "anxiety" could indicate that the patient is detached from self, others or the environment.

A grand sum of **22 – 35** indicates moderate anxiety. The body is trying to say something. Look for patterns as to when and why the patient experiences the symptoms described above. For example, if it occurs prior to public speaking or ones job requires a lot of presentations one may want to find ways to calm them before speaking or let others do some of the presentations. The patient may have some conflict issues that need to be resolved, it is not "panic" time but ways to manage the stress should be found.

A grand sum that **exceeds 36** is a potential cause for concern. Persistent and high anxiety is not a sign of personal weakness or failure. It is, however, something that needs to be proactively treated or there could be significant impacts to the patient mentally and physically. A physician may need to be consulted or counselor if the feelings persist.

3.7 Data collection procedure

The participants who met the criteria of the study were briefed on the nature of the study. Those willing to participate completed the administered questionnaires. The researcher read the questions exactly the way they appeared. Their responses were recorded as answered. The

respondents' queries were responded to appropriately. The following questionnaires were used in data collection.

i. Researcher administered Socio Demographic questionnaire
ii. Researcher administered Becks Depression Inventory.
iii. Researcher administered Becks Anxiety Inventory.

Each questionnaire had the clinic code number of the participant (the sole purpose of having the code was to enable the researcher (only) to provide necessary intervention e.g. referral if need be and to ensure confidentiality.

After data entry and analysis all those patients identified with symptoms of anxiety and depression were recalled and referred for further treatment.

3.8 Data Management

Only the researcher was allowed to access the data. Once filled, the forms were kept safely for analysis.

3.9 Data Entry

Data was entered using SPSS version 13

3.10 Data analysis and presentation

The statistical package for social sciences (SPSS) version 13 for windows was used to analyze the data by applying descriptive and inferential statistics. The results were presented in narratives, tables, bar charts and pie charts.

3.11 Ethical consideration

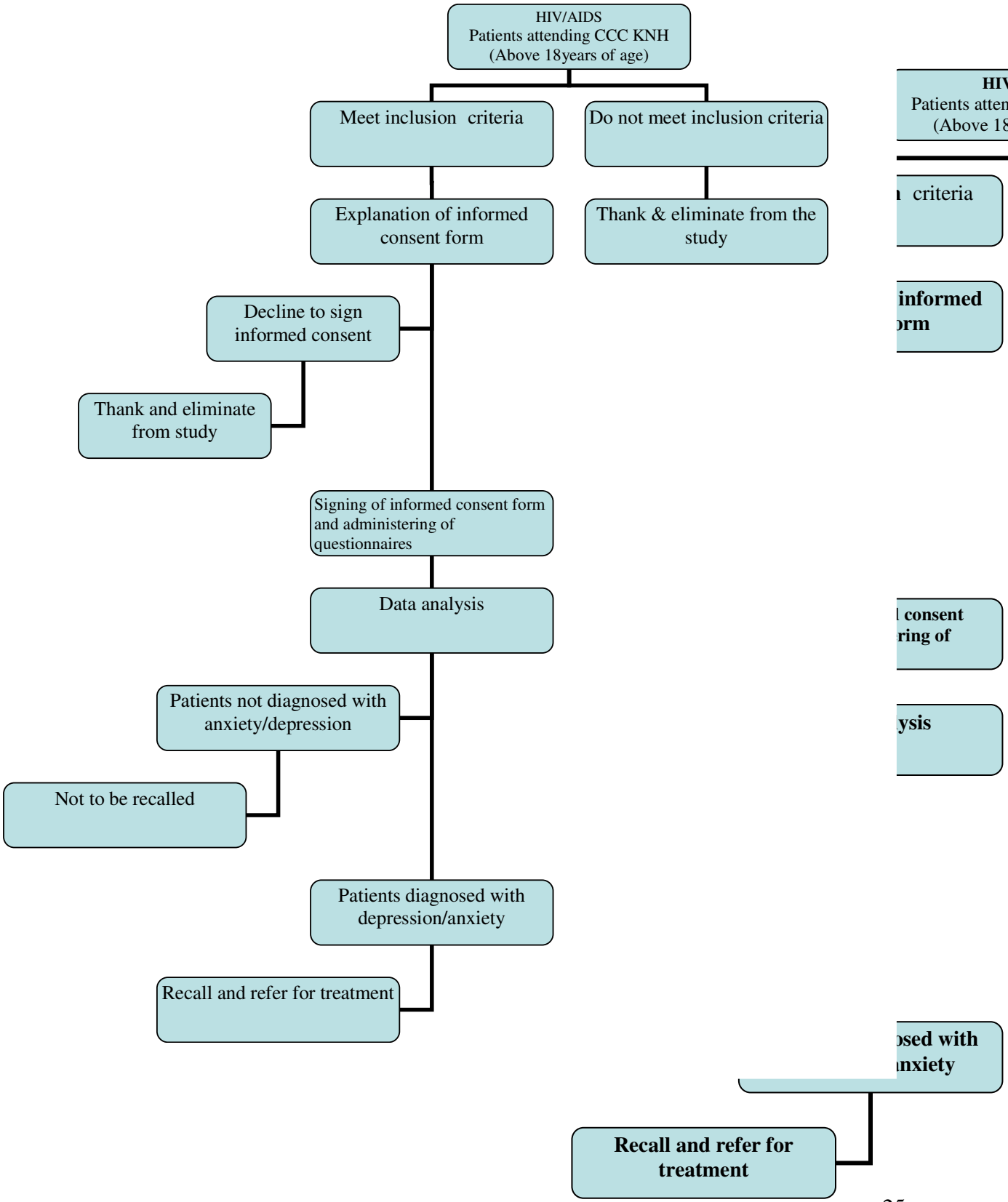
The research process began by obtaining approval from the Department of Psychiatry, University of Nairobi, research permit from the Kenyatta National Hospital Research and Ethics committee as well as the Ministry of Science and Technology.

The procedures and the objectives of the study were explained to CCC, KNH staff and the patients at the clinic. Explanation to the Head of the CCC facilitated their participation like requesting the patients to go to the consultation room from where the researcher explained to the respondent everything concerning the research and request his/her informed consent. The details of the ethical considerations was laid down in the letter of consent namely: consent explanation, confidentiality, personal and general benefits, risk and right not to participate and right to withdraw anytime was explained to the respondents.

3.12 Study Limitations

1. Only HIV/AIDS patients attending CCC KNH participated in the study.
2. The study was limited to those who understood English language only.
3. Very sick patients were not enrolled in the study.
4. Those under 18 years of age were not enrolled in the study.
5. Those on treatment for any psychiatry illness were not enrolled for the study.

3.13 Flow chart



CHAPTER FOUR

4.0 RESULTS

Introduction

In this chapter the findings of the study are presented under the following four major sections:

1. Socio demographic characteristics of HIV patients attending the CCC
2. Prevalence of anxiety as co-morbidities in HIV/AIDS patients
3. Prevalence of depression as co-morbidities in HIV/AIDS patients
4. Relationship between anxiety, depression and socio demographic factors in HIV/AIDS patients

Socio demographic characteristics of HIV patients attending the CCC

During this study, a total of 400 HIV positive patients attending the CCC at KNH were identified and included in the study conducted in October 2010. 21% of these (n=85) reported that they had other co-morbid physical illnesses. The common problem mentioned by this group of patients included TB and other respiratory problems, various ulcers and chronic illnesses like hypertension and diabetes. A few patients (n=3) also stated that they had experienced psychological problems and one patient had past history of psychiatric illness.

The socio demographic characteristics of the 400 patients are summarized in Table 1 below. The mean age was 39 ± 8.84 years, and the median age was 38.5 years (interquartile range 32.5-44.5 years); 62.2% (n=248) of the 400 patients recruited in the sample were females, resulting in a female: male ratio of 1.6: 1. The percent distribution of patients by ten-year age groups is presented in Table 1. Most participants were middle aged, with 39.8% and 31% of patients being in the age groups 30-39 years, and 40-49 years respectively.

Table 1: Socio-demographic characteristics of HIV positive patients attending the CCC at KNH

Demographic characteristics	Frequency (n)	Percent (%)
Gender		
Male	152	38.0
Female	248	62.0
Age category		
20-29 years	48	12.0
30-39 years	159	39.8
40-49 years	124	31.0
50-59 years	46	11.5
60-69 years	7	1.8
Not stated	16	4.0
Highest level of education		
No formal education	11	2.8
Primary	75	18.8
Secondary	166	41.5
College	111	27.8
University	32	8.0
Not stated	5	1.3
Religion		
Protestant	205	50.1
Catholic	148	37.0
African traditional	12	3.0
Muslim	5	1.3
Not stated	33	8.3
Income (Kshs per month)		
Less than 3000	109	27.3
Between 3001 to 6000	67	16.8
Between 6001 and 9000	58	14.5
More than 9000	105	26.3
Not stated	61	15.3
Occupation		
Skilled	170	42.5
Unskilled	98	24.5
Student	16	4.0
Not stated	116	29.0
Employed		
Yes	177	44.3
No	220	55.0
Not stated	3	0.7

The marital status of the 400 study participants is presented in Figure 1 below.

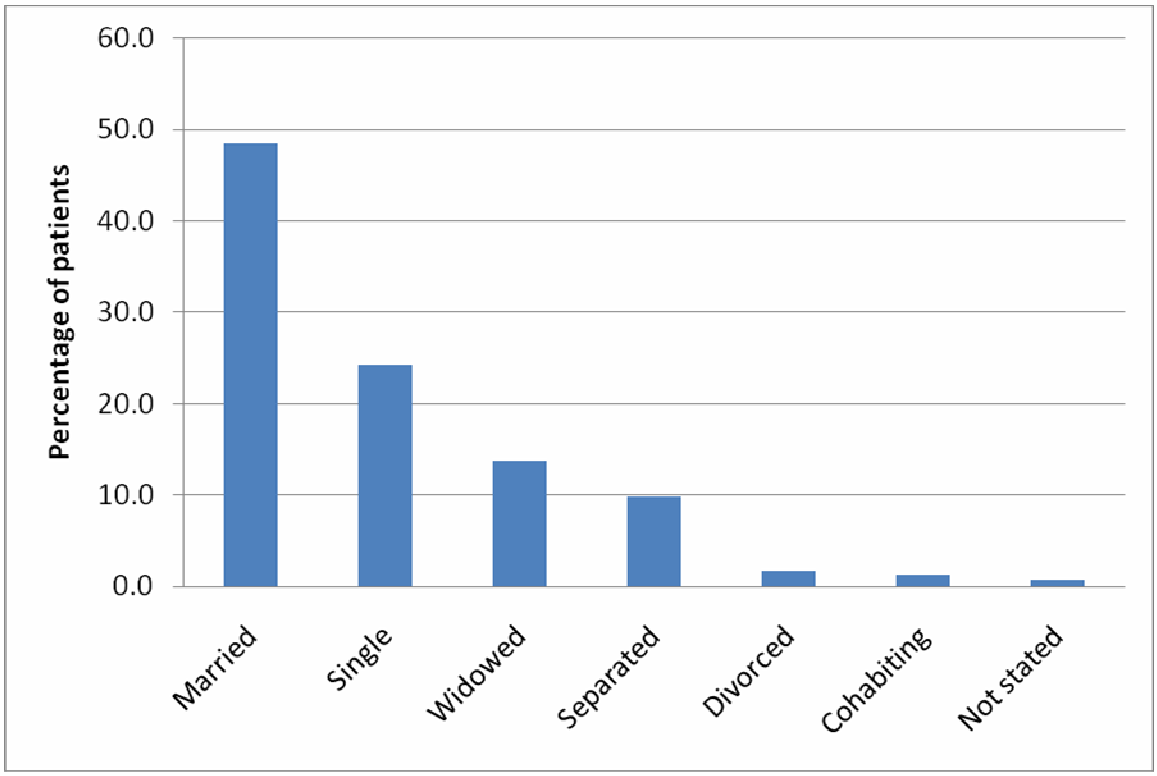


Figure 1: Marital status of patients attending CCC at KNH

The married patients (n=198) constituted 48.3% of the participants and represented the most common marital status; approximately one-quarter (24.3%, n=97) of patients were single, and widowed and separated patients accounted for 18.8 and 10% of the sample, respectively. 7 (1.8%) patient were divorced, 5 (1.3%) were cohabiting and 3 (0.8%) did not state their marital status.

A cumulative proportion of 96% of patients reported having had some formal education. Only 2.8% of patients did not have any formal education (Table 1). Most (41.5%) patients had achieved secondary school level of education. The next most frequently reported levels of education were college (27.8%) and primary education (18.8%) One-half of all the patients (n=202) reported that they professed Protestantism and 37% (n=148) of the patients reported that they were Catholics (Table 1). The other patients stated that they were Muslim or belonged to African traditional religions.

When socio-economic status was examined, 27.3% (n=109) of patients were found to be in the lowest income category with monthly income below Kshs 3000, 16.8% (n=67) with income between Kshs 3000- 6000, 14.5% with income between Kshs 6000-9000 per month and 26.3% had incomes above Kshs 9000 per month. The other work-related socio-demographic factors showed that slightly more than one-half (55%, n=220) were unemployed while (42.5%, n=170) were engaged in skilled occupations. Of the remaining patients not engaged in skilled occupations the commonly reported occupations were unskilled (24.5%, n=98), and being students 4% (n=16) of participants.

Prevalence of anxiety as co-morbidities in HIV/AIDS patients

The level of anxiety in HIV/AIDS patients was assessed using the Beck Anxiety Index (BAI). Out of a possible maximum score of 63, the 400 study participants had an average (± SD) score of 13.2 (±12.6). The lowest score recorded in the sample was zero (n=58) and the highest score was 63 (n=1). The prevalence of anxiety as co-morbidities in HIV/ AIDS is presented in Table 2.

Table 2: Prevalence of anxiety assessed using Becks Anxiety Index among HIV/AIDS patients at KNH CCC

Anxiety level	BAI score	Frequency (n)	Percentage
Very low	0-21	309	77.25
Moderate	22-35	62	15.50
Severe	36 and above	29	7.25
Total		400	100

The prevalence of the different levels of anxiety was as follows: 77.25% of patients had very low anxiety, represented by a BAI score of 0-21; 15.5% of patients had moderate anxiety and 7.25% had severe levels of anxiety (Table 2).

Prevalence of depression as co-morbidities in HIV/AIDS patients

Patients were classified as either depressed or not depressed using scores derived from the Beck depression index (BDI). Out of a possible maximum score of 63, the 400 study participants had an average (± SD) score of 14.4 (±11.9). The lowest score recorded in the sample was zero (n=37) and the highest score was 62 (n=1). The overall prevalence of depression among all 400 patients was 47.25% and prevalence of different levels of depression is presented in Table 3.

Table 3: Prevalence of depression assessed using Beck Depression Index among HIV/AIDS patients at KNH CCC

Depression	BDI score	Frequency (n)	Percentage
No depression	0-12	211	52.75
Depression	13 and above	189	47.25
Severity of depression	BDI Score	Frequency (n=189)	Percentage
Mild depression	13-16	39	20.6
Moderate depression	17-28	101	53.4
Severe depression	>28	49	25.9

As shown in Table 3, approximately one-half (52.75%) of all patients did not have depression (BDI score from 0 to 12). The overall prevalence of depression was 47.25%. Of the 189 depressed HIV/ AIDS patients 39 (20.6%) had mild depression, 53.4% had moderate depression and 25.9% had severe depression.

Association between anxiety and depression in HIV patients

Table 4 presents the association between depression and anxiety in HIV/ AIDS patients at KNH.

Table 4: Chi square tests of association between anxiety and depression in patients at KNH CCC

	Anxiety		Total	Chi(df)	P value
Depression	No	Yes			
No	201(95.2%)	10(4.8%)	211(100.0%)	82.4(1)	<0.0001
Yes	108(57.1%)	81(42.9%)	189(100.0%)		
Total	301(77.2%)	91(22.8%)	400(100.0%)		

As shown by the findings of the chi square test (Table 4), anxiety was significantly associated with depression (chi square (1) = 82.4, $p<0.0001$). Patients with depression were more likely to have anxiety compared to those without depression (42.9% of depressed patients also had anxiety compared to only 4.8% of patients without depression who also had anxiety).

Relationship between socio demographic factors and depression or anxiety in HIV/AIDS patients

a) Depression and socio-demographic factors

The association between socio-demographic factors and prevalence of depression were tested using the chi square test and the results are presented in Table 5. The following section explores the association between the individual factors and depression.

Table 5: Association between depression and socio-demographic characteristics of HIV patients at KNH CCC

	Depression (BDI score)	Chi(df)	P value

Socio-demographic characteristics		No (BDI=0-12)	Yes (BDI≥13)		
Gender	Male	100(65.8%)	52(34.2%)	17.93(1)	<0.001
	Female	111(44.8%)	141(56.2%)		
Age				5.13(4)	0.28
	20-29 years	19(39.6%)	29(60.4%)		
	30-39 years	81(50.9%)	78(49.1%)		
	40-49 years	70(56.5%)	54(43.5%)		
	50-59 years	21(60.9%)	18(46.2%)		
	60-69 years	5(71.4%)	2(28.6%)		
Marital	Married	114(59.1%)	79(40.9%)	10.68(5)	0.06
	Single	45(46.4%)	52(53.6%)		
	Widowed	25(45.5%)	30(54.5%)		
	Separated	17(42.5%)	23(57.5 %)		
	Divorced	6(85.7%)	1(14.3%)		
	Cohabiting	3(60%)	2(40%)		
Education	Nil	7(63.6%)	1(9.1%)	17.44(4)	0.001
	Primary	31(41.3%)	4(5.3%)		
	Secondary	77(46.4%)	19(11.5%)		
	College	69(62.2%)	12(10.8%)		
	University	24(75.0%)	2(6.3%)		
Religion	Catholic	76(51.4%)	72(48.6%)	2.4 (3)	0.45
	Protestant	102(50.5%)	100(49.5%)		
	Muslim	4(80%)	1(20%)		
	African religion	8(66.7%)	4(33.3%)		
Income	Less than 3000	47(42.1%)	62(59.6%)	28.17(3)	<0.001
	Between 3001 to 6000	29(43.3%)	38(56.7%)		
	Between 6001 and 9000	25(43.1%)	33(56.9%)		
	More than 9000	78(74.3%)	27(25.7%)		

Gender

The average BDI score for female patients was 16.2 (± 11.7) and they scored relatively higher than male patients (11.2 ± 8.7). Findings of the chi square test presented in Table 5 showed that,

female HIV patients were significantly more likely to have depression compared to male patients (56.2% versus 34.2% $\chi^2(1) = 17.93$, $p< 0.001$).

Level of education

On average, patients with primary education had the highest BDI score (17.8 ± 12.4), followed by those with secondary (15.7 ± 12.4) and college education (12 ± 10.6). The patients with university and no formal education reported relatively lower depression scores of 9.9 ± 10.7 and 8.9 ± 10.7, respectively. The chi square test showed that prevalence of depression was significantly higher in patients with primary (58.7%) and secondary (53.6%) level education $\chi^2(4) = 17.44$, $p=0.001$ (Table 5).

Age

The mean BDI score in the different age groups varied from 10.1 (± 10.4) among patients aged 60 years and above to 19.4 (± 14.2) in the youngest patient age group i.e. 20-29 years. The mean scores in the intermediate age groups were as follows: 30-39 years (14.4 ± 12), 40-49 years (13.2 ± 10.9) and 50-59 years (12.9 ± 9). The results of the chi square test comparing prevalence of depression in the different age groups showed that age was significantly associated with the patient's level of depression $\chi^2(4)=5.13$, $p=0.28$ (Table 5).

Marital status

The patients (n=5) who were cohabiting, on average had high scores for depression (23 ± 21.6). They were followed by separated (18.2 ± 14.8), single (16.2 ± 12.3) and widowed patients (14.3 ± 11.8) in that order. Married patients and divorced patients scored 12.6 ± 10.6 and 7.3 ± 5.6, respectively. These associations when tested using the chi square test comparing prevalence of depression in the different marital status were not statistically significant $\chi^2 (5) =10.68$, $p=0.06$ (Table 5).

Income

As shown in Table 5 above the income reported by patients was significantly associated with prevalence of depression $\chi^2 (3) =20.17$, $p<0.001$. Notably, the lowest prevalence of depression (25.7%) was seen in patients with the highest monthly income of more than Kshs 9000 per month. The prevalence of depression in the three income groups below Kshs 9000 was consistently above 50%. There was, however no clear trend of increasing or decreasing prevalence of depression with increasing income.

Prevalence of depression and its relationship with occupation, and employment

The patients in unskilled occupations and students had high score on the BDI index scoring an average of 17.1 ± 14.2 and 18.6 ± 12.5, respectively. The patients in skilled employment scored 11.7 ± 10.5.The proportions of patients engaged in skilled occupation, unskilled occupation and other types of occupations presented by presence or absence of depression are shown in Figure 2.

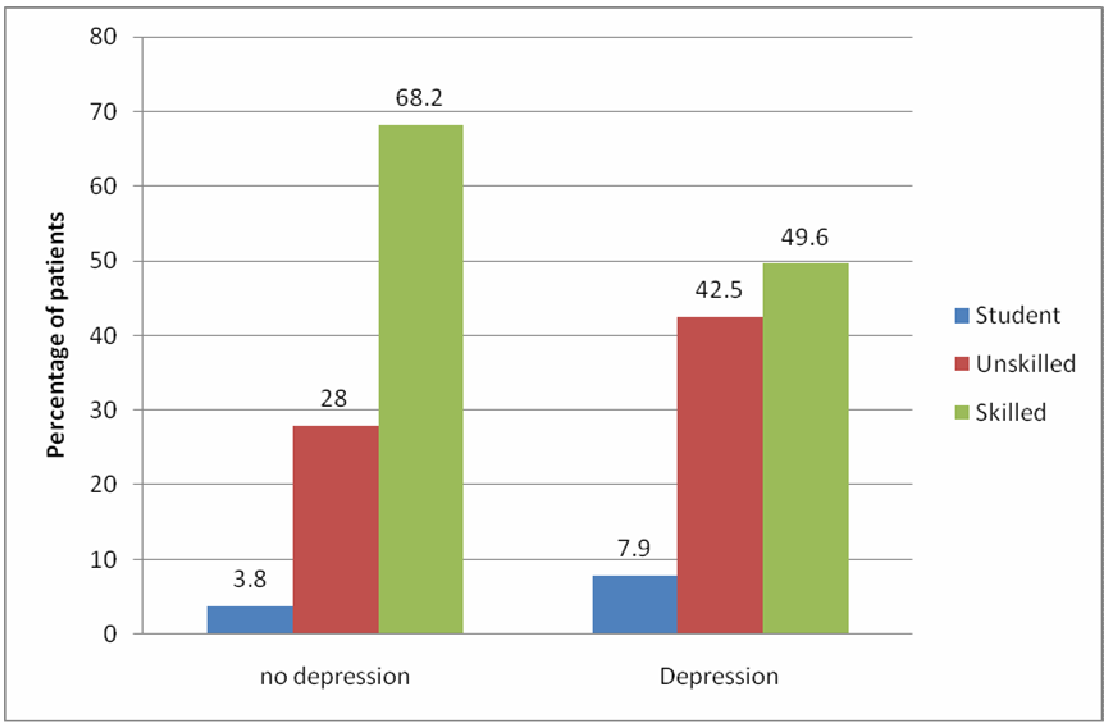


Figure 2: Prevalence of depression among HIV patients in different occupations

Among the 284 patients providing information on their occupation 127 (44.7%) had a diagnosis of depression. The prevalence of depression showed a significant association with patients occupation χ^2 (2) =10.4, p=0.006. Students accounted for 7.9% of the patients with depression and patients in unskilled and skilled occupations contributed 42.5% and 49.6% of depression cases, respectively. Among patients without depression the contribution of the various occupations was 3.8% for students, 28% for patients engaging in unskilled occupations and 68.2% for patients in skilled occupations.

b) Anxiety and socio-demographic factors

Results of the chi square tests of independence comparing prevalence of anxiety and socio-demographic factors among HIV patients are presented in Table 9 for gender, age, marital status, level of education and religion and explained in the following section.

Table 6: Association between anxiety and socio-demographic characteristics of HIV patients at KNH CCC

		Anxiety (BAI score)			Chi(df)	P value
Socio-demographic characteristics		Very low (BAI≤21)	Moderate (BAI =22-35)	Severe (BAI≥36)		
Gender	Male	130(83.9%)	16(10.3%)	9(5.8%)	5.82(2)	0.05
	Female	186(73.8%)	46(18.3%)	20(7.9%)		
Age					8.68(10)	0.326
	20-29 years	36(72%)	10(20%)	4(8%)		
	30-39 years	121(75.6%)	25(15.6%)	14(8.8%)		
	40-49 years	107(84.9%)	13(10.3%)	6(4.8%)		
	50-59 years	35(72.9%)	10(20.8%)	3(6.3%)		
	60-69 years	4(57.1%)	2(28.6%)	1(14.3%)		
Marital	Married	160(80.8%)	24(12.1%)	12(7.1%)	12.21(10)	0.276
	Single	77(77.8%)	15(15.2%)	7(7.1%)		
	Widowed	41(73.2%)	13(23.2%)	2(3.6%)		
	Separated	27(67.5%)	7(17.5%)	6(15%)		
	Divorced	6(85.7%)	1(14.3%)	0(0%)		
	Cohabiting	3(60%)	2(40%)	0(0%)		
Education	Nil	7(63.6%)	3(27.3%)	1 (9.1%)	15.19(5)	0.035
	Primary	52(67.5%)	19(24.7%)	6(7.8%)		
	Secondary	133(77.8%)	23(13.5%)	15(8.8%)		
	College	88(79.3%)	16(14.4%)	7(6.3%)		
	University	32(97%)	1(3%)	0(0%)		
Religion	Catholic	118(77.1%)	26(17%)	9(5.9%)	2.24(3)	0.59
	Protestant	154(75.5%)	33(16.2%)	17(18.3%)		
	Muslim	5(80%)	0(0%)	0(0%)		
	African religion	10(83.3%)	2(16.7%)	12(0%)		

Gender

On average female patients scored higher on the BAI at 14.3 ±12.3 compared to a score of 11.5 ± 12.9 for their male counterparts. As shown in Table 6, the proportion of female patients who had moderate and high levels of anxiety was 18.3% and 7.9%, respectively, whereas the proportion of males was only 10.3% for moderate anxiety and 5.8% for high anxiety levels $\chi^2(2)=5.82$, p=0.05.

Level of education

The patients with no formal education had the highest anxiety levels based on the BAI score (18.9 ± 18.8). They were followed by patients with primary (15 ± 12.4), secondary (13.7 ± 12.9), college (12.6 ± 12.4) and university education (8.8 ± 7.6), respectively. The highest level of education attended by patients was significantly associated with their anxiety levels χ^2 (5) = 15.95, p=0.035. As shown in Table 6 the percentage of patients with anxiety was low among patients with higher levels of education and increased among the patients who reported lower levels of education.

Age

The mean anxiety score was highest in the oldest patients aged 60 years and above (18.1 ± 21.8) followed by the youngest age group (20-29 years) with an average score of 15.3 ± 11.7. The scored for the intermediate age groups were 30-39 years (13.6 ± 12.9), 40-49 years (11.2 ± 11), and 50-59 years (14.3 ± 13.3). Patients in the older age groups i.e. 50 years and above had slightly higher prevalence of anxiety relative to those in the age groups below 50 years. These differences in anxiety levels across the age groups were, however, not statistically significant χ^2 (10) =8.68, p=0.326 (Table 6).

Religion

The anxiety scores recorded for Protestants (13.6 ± 13.1) were comparable to those of Catholic patients (13.4 ± 12.1). The patients professing the Muslim faith and African traditional religious faiths had slightly lower anxiety score at 11 ± 7.6 and 9.4 ± 8.9. Table 6 shows that the prevalence of anxiety was not significantly associated with the patients religion χ^2 (3) = 2.24, p = 0.59.

Prevalence of anxiety and its relationship with occupation, employment and income

The mean anxiety score among the employed patients was 11.5 ± 11.6 compared to an average score of 14.4 ± 12.8 among the unemployed group. For occupation, the scores were as follows: skilled (11 ± 10.8), unskilled (14.8 ± 13.7), and students (13 ±11.1). Table 7 presents relationships between work-related socio-demographic factors and the prevalence of anxiety.

Table 7: Association between work-related socio demographic factors and prevalence of anxiety

		Anxiety (BAI score)			Chi(df)	P value
Work related socio-demographic factors		Very low (BAI≤21)	Moderate (BAI =22-35)	High (BAI≥36)		
Employed	No	165(73.0%)	43(19.0%)	18(8.0%)	5.82(2)	0.032
	Yes	150(83.8%)	19(10.6%)	10(5.6%)		
Occupation	Skilled	148(86.6%)	18(10.5%)	5(2.9%)	12.79(3)	0.005
	Unskilled	66(67.4%)	24(21.4%)	11(11.2%)		
	Student	13(81.3%)	2(12.5%)	1(6.3%)		
Income	less than 3000	74(68%)	23(21.1%)	12(11%)	15.81(6)	0.01
	Between 3001-6000	53(74.7%)	12(16.9%)	6(8.5%)		
	Between 6001-9000	44(75.9%)	12(20.7%)	2(3.5%)		
	Above 9000	94(88.7%)	8(7.6%)	4(3.8%)		

The results indicate that level of anxiety in HIV patients showed significant association with; occupation, employment status and income. Seventy-three per cent of unemployed patients reported very low anxiety and this was significantly lower than the proportion (83.8%) of employed patients reporting very low anxiety χ^2 (2) = 5.82, p=0.032.

CHAPTER FIVE

5.0 DISCUSSION

The observations from this study conducted at the main referral hospital in Nairobi highlight the magnitude of anxiety and depression as health problems in HIV/ AIDS patients in Kenya along with its associated factors. The findings suggest that a significant proportion of the HIV/AIDS patients attending CCC may be experiencing psychiatric problems, for which they may not be receiving treatment. Similar findings of high burdens of anxiety and depression have been reported in previous African studies and studies in other low-income settings (31).

Socio demographic characteristics

The studied patients' social and demographic characteristics including age distribution, peak infections prevalence, and gender appear to be similar to national estimates recently reported in the Kenya National AIDS Indicator Survey. Although prevalence data suggests that the majority of non pediatric infections occur among the youth especially young women aged 15-24 years and most young men less than 30 years (10), the present study showed that most participants were middle aged, with 39.8% and 31% of patients being in the age groups 30-39 years and 40-49 years respectively. These differences could possibly be explained by the fact that the present study reports age distribution of HIV/AIDS infection in a select population i.e. Patients accessing and utilizing CCC services as opposed to prevalence studies that report HIV distribution in more general populations. It is also possibly because the CCC population comprise of patients with AIDS as opposed to just being HIV positive. People Living with Aids (PLWA) have been HIV for some years and therefore are an older population.

In many African countries, sexual relationships are dominated by men, meaning that women cannot always practice safer sex even when they know the risks involved. Findings in the Kenya Aids Indicator Survey (2007) revealed that women were more likely to be infected (8.4%) than men (5.4%). In particular, young women aged 15-24 years were four times more likely to be infected (5.6%) than young men of the same age group. In this study, most participants were female (62%) and married (48.3%), there was a Male: Female ratio of 1:1.6 similar studies done in Africa had a Male: Female ratio of 1:1.2 (35). Biologically, women are twice more likely to become infected with HIV through unprotected heterosexual intercourse than men. In many countries women are less likely to be able to negotiate condom use and are more likely to be subjected to non- consensual sex. In some southern African countries the rate of HIV among 23-

24 year old females is far higher than that of 15-17 year old girls, this suggests prevention activities should target women at a young age and ensure they have the knowledge and skills to avoid HIV infection from when they become sexually active. (11)

It has been previously reported that women tend to have confiding relationships and have responsibility for the care of young children at home. They are therefore more likely to seek intervention in case of ill health compared to men. In fact for a while HIV prevalence estimates have been based on hospital antenatal clinic surveillance. Additionally, AIDS epidemic is aggravated by social and economic inequalities between men and women. Women and girls commonly face discrimination in terms of access to education, employment, credit, healthcare, land and inheritance. All these factors can compromise women's demand for safe sex practice and thereby making them vulnerable to HIV infection. In sub Saharan Africa, about 59% of people living with HIV are female. (11)

Prevalence of anxiety as a co-morbidity in HIV/AIDS patients

Anxiety disorders occur in about 20% of HIV/AIDS victims. These disorders may evolve from adjustment disorders and may take on different forms e.g. generalized anxiety disorder, panic attacks or obsession states (36). Majority of the patients in the study, (77.25%) had very low anxiety levels. Anxiety scores below 21 in the BAI are usually considered to fall within the normal range- some degree of anxiety being part of the normal protective physiological process in humans. A possible explanation for the low anxiety levels is the phase of disease and ongoing management in the studied sample. Anxiety is prominent following initial HIV diagnosis and anxiety symptoms can frequently recur and escalate in response to disease progression. Symptoms of anxiety in HIV infected patients are related to the uncertainties about the evolution of the disease, its clinical course, fears related to pains, suffering, body decay, treatment and death (3). Participants in this study were already undergoing treatment, having gone through the various phases of management i.e. counseling, initiation and maintenance of drug therapy.

Similar to earlier studies, anxiety showed statistically significant relationships with several social and demographic factors including education, employment and occupation (31).

Prevalence of depression as a co morbidity in HIV/AIDS patients

Worldwide, mood disorders are very common with depression being the most common. Generally it occurs at a prevalence of between 5-20%. In most studies in Africa, depression studies are found to be between 10-15%. Depression causes significant morbidity and mortality in the community with a prevalence of 10-25% in women and 5-12% in men (36). A study done on the prevalence of mental disorders in adults in different level general medical facilities in Kenya revealed that 42% of subjects had symptoms of mild and severe depression (33). In Uganda the prevalence stands at 10-20% (36).

The diagnosis of depression in HIV/AIDS patients can be difficult because the clinical indicators of depression are often obscured by the somatic symptoms of HIV/AIDS. These include poor appetite, weight loss, loss of energy and insomnia. However complaints of fatigue and insomnia in otherwise asymptomatic HIV- infected patients are likely to be related to psychological disturbances possibly major depression which can be treated (36). The current study reveals that approximately one half (52.75%) of the patients did not have depression, while 47.25% were found to have either: mild, moderate or severe depression. Sherbourne et al (2000) found that among HIV/AIDS patients, clinical depression is a frequently observed psychiatric disorder with its prevalence estimated to range from 22%-32% in patients attending HIV/AIDS clinics. Lyketsos et al (1996) found over 42% of HIV positive women experienced chronic depressive symptoms, 35% intermittent symptoms and 23% had single episodes among those attending HIV/AIDS clinics. Kinyanda (1998), in a Ugandan study, found that patients in late HIV clinical stages were three times more likely to have significant depressive symptomatology as compared to those with early HIV. Lyketsos et al (1996), in studying the progression of depression in association with HIV, found that clinically there was often an observed dramatic sustained rise in depressive symptoms as AIDS develops, which begins as early as 18 months before clinical AIDS is diagnosed. Depressive symptoms among women with HIV/AIDS have been associated with disease progression. Depression has been reported to increase toward the later stages of HIV infection suggesting that it may be a manifestation of the HIV disease process itself (36).

The high prevalence rates found in this study may be attributed to the fact that most participants were female and as mentioned above HIV positive women tend to experience chronic depressive

symptoms and in addition, the participants may have been suffering from later stages of the disease. A similar study done in South Africa showed that 38.5% had an elevated BDI and 19.8% fell on the moderate range for depression (30) and in yet another study done in South Africa 17% of patients had a current depressive disorder while almost 16% had a life time depressive disorder (31). As mentioned earlier most of the participants in the study were aware of their status and were on various stages of management for the infection, having gone through counseling. This could be a possible explanation for the lower prevalence rates of severe depression (25.9%) found in this study.

The prevalence rates of depression found in the study may also have been partly attributed to the fact that most of the patients were unemployed (55%). According to The HIV Costs and Utilization Study (HCSUS) findings; being unemployed or disabled was associated with greater risk of Psychiatric disorder. The same study also concludes that women who are dependent on income assistance were more likely to experience psychiatric co morbidity (24). Despite the study findings revealing no clear trend of increasing or decreasing prevalence of depression with increasing income, the prevalence of depression was low among patients in skilled occupation and employed patients.

5.1 STUDY LIMITATIONS

There were several sources of selection bias in the study including refusals to participate. Of those patients who accepted to participate some complained that the questionnaires were too long and therefore time consuming and provided incomplete information.

The study only assessed those who were conversant with English language; therefore a large proportion of participants with anxiety or depressive symptoms may have been left out hence introducing potential selection and information biases.

The Social demographic questionnaire did not capture the duration of illness awareness, any recent traumatic event, sexual orientation of the participants and the stage of HIV illness which would have contributed to the study results.

The study was limited to KNH, CCC patients only.

5.2 CONCLUSION

Overall the results of this study provide evidence that, patients with HIV/AIDS receiving follow-up care still experience considerable anxiety and depression. There is a need for more psychological counseling and psychiatric assessment and treatment to ensure complete mental well being in Patients being managed at the Comprehensive Care Centres in the country. This will additionally improve adherence and may even reduce the cost of care (24).

5.3 RECOMMENDATIONS

The findings reported above have several implications both within the clinical setting and at policy level. Within the setting, considerable emphasis has been placed on psychological care of patients around the time of diagnosis through providing pre and post test counseling. However, beyond this period very little attention is given to the psychological well being of patients. Health workers providing follow-up care should be encouraged to sustain counseling during follow-up and routinely assess patients psychological and emotional well being. A further recommendation for policy makers is to consider options which will increase and promote interdisciplinary collaborative care with an aim of increasing the psychiatric and psychological support available to patients.

There is need to screen HIV/AIDs patients for psychiatric morbidity. Importantly, the introduction of a simple and quick test for depression and anxiety and the psychological wellbeing of all patients attending the CCC should be introduced and patients found to have high levels of morbidity should be referred for further psychiatric management.

It is important to note that patients who were found to have symptoms of anxiety or depression were recalled back and referred to the mental health workers for appropriate treatment.

REFERENCES

1. Morrison, M.F., Petito, J.M., Have, T.T., et al. Depressive and Anxiety Disorders in women with HIV Infection. *Am J psychiatry 2002*; **159**:789-796
2. Reference Manual for Home- Based Care for People Living with HIV/AIDS in Kenya 2006. National AIDS/STD Control Programme Ministry of Health.
3. Junqueira, P., Bellucci, S., Rossini, S., et al .Women Living with HIV/AIDS. Sleep impairment, anxiety and depression symptoms. *Arq Neuropsiquiatr 2008*;**66(4)**:817-820
4. Ndetei, D.M. The African Text book of Clinical Psychiatry and Mental Health. *AMREF*, 2006
5. Tsai-Ya Lai, R. N., Larson, E.L., Rockoff, M.L., et al. User Acceptance of HIV TIDES-Tailored Interventions for Management of Depressive Symptoms in Persons Living with HIV/AIDS. *J Am Med Inform Assoc*. 2008*;* **15***:* 217-226.
6. Moussavi, S., Chatterji, S., Verdes, E., et al. Quality of Life and Neurotic Disorders in General Healthcare: Depression, Chronic Diseases and Decrements in Health and Quality of Life. *Curr Opin Psychiatry, v.*2009; **22, 1**: 61-68
7. Kilziah, N. Co morbidity of depression with chronic diseases: a population-based study in Aleppo, *Syria Intl J Psychiatry Med*. 2008; **38, 2**: 169-84.
8. Frances, A., Manning, D., Mann, D., et al. Relationship of anxiety and depression. *Psychopharmacology* 1992; **106:** pp. S82–S86.
9. Kenya National Prevention of Mother to Child transmission Training Curriculum. 2005. National AIDS/STD Control Programme Ministry of Health.
10. Kenya Demographic Health Survey. 2003
11. UNAIDS report on Global AIDS epidemic.2008
12. AIDS epidemic update. 2007
13. Greener, R. AIDS and Macroeconomic impact in S, Forsyth (ed). State of The Art*: AIDS and Economics IAEN*. 2002; pp. 49–55.
14. Nutt, D.J. Relationship of neurotransmitters to the symptoms of major depressive disorder, *Journal of Clinical Psychiatry. 2008;* **69** Suppl E1: 4–7
15. Brown, G.W. and Harris, T.O. Social Origins of Depression: A Study of Psychiatric Disorder in Women. Routledge. ISBN 0-415-20268-X. 2001; 1978.
16. Hinrichsen, G.A. and Emery, E.E. Interpersonal factors and late-life depression

(Subscription required) *Clinical Psychology: Science and Practice* 12 2006; **3**: 264–75.

17. Raphael B. Unmet Need for Prevention. In Andrews G, Henderson S *(eds*). Unmet Need In Psychiatry: Problems, Resources, Responses. Cambridge University Press 2000; Pp.138–39
18. Kim, D. Blues from the Neighborhood? Neighborhood characteristics and depression, *Epidermal Rev* Aug 27.2008
19. Bonde, J.P. Psychosocial factors at work and risk of depression: A systematic review of the epidemiological evidence. *Journal of Occupational and Environmental Medicine* **65**, July, 2008; 7: 438–45.
20. *http://www.emedicinehealth.com*
21. Valente*, S*. Depression and HIV Disease. *Journal of the Association of Nurses in AIDS care,* Volume **14**, Issue 2, 2003; Pages 41-51
22. http://www.mentalhelp.net
23. Leserman**,** J. Severe life stress as a predictor of early disease progression in HIV infection. *Am J Psychiatry* 1997:**154**: 6 30–4.
24. Page-Shafer, K., Delorenze, G.N., Satariano, W., et.al.Co-morbidity and survival in HIV Infected men in the San Francisco Men's Health Survey, *annals of epidemiology*. 1996; **6, 5**: 420-30.
25. Whetten, K., Reif, S., Whetten, R., et al. Trauma, Mental Health, Distrust, and Stigma among HIV-Positive Persons: Implications for Effective Care. *Psychosomatic Medicine* No **70**:2008; pp. 531-538.
26. Lavick, J. and Vaccaro, G. Conquering anxiety. MH **27** *BETA* 2007: *pp 20-28 http://www.thebody.com/content/art40749.html*
27. Derogatis, L.R. and Melisaratos, N. The brief Symptom Inventory: An introductory report. *Psychol Med*. 1983; **13:** 595-605
28. Lyketsos, C.G. and Federman, E.B. Psychiatric disorders and HIV infection: impacting one another. *Epidemiol Rev* 1995; v.**17**: pp.152-164
29. Gordillo, V., Del Amo, J., Soriano, V., et al. Sociodemographic and psychological variables influencing adherence to antiretroviral therapy. *AIDS.* V **13**, 1999; pp. 1763–1769

30. Kagee, A. Symptoms of depression and anxiety among a sample of South African patients living with a chronic illness. *Journal of Health Psychology* 2008_files13***, 4***, 547
31. Thom, R. G. M. Depression and anxiety in HIV infected individuals attending HIV treatment facilities at various sites in South Africa: Occurrence and related factors.2009
32. Carson, A. J., Sandler, R.,Owino, F.N., et al. Psychological Morbidity and HIV in Kenya**.** *Acta Psychiatric Scandinavica* 1998; Apr, **97, 4**: 267-71.
33. Ndetei, D.M., Khasakhala, I.L., Kuria, M.W., et-al. The prevalence of mental disorders in adults in different level general medical facilities in Kenya: a cross-sectional study. *Annals of General Psychiatry* 2009; **8**:1
34. Hulley, S., Cummings, S., Browner, W., et al. Designing clinical trials.3rd Edition 2007. Lippincot and Williams.
35. Benard, R. Fundamentals of Biostatistics 5th Edition 2000. Duxbury Press.
36. Musisi, S. and Kinyanda, E. Psychiatric Problems of HIV/AIDS and their Management in Africa.

BUDGET

NO.	ITEM	COST(KSHS)
1.	Proposal writing Typing and type setting Printing and photocopying	35,000/=
2.	Data collection-assistant - data entry	20,000/= 5,000/=
3.	Data analysis	10,000/=
4.	Final thesis	50,000/=
5.		
	TOTAL COST	120,000/=

TIME FRAME

Activity number	Activity	Responsible officer	June 2009 Nov 2009	March 2010 Aug. 2010	Sept.2009 – Aug 2010
1	Proposal writing	Principal investigator Supervisors	June - Nov		
2	Submission of proposal for approval	Principal investigator Supervisors	December		
3	Pretesting	Principal investigator	February		
4	Data collection	Principal investigator Supervisors		March	
5	Data analysis	Principle investigator Biostatistician Supervisors		April	
6	Thesis Writing	Principal investigator supervisors			May- July
7	Submission of thesis	Principal investig Supervisors			August

APPENDICES

APPENDICES

Appendix A: Informed Consent Explanation

My name is Dr. Pauline Ng'ang'a. I am currently doing a Masters Degree course in Clinical Psychology at the University of Nairobi. I am doing research on prevalence of anxiety and depression among HIV/AIDS patients attending CCC KNH.

The information you give will be used for completion of my Masters Degree in Clinical Psychology at the same university.

The main aim of this letter is to request for your participation in this research in which I will ask questions which will be in form of questionnaires: socio-demographic, Becks Depression Inventory (BDI) and Becks Anxiety Inventory (BAI) to determine the socio demographic variables associated with depression and anxiety in the above group. The exercise will take about 30-45 minutes.

Please note that:

- Your acceptance to participate in this study is voluntary.
- Your acceptance to participate in this study does not prevent you from withdrawing from the study at any time.
- Declining to participate or withdrawing from the study will not warrant any punishment or penalty. i.e. you will not be denied the services that you are receiving.
- You will not receive any token or monetary benefit by participating in the study.
- Your personal details will be highly confidential.
- If after analysis I discover you have a problem I will refer you to the appropriate clinic.
- The results of this study could be used to introduce a component of Mental Health Care in managing HIV/AIDS patients.
- Part or whole of this study can be availed to you on request.

- There is no right or wrong answer.
- There will be no physically invasive procedures although some of the questions in the BDI (Becks Depression Inventory) may be psychologically invasive.

You are free to ask any questions that will allow you to understand the nature of the study. If you need to seek clarification you can contact me on **0722 874 000** or my supervisors:
Dr M. Mathai and Dr A. Obondo at the Department of Psychiatry University of Nairobi.

Appendix B: Consent Declaration

I, the undersigned, do here by volunteer to participate in this study. The nature and purpose have been fully explained to me by
Dr. Ng'ang'a P.W.

I understand that all information gathered will be used for the purpose of the study only

Name of Participant: ……

Signed..... Date.....……..

Signed by Dr. Ng'ang'a P.W Date. …….

.....

Appendix C: Socio-Demographic Questionnaire

Study No._____

Date_____

Gender Male: ……. Female: ……

Date of Birth: ……..

1) Marital status:

a) Single

b) Married

c) Separated

d) Divorced

e) Widowed

f) Cohabiting

2) Number of children _____

3) Highest level of education:

a) Nil

b) Primary

c) Secondary

d) College

e) University

4) Are you employed? Yes…… No……

5) Occupation:

a) Skilled

b) Unskilled

c) Student

d) Others (specify): ……

6) Religion:

a) Catholic

b) Protestant

c) Muslim

d) Hindu

e) African traditional

f) Others (specify): …….

7) Income (in Kshs):

a) Less than 3000

b) Between 3001 and 6000

c) Between 6001 and 9000

d) More than 9000

8) Other illness: _____

Treatment _____

9) HIV Status of Partner……

Appendix D: BDI (Becks Depression Inventory and Becks Anxiety Scale)

Now I would like to ask you about your feelings. Some people feel sad, some people feel happy and some people have feelings somewhere in the middle. [SHOW VISUAL ANALOGUE SCALE OF FACES WITH FEELINGS] **It is normal to feel all of these feelings. Please tell me honestly which statement in each group best describes the way you have been feeling during the past two weeks, including today.**

PSYCHOLOGICAL WELL-BEING PART 1

The first groups of statements are about …

1. Sadness

I do not feel sad.....0

I feel sad much of the time .....…….....1

I am sad all of the time.....2

I am so sad or unhappy that I can't stand it…… ...3

DK .....…….....7

Refused .....…….....8

The next statements are about … [REPEAT THIS LEAD IN FOR ALL GROUPS]

2. Pessimism

I am not discouraged about my future 0

I feel more discouraged about my future than I used to be. .....……...1

I do not expect things to work out for me.....…….....2

I feel my future is hopeless and will only get worse.....……...3

DK .....…….....7

Refused .....……...8

3. Past Failure

I do not feel like a failure.....……...0

I have failed more than I should have……...1

As I look back, I see a lot of failures ……...2

I feel I am a total failure as a person..……...3

DK 7

Refused 8

4. Loss of Pleasure

I get as much pleasure as I ever did from the things I enjoy 0

I do not enjoy things as much as I used to 1

I get very little pleasure from the things I used to enjoy 2

I can not get any pleasure from the things I used to enjoy 3

DK 7

Refused 8

5. Guilty Feelings

I do not feel particularly guilty 0

I feel guilty over many things I have done or should have done 1

I feel quite guilty most of the time.....2

I feel guilty all of the time 3

DK 7

Refused 8

6. Punishment Feelings

I do not feel I am being punished.....0

I feel I am being punished.....1

I expect to be punished 2

I feel I am being punished.....3

DK 7

Refused 8

7. Self -Dislike

I feel the same about myself as ever 0

I have lost confidence in myself 1

I am disappointed in myself.....2

I dislike myself.....3

DK 7

Refused 8

8. Self-Criticalness

I do not criticize or blame myself more than usual.....0

I am more critical of myself than I used to be 1

I criticize myself for all of my faults 2

I blame myself for everything bad that happens 3

DK 7

Refused 8

9. Suicidal Thoughts

I do not have any thoughts of killing myself 0

I have thoughts of killing myself, but I would not carry them out 1

I would like to kill myself 2

I would kill myself if I had the chance 3

DK 7

Refused 8

10. Crying

I don't cry anymore than I used to.....0

I cry more than I used to 1

I cry over every little thing.....2

I feel like crying, but I can not cry.....3

DK 7

Refused 8

11. Agitation

I am not more restless or wound up than usual.....0

I feel more restless or wound up than usual.....1

I am so restless or agitated that it is hard to stay still 2

I am so restless or agitated that I have to keep moving or doing something……..3

DK 7

Refused 8

12. Loss of Interest

I have not lost interest in other people or activities 0

I am less interested in other people or things than before.....1

I have lost most of my interest in other people or things.....2

It is hard to get interested in anything.....3

DK 7

Refused 8

13. Indecisiveness

I make decisions about as well as ever 0

I find it more difficult to make decisions than usual 1

I have much greater difficulty in making decisions than I used to 2

I have trouble making any decisions.....3

DK 7

Refused 8

14. Worthlessness

I do not feel I am worthless 0

I do not consider myself as worthwhile and useful as I used to 1

I feel more worthless as compared to other people.....2

I feel utterly worthless 3

DK 7

Refused 8

15. Loss of Energy

I have as much energy as ever 0

I have less energy than I used to have.....…….1

I do not have enough energy to do very much.....2

I do not have enough energy to do anything……...3

DK .....…….7

Refused .....……...8

16. Changes in Sleeping Pattern

I have not experienced any change in my sleeping pattern .....……0

I sleep somewhat more than usual .....……1a

I sleep somewhat less than usual 1b

I sleep a lot more than usual .....…….....2a

I sleep a lot less than usual ....……...2b

I sleep most of the day 3a

I wake up 1-2 hours early and can't get back to sleep..... .....3b

DK .....…….....7

Refused .....…….....8

17. Irritability

I am no more irritable than usual .....…….....0

I am more irritable than usual .....…….....1

I am much more irritable than usual ..……...2

I am irritable all the time.....…….....3

DK .....……...7

Refused .....……...8

18. Changes in Appetite

I have not experienced any change in my appetite .....…….....0

My appetite is somewhat less than usual 1a

My appetite is somewhat greater than usual ..... …….....1b

My appetite is much less than before.....…….....2a

My appetite is much greater than usual 2b

I have no appetite at all 3a

I crave food all the time 3b

DK .....…….....7

Refused .....…….....8

19. Concentration

I can concentrate as well as ever.....0

I can not concentrate as well as usual .....…….1

It is hard to keep my mind on anything for very long 2

I am irritable all the time .....…….....3

DK .....…….....7

Refused .....…….....8

20. Tiredness or Fatigue

I am no more tired or fatigued than usual .....…….....0

I get more tired or fatigued more easily than usual .....…….....1

I am too tired or fatigued to do a lot of the things I used to do….....2

I am too tired or fatigued to do most of the things I used to do.....3

DK .....…….....7

Refused .....…….....8

21. Loss of Interest in Sex

I have not noticed any recent change in my interest in sex ...…….....0

I am less interested in sex than I used to be.....…….....1

I am much less interested in sex now.....…….....2

I have lost interest in sex completely.....…….....3

DK .....…….....7

Refused .....…….....8

Appendix E: Becks Anxiety Inventory

I would like to ask you some different questions about how you have been feeling. Please listen to each group of statements carefully, look at the choices on this card [SHOW CARD]**, and then tell me which statement from the card best describes the way you have been feeling <u>during the past two weeks</u>, including today.**

[CARD]

0 = Not At All

1 = mildly - but it did not bother me much.

2 = moderately - it was not pleasant at times

3 = severely – it bothered me a lot

1. Numbness or tingling

Not At All .....…….....0

Mildly but it did not bother me much …….....1

Moderately - it was not pleasant at times.....2

Severely – it bothered me a lot 3

DK .....…….....7

Refused .....…….....8

2. Feeling hot

Not At All .....……..0

Mildly but it did not bother me much ……....1

Moderately - it was not pleasant at times.....2

Severely – it bothered me a lot 3

DK .....….....7

Refused 8

3. Wobbliness in legs

Not At All 0
Mildly but it did not bother me much 1
Moderately - it was not pleasant at times.....2
Severely – it bothered me a lot 3
DK 7
Refused 8

4. Unable to relax

Not At All 0
Mildly but it did not bother me much 1
Moderately - it was not pleasant at times.....2
Severely – it bothered me a lot 3
DK 7
Refused 8

5. Fear of the worst happening

Not At All 0
Mildly but it did not bother me much 1
Moderately - it was not pleasant at times.....2
Severely – it bothered me a lot 3
DK 7
Refused 8

6. Dizzy or lightheaded

Not At All 0
Mildly but it did not bother me much 1
Moderately - it was not pleasant at times.....2
Severely – it bothered me a lot 3
DK 7
Refused 8

7. Heart pounding/racing

Not At All 0
Mildly but it did not bother me much 1
Moderately - it was not pleasant at times.....2
Severely – it bothered me a lot 3
DK 7
Refused 8

8. Unsteady

Not At All 0
Mildly but it did not bother me much 1
Moderately - it was not pleasant at times.....2
Severely – it bothered me a lot 3
DK 7
Refused 8

9. Terrified

Not At All 0
Mildly but it did not bother me much 1
Moderately - it was not pleasant at times.....2
Severely – it bothered me a lot 3
DK 7
Refused 8

10. Nervous

Not At All 0
Mildly but it did not bother me much 1
Moderately - it was not pleasant at times.....2
Severely – it bothered me a lot 3
DK 7
Refused 8

11. Feeling of choking

Not At All 0
Mildly but it did not bother me much 1
Moderately - it was not pleasant at times.....2
Severely – it bothered me a lot 3
DK 7
Refused 8

12. Hands trembling

Not At All 0
Mildly but it did not bother me much 1
Moderately - it was not pleasant at times.....2
Severely – it bothered me a lot 3
DK 7
Refused 8

13. Shaky

Not At All 0
Mildly but it did not bother me much 1
Moderately - it was not pleasant at times.....2
Severely – it bothered me a lot 3
DK 7
Refused 8

14. Fear of losing control

Not At All 0
Mildly but it did not bother me much 1
Moderately - it was not pleasant at times.....2
Severely – it bothered me a lot 3
DK 7
Refused 8

15. Difficulty breathing

Not At All 0
Mildly but it did not bother me much 1
Moderately - it was not pleasant at times.....2
Severely – it bothered me a lot 3
DK 7
Refused 8

16. Fear of dying

Not At All 0
Mildly but it did not bother me much 1
Moderately - it was not pleasant at times.....2
Severely – it bothered me a lot 3
DK 7
Refused 8

17. Scared

Not At All 0
Mildly but it did not bother me much 1
Moderately - it was not pleasant at times.....2
Severely – it bothered me a lot 3
DK 7
Refused 8

18. Indigestion or discomfort in abdomen

Not At All 0
Mildly but it did not bother me much 1
Moderately - it was not pleasant at times.....2
Severely – it bothered me a lot 3
DK 7
Refused 8

19. Faint

Not At All 0
Mildly but it did not bother me much 1
Moderately - it was not pleasant at times.....2
Severely – it bothered me a lot 3
DK 7
Refused 8

20. Face flushed

Not At All 0
Mildly but it did not bother me much 1
Moderately - it was not pleasant at times.....2
Severely – it bothered me a lot 3
DK 7
Refused 8

21. Sweating (not due to heat)

Not At All 0
Mildly but it did not bother me much 1
Moderately - it was not pleasant at times.....2
Severely – it bothered me a lot 3
DK 7
Refused 8

22. Is there anything else that you feel or think about that is bothering you?

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