

**PREVALENCE OF DEPRESSION AND SUICIDAL IDEATION AND
ASSOCIATED RISK FACTORS IN ADOLESCENTS RECEIVING CARE
AND TREATMENT FOR HIV/AIDS AT A TERTIARY HEALTH
FACILITY IN KILIMANJARO REGION, TANZANIA**

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**By
Editruda Gamassa**

**A Dissertation Submitted in (Partial) Fulfillment of the Requirements for the Degree of
Masters of Medicine in Psychiatry of**

**Muhimbili University of Health and Allied Sciences
October, 2021**

CERTIFICATION

The undersigned certifies that she has read and hereby recommends for examination by Muhimbili University of Health and Allied Science a dissertation entitled; **“Prevalence of depression and suicidal ideation and associated risk factors in adolescents receiving care and treatment for HIV/AIDS at a tertiary facility in Kilimanjaro Region, Tanzania.** in (partial) fulfillment of the requirements for the degree of Masters of Medicine (Psychiatry and Mental Health) of Muhimbili University of Health and Allied Sciences

Dr. Ester Steven Mzilangwe MD, Mmed,
(Supervisor)

Date

DECLARATION AND COPYRIGHT

I, **Editruda Gamassa**, declare that this **dissertation** is my original work and that it has not been presented and will not be presented at any other university for a similar or any other degree award.

Signature **Date**

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DEDICATION

This work is dedicated to my father Mr Deo-gratias Gamassa, my sister Evelyne and my brothers Emmanuel and Ezekiel.

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LIST OF ABBREVIATIONS

AIDS	–	Acquired Immunodeficiency Syndrome
AWHIV	–	Adolescents with HIV/AIDS
ART	–	Anti-Retroviral Therapy
HIV	–	Human Immunodeficiency Virus
KCMC	–	Kilimanjaro Christian Medical Centre
MUHAS	–	Muhimbili University of Health and Allied Science
PLWHA	–	People Living With HIV/AIDS
SSA	–	Sub-Saharan Africa
TACAIDS	–	Tanzania Commission for AIDS
WHO	–	World Health Organization

DEFINITION OF TERMS

Depression- This is a common and severe mental illness that negatively affects how one feels, thinks and behaves. Depression causes feelings of sadness and a loss of interest in activities that one previously enjoyed. It can lead to various emotional and physical problems and can negatively impact one's ability to carry out activities at work and home(Beevers, 1968)

HIV- related stigma - The negative beliefs, feelings, and attitudes that are directed towards people living with HIV (UNAIDS, 2014).

Suicidal ideation - These are thoughts of engaging oneself in acts or behaviors intended to end one's life; including wishes to kill oneself and may lead to making plans of when, where and how to carry out the act. (Nock et al., 2008)

Social support- Broad construct that includes the sources of support, this includes who in the social network provides support, the types of support provided (emotional, informational or advice, or materialistic support), and one's satisfaction with the support they received (Vyavaharkaret *al.*, 2007) .

Hope –is the state of believing life to be worth living at the present and in the future (Kylmä et al., 2001)

ABSTRACT

Background: The HIV/AIDS pandemic is a significant health concern worldwide since the first case emerged in the early 1980's. Most of the HIV disease burden is in Sub Saharan Africa (SSA). Depression and suicidal ideation have been found to be higher among people living with HIV/AIDS (PLWHA) than persons not infected with HIV. Adolescents living with HIV/AIDS (ALWH) are more at risk of suffering from depression and suicidal ideation than their unaffected peers. Several factors such as social demographics, poor social support, clinical and other contextual factors such as HIV related stigma have been found to be significantly associated with depression and suicidal ideation among adolescents living with HIV/AIDS. Moreover, depression and suicidal ideation may lead to poor ART adherence, lower viral load suppression and development of opportunistic infections. Screening and treatment of mental disorders may improve the health and quality of life of ALWH. Few studies have evaluated the mental health of ALWH in SSA. However, these studies do not provide information on the magnitude of suicidality among this population subgroup despite them being at high risk.

Objective: -The aim of the study is to determine the prevalence of depression and suicidal ideation and explore associated risk factors in adolescents receiving care and treatment for HIV/AIDS at a tertiary health facility in Kilimanjaro region, Tanzania.

Materials and methods: - A hospital based cross-sectional analytical study using quantitative approach was conducted. Adolescents receiving care and treatment for HIV/AIDS in a youth clinic at Kilimanjaro Christian Medical Centre (KCMC) were sampled. Data collection on depression was done using Patient Health Questionnaire for Adolescents (PHQ-A) a screening instrument that is used to screen for probable depression in adolescents henceforth referred for diagnosis. A semi-structured questionnaire captured the socio-demographic and clinical information characteristics of the participants, also included a short version of the HIV Stigma Scale measured HIV related stigma, a social support measure (Multidimensional Perceived Social Support Scale (MSPSS)) and a locally developed Hope Scale assessed hopefulness. Captured data were analyzed using SPSS version 23; Frequency distributions described the

participants' sociodemographic characteristics. Chi-Square test established the univariate association between the independent and the dependent variables. While analysis to identify independent risk factors of suicidality and depression used a multivariate logistic regression model. Associated risk factors and the strengths of association are summarized using odds ratios (ORs) and 95% confidence intervals. Ethical clearance was obtained from MUHAS Senate Research and Publications Committee and permission sought from the administration of KCMC.

Results: A total 170 adolescents were studied, 96 (56.5%) were females while 74 (43.5%) were males. Mean age (standard deviation) of participants was 15.06 (2.2) years. The prevalence of depression was 15.9% and that of suicidal ideation was 31.2%. Based on univariate analysis relatively high levels of HIV related stigma and lower levels of hope were significantly associated with depression and suicidal ideation. From multivariable analyses adolescents with low levels of hope were 9.2 times more likely to develop depression compared to those with high levels of hope (OR, 9.21, 95% CI: 2.16-39.32). Participants who experienced high level of HIV related stigma were 2.7 times more likely to have suicidal ideation compared to those with low levels (OR, 2.7, 95% CI: 1.01-7.37). Furthermore participants with low levels of hope were also 3.8 times more likely to have suicidal ideation compared to those with high levels (OR, 3.84, 95% CI: 1.50-9.84).

Conclusion and recommendation: This study reveals depression and suicidal ideation among adolescents living with HIV to be 16% and 31% respectively. High levels of stigma and low hope were identified as risk factors.

I recommend further studies to be done to evaluate mental health of adolescents living with HIV and integration of mental health services in the clinic providing services for these adolescents.

1.0 INTRODUCTION

1.1 Background

Human Immunodeficiency Virus (HIV) and its related disorders constitute a global health threat and continue to pose a public health challenge. For-example it is estimated that 37.9 million people globally, are living with HIV. Among this population, 1.6million are adolescents between the ages of 10- 19 years. Eighty nine percent of the adolescents with HIV reside in SSA(United Nation, 2018).

The prevalence of HIV infection in Tanzania is 5.7%. Approximately 81,000 adolescents were living with HIV in Tanzania in 2016(TACAIDS, 2018).Adolescents may acquire HIV through mother-to-child transmission or behaviorally(Idele et al., 2014).Mother-to-child transmission of HIV accounts for 18% of new HIV infections(United Nation, 2018). HIV infection has an adverse effect on the mental health of an individual due to the direct effect to the brain causing neurocognitive changes as well as the indirect effects of the psychological distress of living with a chronic illness that impacts self-care practices(Breuer et al., 2011).

Depressive disorders are reported in approximately 4.4% of the world's population and depression is estimated to be the largest contributor to disability (WHO, 2017). According to WHO, depression is the third leading cause of disability and illness among adolescents aged between 15- 19 years (WHO, 2017). Adolescents are at high risk of depressive disorders as a result of physiological and psychological changes they undergo during this developmental period. The prevalence of depression among adolescents ranges from 3% - 4% with the highest prevalence rates among females (WHO, 2017). Depression in children to adolescent is characterized by persistent, impairing sadness, anhedonia and irritability; mood changes that are relatively unresponsive to pleasurable activities and interactions or attention from other people (Rutter's Child and Adolescent Psychiatry Sixth Edition).

Several studies have shown the overall prevalence of mental disorders among HIV positive adolescents to range between 9.6% to 22% which is higher than in HIV negative adolescents (Pao et al., 2016). Due to the availability and use of ART, HIV positive adolescents have improved in their survival rate and develop into adulthood that predispose them to biomedical, genetic, familial, economic, and social or environmental factors that also increase their risk for developing mental disorders (Vreeman et al., 2017). The odds of depressive disorder is almost two folds higher among adolescents living with HIV compared to their HIV- unaffected peers (Betancourt et al., 2014).

Various factors have been associated with depression in adolescents living with HIV. Factors such as HIV related stigma and discrimination, child abuse, poor social support, orphan-hood, poor adherence to ART, ART side effects and history of opportunistic infections have been highly associated with increased prevalence of depression among this age group (Abebe et al., 2019; Bankole et al., 2017; Boyes et al., 2018; Vreeman et al., 2017)

Globally approximately 800,000 people die from suicide in every year, 79% of the suicides occur in low and middle income countries where most of the world's population reside (Fleischmann, 2019). Suicide is the second leading cause of death among youths aged 15 – 29 years whereby approximately 223,000 of youths die of suicide in the world (WHO, 2020).

Suicide ideation are thoughts of engaging oneself in acts or behaviors intended to end one's life, including wishes to kill oneself and may lead to making plans of when, where and how to carry out the act. (Nock et al., 2008). ALHA have increased risk of suicidal ideation compared to the unaffected population, this has been linked with the psychological distress they endure due to biological effect of HIV on the brain or/and the stress of living with a chronic illness that may impair personality development and function (Ishrat Rizwan* and Erum Irshad, 2015; Schlebusch & Govender, 2015).

Various risk factors have been associated with suicidal ideation, including socio- demographics, parental psychopathology, childhood adversities, respondent history of past suicidal behaviors, poor levels of personality functioning and history of mental disorder (Borges et al., 2010). For PLWHA social isolation, perceived lack of social support, adjustment disorder, personality disorders, alcohol abuse, HIV-related interpersonal problems and past history of depression are the definitive factors associated with suicidality (Rundell et al., 1992).

Depression and suicidal ideations in adolescents living with HIV have been associated with poor ART adherence, high viral load and low CD4 counts, development of opportunistic infections and increased mortality (Hudelson & Cluver, 2015; Pence et al., 2018) It is important to screen for and treat mental health disorders among individuals living with HIV, as this will help in reducing morbidity as well as enhancing quality of life. There are various screening tools and treatment methods which have been validated to be used and proved to be effective (Remien et al., 2019).

Several interventions have been done to enhance the mental wellbeing of adolescents living with HIV, such interventions include peer groups, enhancing social support and educating communities about mental health (Dow et al., 2019; Ramaiya et al., 2016). Tools such as the Patient Health Questionnaire-9 and Children Depression Inventory have been validated to be used for screening for depression in our setting (Smith et al., 2019; Traube et al., 2010)

There are few studies done in Tanzania to evaluate the mental health of adolescents living with HIV. (Ramaiya et al., 2016) explored qualitatively the mental health and psychosocial contexts of adolescents infected with HIV, of which psychosocial challenges such as loss of parent, financial constraints and chronic domestic abuse were highly experienced by the adolescents. (Dow et al., 2016) revealed that adolescents living with HIV had high prevalences of depression, anxiety and post-traumatic stress disorder (PTSD) as well as incomplete adherence and stigma as factors associated with the mental disorders. All these studies did not give information on the rate of suicidality among this population despite their probable high risk suicidality.

1.2 Problem Statement

For a long period of time, Tanzania has been one of the countries in SSA with high prevalence of HIV infection among adolescents and youth. (United Nation, 2018). Government initiated measures to curb the transmission of HIV and improve the quality of life for adolescents living with HIV/AIDS. This includes programs to oversee PMTCT, continuous education to communities, distribution and availability of ART (TACAIDS, 2018). The Prevalence of HIV/AIDS ranges from 2% - 9% among children and adolescents aged >15- 19 years of age (TACAIDS, 2018)

Furthermore, adolescents living with HIV/AIDS have shown to have high rates of mental health challenges such as depression compared to their unaffected peers (Dow et al., 2016; Masese et al., 2019). Suicidal ideation and tendencies have also been found to prevail among adolescents living with HIV/AIDS (Adeyemo et al., 2019; Casale et al., 2019; Wonde et al., 2019). Psychosocial distress such as poor social support and HIV related stigma in adolescents are factors contributing to the development of depression and suicidality (Mutumba et al., 2015; Toth et al., 2018). Depression and suicidal ideation have a negative impact on the lives of people living with HIV; including high risk of poor medication and treatment adherence hence accelerating the progression of HIV to AIDS and leading to poor clinical outcome (Siril et al., 2020).

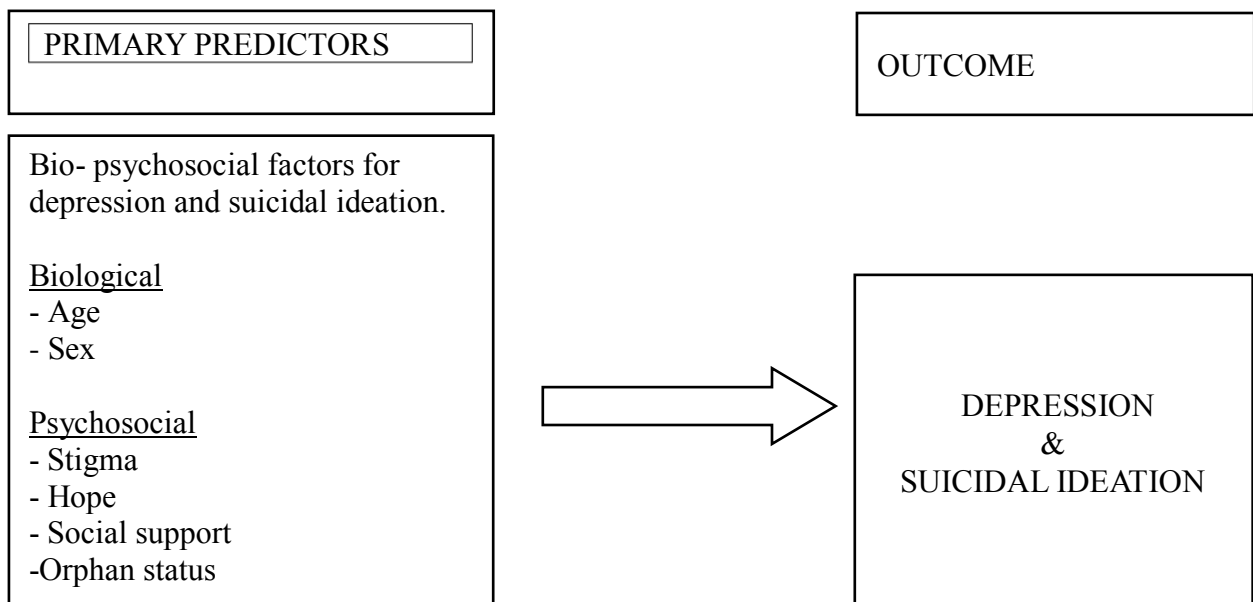
Limited studies have been done in Tanzania to estimate the prevalence of depression and suicidal ideation among adolescents living with HIV. Therefore this study aims at estimating the prevalence of depression and suicidal ideation and associated factors among adolescents living with HIV and receiving care at KCMC.

1.3 Conceptual Framework

The biopsychosocial model has been used and studied for many years by various scientists and clinicians. George Engel first proposed it. The biopsychosocial theory considers that biological, psychological and social factors play a role in the understanding of health, diseases and management of the diseases (Epstein et al., 2004). The model suggests that occurrence of an illness is influenced by an individual's biological, psychological and social context.. HIV/AIDS being a chronic disease affects an individual's social, psychological and physical aspects of life. And hence negatively affecting mental health status (Kodali, 2018).

Based on this model, the researcher investigated the prevalence of depression and suicidal ideation and factors associated with depression and suicidal ideation among adolescents infected with HIV. With reference to the literature review, exploring depression and suicidal ideation and associated risk factors using a framework that captures biological, psychological and social predicaments of ALHA can advance knowledge on areas of focus for prevention and treatment in Tanzania. This study will focus on the biological and psychosocial factors associated with the clinical outcome of depression and suicidal ideation among ALHA as summarized in Figure 1.

Figure 1: Adapted bio psychosocial model showing factors associated with depression and suicidal ideation.



The purpose of this study is to determine the prevalence of depression and suicidal ideation among adolescents living with HIV/AIDS receiving care at KCMC and to find out the factors associated with depression and suicidal ideation among this population.

The findings obtained from this study, will inform healthcare providers on the magnitude of the problem, the importance of early screening and management of depression and suicidal ideation among adolescents living with HIV/AIDS and potential risk factors to target in preventive interventions.

The study is also for partial fulfillment of the requirements for the Master of Medicine Degree in Psychiatry.

1.5 Research Questions

1. What is the prevalence of depression and suicidal ideation among adolescents receiving care and treatment for HIV/AIDS at KCMC?
2. What are the risk factors associated with depression and suicidal ideation among adolescents receiving care and treatment for HIV/AIDS at KCMC?

1.6 Objectives

1.6.1 Broad Objective

To determine the prevalence of depression and suicidal ideation and associated risk factors in adolescents receiving care and treatment for HIV/AIDS at a tertiary health facility in Kilimanjaro Region, Tanzania.

1.6.2 Specific Objectives

1. To determine the prevalence of depression in adolescents receiving care and treatment for HIV/AIDS at a tertiary health facility in Kilimanjaro Region, Tanzania
2. To determine the prevalence of suicidal ideation in adolescents receiving care and treatment for HIV/AIDS at a tertiary health facility in Kilimanjaro Region, Tanzania.
3. To determine risk and protective factors associated with depression in adolescents receiving care and treatment for HIV/AIDS at a tertiary health facility in Kilimanjaro Region, Tanzania.
4. To determine risk and protective factors associated with suicidal ideation in adolescents receiving care and treatment for HIV/AIDS at a tertiary health facility in Kilimanjaro Region, Tanzania

2.0 LITERATURE REVIEW

2.1 Prevalence of depression among HIV infected adolescents

Adolescence is considered to be a vulnerable age period of an individual, most mental disorder are first diagnosed during this developmental period and are associated with poor physical and mental health outcomes during adulthood (Patel et al., 2007). Various studies have shown that there is an increased rate of depression among HIV infected adolescents compared to the general adolescent population (Pao et al., 2016). Studies done in the US showed that the prevalence of depression among adolescents infected with HIV ranged between 21.4% to 68% (Chenneville et al., 2019; Pao et al., 2016). Study done in northern Thailand showed the prevalence of depression among HIV infected adolescents to be 27.8% although this was lower compared to the unaffected group (Lee et al., 2011).

Sub-Saharan Africa accounts for the majority of the world's population of HIV infected adolescents, however few studies have been done to evaluate the magnitude of depression among this affected group. Studies done in South Africa, Ethiopia and Kenya showed prevalence of depressive symptoms among adolescents living with HIV/AIDS to range between 7.6% to 48.8% (Abebe et al., 2019; Kamau et al., 2014; West et al., 2019). The variations in prevalence from study to study may reflect a variety of factors such as social demographic differences, variation in HIV clinical stage, differences in methodological approaches and even other country differences .

A Tanzanian cross- sectional study in Moshi, Kilimanjaro, that evaluated the mental difficulties and associated outcomes among HIV positive adolescents, used the PHQ-9 to assess for depression; 12.1% of adolescents had scores 10 or greater on the scale (Dow et al., 2016).

Studies show that being HIV positive predisposes an individual to suffer from depression; and that depression leads to poor outcomes in adolescents living with HIV. Hence it is important to screen for and manage depression in this age group of ALHA so as to improve quality of life.

2.2 Prevalence of suicidal ideation among HIV infected adolescents.

Globally the prevalence of suicidal ideation is higher in adolescents compared to the general population. A Canadian study showed the prevalence of suicidality (suicidal ideation and attempt) in adolescents to be 13.5% while a study done in 59 low and middle income countries showed the prevalence of suicidal ideation to be 16.9% with the highest pooled prevalence being in Africa (Cheung & Dewa, 2006; Uddin et al., 2019)

Being HIV positive is psychologically distressful, predisposing an individual to feelings of sorrowfulness, hopelessness, guilt, grief and despair. It is not surprising that hence due to the distress associated with HIV, individuals may suffer from suicidal ideation. (Ishrat Rizwan and Erum Irshad, 2015). A study done in Washington to investigate prevalence of psychiatric disorders among adolescents seropositive for HIV showed that 29% of the adolescents studied had attempted suicide whereby the same amount were admitted due to the same action (Pao et al., 2016). A case control study done in Thailand to assess depression among vertically HIV infected adolescents showed the prevalence of suicide contemplation to be 9.7% in the cases (Lee et al., 2011). A retrospective study by (Walsh et al., 2017) to screen for depression among youth with HIV showed higher rates of suicidal ideation and suicide attempt than youths who acquired HIV perinatally.

Several studies have been done in SSA to establish the magnitude of suicidal ideation among adolescents infected with HIV. In Addis Ababa, Ethiopia, a study to evaluate the magnitude of suicidal ideation and associated factors among youths aged 15-19 years found the prevalence of suicide ideation to be 27.1% (Wonde et al., 2019). Another study in Nigeria showed the lifetime prevalence of suicidal ideation to be 33.3% (Adeyemo et al., 2019). In South Africa (Woollett et al., 2017) showed the prevalence of suicidal ideation among adolescents living with HIV to be 24%. In Kenya, a cross-sectional study showed the magnitude of suicidality to be 18% with the risk increasing by age whereby the youngest age group had prevalence of 4.5% and the older group had prevalence of 25% (Kamau et al., 2014.) There have been few studies in Tanzania to determine depressive disorder and suicidality among adolescents living with HIV, however none have explored suicidality among this age group.

2.3 Factors associated with depression and suicidal ideation

Several factors have been associated with development of depression among adolescents living with HIV. They include socio-demographic factors, psychosocial factors and clinical characteristics (Kodali, 2018)

2.3.1 Social demographic factors: Several demographic factors have been found from research to be associated with depression among adolescents living with HIV. From these studies, gender, orphan status, age and education status have been significantly associated with the development of mental disorders such as depression among this age group (Lee et al., 2011; West et al., 2019; Woollett et al., 2017)

Several studies have concluded that female gender is highly associated with suffering from depression or suicidal ideation among adolescents (Vreeman et al., 2017). Similarly in studies identifying mental disorders risk factors among adolescents infected with HIV in South Africa and Ethiopia, findings showed females had significantly higher scores of depression than males (Woollett et al., 2017); and the magnitude of suicidal ideation was higher among female compared to male adolescents living with HIV (Wonde et al., 2019). Another study in Nigeria to evaluate prevalence and psychosocial correlates of suicidal ideation among adolescents living with HIV showed that females had higher rates of suicidal ideation than males and this may be due to the females tendency of internalizing stressful events (Adeyemo et al., 2019). However there are studies which showed no significant difference in depressive symptoms or suicidal ideation among the genders (Kamau et al., 2014).

2.3.2 Orphan status: Being an orphan increases vulnerability for suffering mental disorder, that is thought to be mediated by psychological distress and impaired social support (Boyes et al., 2018; Maria et al., 2016).

A systematic review of studies done in SSA showed that children orphaned due to HIV/AIDS had higher prevalence of depression compared to non-orphaned children (Breuer et al., 2011). Similarly (Bankole et al., 2017) in South-South Nigeria showed that adolescents who were orphaned were more likely to experience depression than non-orphan, with higher prevalence among those who lost both compared with one parent. In South Africa, a cross-sectional study evaluating the mental health of adolescents living with HIV showed orphan-hood, poor social support and being fully aware of ones HIV status were significantly associated with depression and anxiety (West et al., 2019).

2.3.3 Social support: High levels of social support are shown to contribute to overall stress buffering hence moderating the effects of stigma in adolescents living with HIV (Casale et al., 2019). Several studies in high income countries show that higher social support is also significantly associated with less depression and suicidal ideation (Kalichman et al., 2000; Wang et al., 2018). Similarly (West et al., 2019) when measuring mental disorders in South African adolescents living with HIV show, adolescents with higher levels of social support were less likely to suffer from depression. This is similar to the study in Ethiopia showed that HIV positive adolescents with low and moderate social support were 1.5 times likely to develop depressive symptoms compared to those with strong social support (Abebe et al., 2019).

Willis et al, show that a family and peer led intervention enhances support among adolescents living with HIV and thus may be useful in the prevention and management of depression. (Willis et al., 2018)

2.3.4 HIV related stigma: HIV related stigma is defined as discrimination and prejudice toward individuals perceived to have HIV or AIDS (Wang et al., 2018). Due to the negative effects of HIV related stigma, PLWHV are at high risk of suffering from mental health disorders such as depression and anxiety (Kinyanda et al., 2012; Kodali, 2018). Several studies have shown that adolescents facing internalized HIV stigma have high rate of depression and suicidal ideation (Ashaba et al., 2018; Casale et al., 2019; Vreeman et al., 2017). Studies done in Ethiopia showed that HIV related stigma was significantly associated with depressive symptoms and suicidal ideation among youths infected with HIV (Abebe et al., 2019; Wonde et al., 2019). Case control study done in Rwanda to compare mental health of adolescents infected with HIV and those unaffected showed that HIV infected adolescents faced higher rate of stigma than the unaffected group and hence increased their risk of depression and other mental health challenges (Betancourt et al., 2014). Another study done in Cape Town South Africa showed that internalized stigma faced by adolescents was highly associated with depression (Boyes et al., 2018). A study done in Tanzania by (Dow et al., 2016) showed that HIV related stigma was associated with mental health challenges faced by adolescents living with HIV and also incomplete adherence to ART.

2.3.5 Hopefulness: Hope can be described as believing life to be worth living at the present and in the future (Kylmä et al., 2001). Hope is associated with HIV as a psychological factor, it may affect the treatment and care of individuals living with HIV and quality of life (Abler et al., 2017). Feeling of hopelessness was found to be associated with depression and increased risk of suicidal behavior (Schlebusch & Govender, 2015). Studies done high income countries show hope is significantly associated with perceived social support by PLWH and correlated with quality of life (Kylmä et al., 2001; Yadav, 2010). Studies done in SSA among PLWH show that feelings of hopelessness predisposed individuals to mental disorders such as depression, anxiety and suicidality (Abler et al., 2017; Siril et al., 2020). Few studies assessed hopefulness among adolescents living with HIV.

A study done in Zimbabwe to understand manifestation and experience of depression among ALWH described feeling hopeless as distress experience due to living with HIV/AIDS (Willis et al., 2018).

These factors affecting adolescents biologically, psychologically and socially; and may compromise young persons' coping ability and risk to develop mental disorders. Mental disorder challenge adaptive coping and illness self-management skills that may worsen HIV/AIDS progression and health related quality of life. Assessment of such factors will offer pathways for intervention, enhance adherence to treatment and medication and improve quality of life.

3.0 METHODOLOGY

3.1 Study design

This was a hospital based cross-sectional study that utilized quantitative methods to assess the prevalence of depression and suicidal ideation among adolescents living with HIV receiving care at KCMC. In quantitative research methods research questions are generated, reviewing related literature and analysis of data using mathematical methods (Apuke, 2017). The study had proposed four main independent variables (HIV related stigma, hope, social support and demographic factors) and two dependent variables (depression and suicidal Ideation).

3.2 Study area

The study was conducted at KCMC, a tertiary referral hospital in Tanzania located on the foothills of Mt Kilimanjaro and serving more than 15 million people in Northern Tanzania. KCMC has three dedicated HIV clinics, namely Care and Treatment Clinic (CTC), Child-Centered Family Care Clinic (CCFCC), Infectious Disease Clinic (IDC). Approximately 800 patients receive care and treatment in these clinics. This study was conducted at the CCFCC, a HIV-youth-focused clinic that is specialized for providing care and treatment to adolescents and youths living with HIV/AIDS. The clinic is held once a month on the last Saturday of the month and attends to more than 100 adolescents/youths.

3.3 Study population

The study population included the adolescents receiving care at the CCFCC. Data was collected from adolescents who provided assent and also consent from parents.

3.4 Sample selection criteria

3.4.1 Inclusion criteria

1. Adolescents living with HIV aged between 10 – 19 years receiving care at KCMC
2. Consented to participate in the study as follow
 - a. Adolescents aged 10 to 17 who gave assent to participate in the study and followed by their parental/guardians consent
 - b. Adolescents aged 18 and 19 able to provide consent

3.4.2 Exclusion criteria

1. Adolescents with serious mental illness such as severe intellectual disability, acute/chronic confusion state, agitation/aggressiveness hence unable to give consent or reliable information due to their mental status.
2. Adolescents who were physically unable to participate

3.4 Sample size calculation

Formula for calculation of sample size was derived from (Sullivan & Dean, 2009), researcher used prevalence rate from another study and applied the formula to calculate the sample size. The prevalence of depression among HIV- positive adolescents was taken from a study done in Tanzania by (Dow et al., 2016)

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

Whereby:

N= estimated sample size

Z= confidence level at 95% (standard value of 1.96)

P= prevalence of depression among HIV- positive adolescents was 12.1% by Tanzanian study by (Dow et al., 2016)

d= Margin of error at 5%

Hence, according to the formula above

N= 163

Adjusting for non-response and finite population size, we added 10% of the estimated sample size, hence $N \approx 179$.

3.5 Recruitment and Data collection procedure

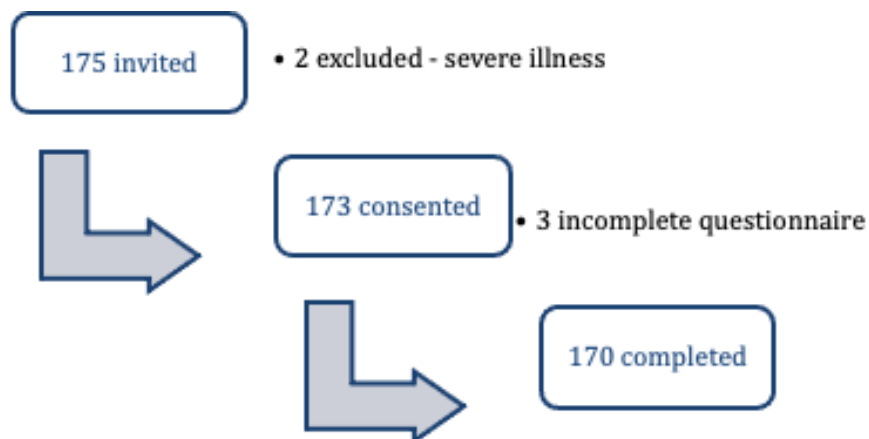
Consecutive sampling technique was used to recruit the participants. In this technique participants are recruited based on their expressed interest to participate and consenting and once the total number of participants or the time limit is reached, the sampling comes to an end (Martínez-Mesa et al., 2016).

Sampling and data collection was done on the same day by the PI and two research assistants. The two RA included a medical doctor from the department of Psychiatry and a Nursing officer attending adolescents at the clinic. Both research assistants received a two days training. They were trained on the objective of the study, details of the data collection tool (questionnaire) and research ethics.

Participants assent and consenting procedures: - information about the study and ethical clearance was submitted to the administration of KCMC for permission to conduct the study. Participants who were interested and assented to participate were given the consent form with study information to give their parents.

Data collection procedures: - all participants who were given information about the study and had assented to participate were given the questionnaire to fill with the assistance from the research assistants.

Figure 2: Recruitment of participants



3.5 Variables

The independent variables

1. Socio demographic factors
2. HIV related stigma
3. Social support
4. Clinical factors

The dependent variables

Depression

Suicidal ideation

3.6 Data collection tools

The tools used are quantitative in nature and will be translated to Kiswahili. All the tools were interviewer administered and administered by the PI and RA. The tools (Socio Demographic Questionnaire, PHQ 9- A, HIV stigma scale, Multidimensional Perceived Social Support Scale (MSPSS) and Hope scale) were compiled into one research document.

1. Semi structured questionnaire

Socio-demographic characteristics including age, gender, orphan status, level of education, were measured with the use of a Standard Demographic Characteristics Questionnaire. This questionnaire was developed by the researcher based on a compilation of the factors that have been associated with depression and suicidal ideation in HIV infected adolescents in previous studies

2. Patient Health Questionnaire 9 Adolescent version (PHQ-A)

In this study depression is characterized by the presence and severity of depressive symptoms, measured by the Patient Health Questionnaire 9 Adolescent version (PHQ-A). It is a 9 items depression scale derived from the PHQ-9. The sum scores from the scale range from 0 to 27, with five severity categories; minimal (0–4), mild (5–9), moderate (10–14), moderately severe (15–19) and severe (20–27)(Johnson et al., 2002). The scale has been found to be valid and reliable to detection and recognition of depression among adolescents through a validation study done by (Johnson et al., 2002). However, locally valid cut off scores for depression have not yet been reported with the PHQ-A.

HIV Stigma Scale

HIV related stigma was assessed using a short version of the HIV Stigma Scale by Berger. It assesses internalized stigma, consisting of four subscales intended to measure personalized stigma, disclosure concerns, concerns with public attitudes and negative self-image (Reinius et al., 2017). The short version has 12 items taken from each of the four subscales of the longer scale and was tested and validated in a survey in Sweden by(Reinius et al., 2017), the longer scale has been used worldwide and in Sub Saharan Africa. Cronbach's α for the short 12 item HIV Stigma Scale after the final combination of items for the subscales were all above 0.7 and was considered acceptable(Reinius et al., 2017).The scale is measured on a 4 point Likert scale ranging from (strongly disagree, disagree, agree, and strongly agree). Higher sum scores on the scale indicate higher levels of stigma.

3. Multidimensional Scale for Perceived Social Support Scale (MSPSS)

Perceived Social support was measure by the Multidimensional Perceived Social Support Scale (MSPSS). The scale has 12 items with questions divided into 3 domains (significant other, family and friends) scored on a Likert scale from 1 to 7 (Very Strongly Disagree, Strongly Disagree, Mildly Disagree, Neutral, Mildly Agree, Strongly Agree, Very Strongly Agree. High mean scores indicate high social support(Zimet et al., 1988). The tool has been used and validated in some studies in Sub Saharan Africa (Dambi et al., 2014).

4. Hope scale

Hopefulness was assessed by using a Local hope scale that was developed and validated for use in Tanzania (Siril et al., 2020). It is a self-administered twenty items tool that has been used in assessment of hope in people living with HIV/AIDS in Tanzania with good internal variability of 0.958 Cronbach's alpha (Siril et al., 2020). Each item is scored as 1, 2, 3 and 4 representing definitely false, somewhat false, somewhat true and definitely true respectively. Total scores range from 20 to 80, with levels of hopefulness increasing as the score increase.

3.7 Data analysis

Data entry and analysis was be done by the PI, data cleaning was done to ensure quality and consistent. The collected data was entered into the computer and analyzed by utilizing the Statistical Package for Social Science (SPSS) for Mac version 23.

Univariate analysis using descriptive statistics is presented in tables using frequencies and ranges for each variable studied.

Bivariate analysis was done to assess the association between variables in which Chi-Square (χ^2) of 1.96 and Pearson value (p) of 0.05 was used as cut off points to check the level of significance between the outcomes of interest (depression and suicidal ideation) and associated factors. The respective 95% confidence intervals were determined and p-value equal or less than 0.05 was considered statistically significant.

Multivariate analysis using a backward logistic regression model was used on bivariate variables with p-values of less than 0.20 in order to adjust for confounders and hence determine the strengths of association between depression and suicidal ideation and the assessed risk factors with the use of odds ratio and 95% confidence intervals.

3.8 Ethical issues

Ethical clearance to conduct this study was sought and granted from MUHAS Senate Research and Publications Committee. Permission to conduct the study at the study site was granted by the KCMC administration.

Consent and Assent: All participation was voluntary, meaning participants had autonomy to participate or not without any consequences related to care and treatment. They were also advised to respond to questions according to their own comfort level. All participants were informed prior to participating in data collection that they had the right to withdraw from the study at any time or refuse to answer any questions.

Participant assent was written and was done in a setting where confidentiality was ensured. A passive parental consent approach involved a parent information letter that had important information such as the purpose of the study, procedures, risks, benefits, contact information for questions, and an explanation of the voluntary nature of the study. All assenting young adolescents were given the information sheet to give to their parents. Parents were only required to return the consent form in the event they declined their adolescents participating in the study.

Confidentiality: In order to maintain confidentiality of the data, no identifying information kept or attached to the questionnaires. Data was kept in a secure place of which only the PI had access. Data will be kept for three years before being destroyed in case there is a need for audit purposes.

Participants were explicitly informed that there was no financial gain for participation in the study. However, the study team gave a brief psycho-education of symptoms of depression and suicidal ideation and its link to HIV/AIDS. They also received information provided a link to mental health care services.

Contacts of the PI, supervisor and director of research and publication committee from MUHAS were given to participants in case of any concerns or complaints.

Adverse event and social harm: The anticipated minimal risks were those that could be associated with psychosocial distress secondary to reflecting on past experience related to stigma, depression and suicidal ideation. However there was no any participants who became severely distressed to necessitate stopping the interview or referral to the mental health department.

4.0 RESULTS

4.1 Socio demographic and psychosocial characteristics of the participants

A total of 170 adolescents were eligible, assented and their parents/guardians consented for participation in the study. Data from 170 (100%) participants who participated in the study were complete and used in those analyses. Female adolescents constituted 56.5% (96) of all adolescents as summarized in Table 1. The age range was between 10 – 19 with the mean age of 15.06 years. More than half of the participants belonged in the late age group 60.6% (103) while the rest 39.4% (67) being in the early age group. Most adolescents were still enrolled to school 94.1% (160) of which 61.2% (104) had secondary school education and 29.4% (29) primary education. Fewer than half of the adolescents 38.2% (65) lived with a single parent while 14.7% (25) were double orphans.

Participants were also assessed for psychological factors that can influence the presence of depression in adolescents living with HIV. Of all the participants, 25.9%(44) experienced high level of HIV related stigma whereby the rest equally experienced low or moderate level 37.1%(63). Majority of the adolescents had moderate perceived social support 54.1%(92) followed by high-perceived social support 37.1%(63) while only 8.8%(15) had low level of perceived social support. Hope was another psychological component assessed whereby moderate level of hope was observed in 34.7%(59) of the participants followed by high level of hope of which 33.5%(57) and 31.8%(54) had low level of hope.

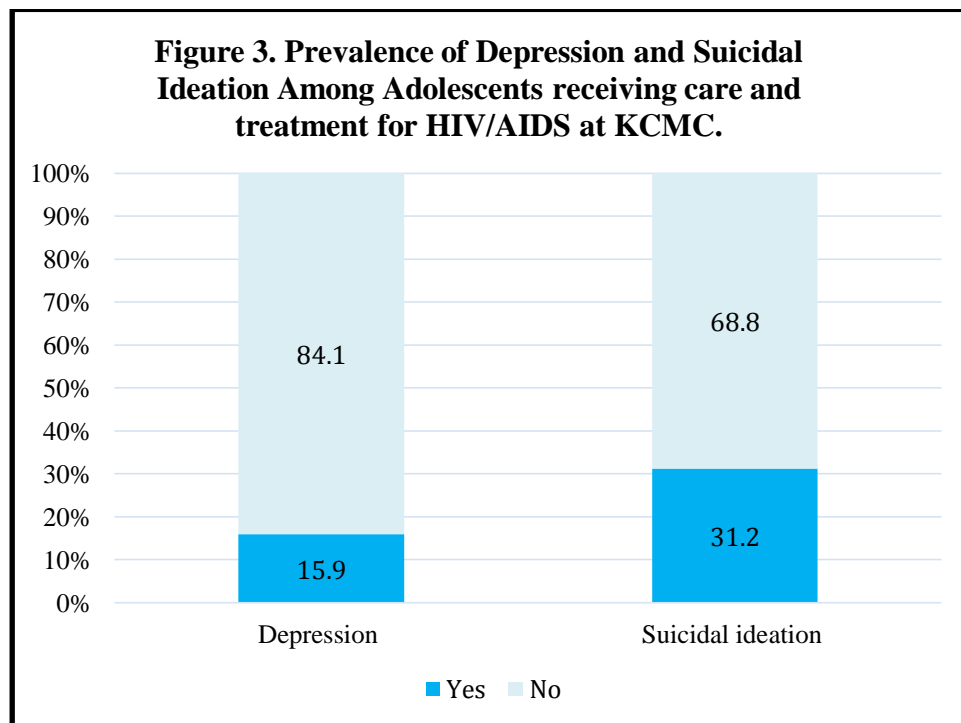
Table 1: Socio-demographic and psychosocial characteristics of adolescents receiving care and treatment for HIV/AIDS at KCMC.

Item	N	%
Age		
10- 14	67	39.4
15-19	103	60.6
Sex		
Male	74	43.5
Female	96	56.5
Level of education		
Never enrolled	1	0.6
Primary school	50	29.4
Secondary school	104	61.2
College/university	15	8.8
Orphan status		
No	80	47.1
Both parents	25	14.7
One parent	65	38.2
HIV related stigma		
Low	63	37.1
Moderate	63	37.1
High	44	25.9
Social support		
Low	15	8.8
Moderate	92	54.1
High	63	37.1
Hopefulness		
Low	54	31.8
Moderate	59	34.7
High	57	33.5

4.2 Prevalence of Depression and Suicidal Ideation

According to the PHQ-A scores; and using 5 as the cut-off point for probable depression. Of which, 15.9% (27) of participants had depression, while the rest 84.1% (143) did not have depression as summarized in Figure 3. This was then categorized into severity scores of which 5.9% (10) had mild to moderate depression, 7.1% (12) had moderate to severe depression and 2.9% (5) severe depression.

Suicidal ideation was assessed using the PHQ-A. Over a course of one month 31.2% (53) of the participants had thoughts about ending their life and 14.7% (25) had lifetime attempted suicide. Whereby within two weeks on several days 24.7% (42) of participants had thoughts that they were better off dead or hurting themselves, 8.2% (14) had same thoughts for more than half the days and 0.6% (1) had same thoughts nearly every day for two weeks.



4.3 Association between social demographic and psychological factors with depression among adolescents living with HIV.

4.3.1 Bivariate analysis

Table 2 below shows factors that are associated with depression among adolescents living with depression. There was no significant association between socio demographic factors (age, sex, level of education and orphan status) of the participants and depression. However adolescents who were older were found to be more depressed 16.5% compared to the 14.9% of the younger ones (p-value 0.783). About 17% of female participants were found to be depressed while this was the case for 14.9% of males and not statistic significant (p-value 0.750). Orphan also showed an insignificant association (p-value of 0.139) with depression.

Among the psychological factors, hope showed a significant association with depression (p-value <0.0001). Participants who had low levels of hope were found to be more depressed (35.2%) compared to those with high (5.3%) and moderate (8.5%) levels of hope. Furthermore, HIV related stigma showed insignificant association with depression (p-value 0.149). For the variables with $p < 0.2$ were included in the multivariate analysis.

Table 2: Bio-psychosocial factors associated with depression among adolescents receiving care and treatment at KCMC

Variable	No depression N (%)	Depression N (%)	Total	Chi- square	P-value
Age					
10-14	57 (85.1%)	10 (14.9%)	67 (100%)	0.076	0.783
15-19	86 (83.5%)	17 (16.5%)	103 (100%)		
Sex					
Male	63 (85.1%)	11 (14.9%)	74 (100%)	0.102	0.750
Female	80 (83.3%)	16 (16.7%)	96 (100%)		
Level of education					
Primary education	46 (90.0%)	5 (10.0%)	51 (100%)	2.118	0.457*
Secondary education	85 (81.7%)	19 (18.3%)	104 (100%)		
College/ university	12 (80.0%)	3 (20.0%)	15 (100%)		
Orphan status					
Not orphan	72 (90.0%)	8 (10.0%)	80 (100%)	3.946	0.139
Both parents	20 (80.0%)	5 (20.0%)	25 (100%)		
One parent	51 (40.35)	14 (21.5%)	65 (00%)		
HIV related stigma					
Low	56 (88.9%)	7 (11.1%)	63 (100%)	3.932	0.140
Moderate	54 (85.7%)	9 (14.3%)	63 (100%)		
High	33 (75.0%)	11 (25.0%)	44 (100%)		
Social support					
Low	12 (80.0%)	3 (20.0%)	15 (100%)	1.728	0.413*
Moderate	75 (81.5%)	17 (18.5%)	92 (100%)		
High	56 (88.9%)	7 (11.1%)	63 (100%)		
Hope					
Low	35 (64.8%)	19 (35.2%)	54 (100%)	22.295	0.000*
Moderate	54 (91.5%)	5 (8.5%)	59 (100%)		
High	54 (94.7%)	3 (5.3%)	57 (100%)		

* Fisher's Exact Test

4.3.2 Multivariate analysis

A logistic multivariate analysis was performed in which socio-demographic and psychological factors that best predicted likelihood of depression and suicidal ideation among adolescent were determined. With evidence from table 3, hope was the only factor found to significantly predict the chance of adolescent to develop depression. Adolescents with low levels of hope were 9.2 times more likely to develop depression compared to those with high level of hope (OR, 9.21, 95% CI:2.16-39.32).

Table 3.: Logistic regressions of independent factors of depression among adolescents receiving care and treatment at KCMC

Variable	OR95%CI	p-value	AOR95%CI	P-value
<i>Age</i>				
10-14	Ref		Ref	
15-19	1.127(0.482,2.636)	0.783	0.754(0.274,2.071)	0.583
<i>Sex</i>				
Male	Ref		Ref	
Female	1.145(0.497,2.642)	0.750	1.190(0.47,3.024)	0.715
<i>Orphan status</i>				
Not orphan	Ref		Ref	
Both parents	2.250(0.663,7.638)	0.193	2.085(0.53,8.28)	0.297
One parent	2.471(0.965,6.323)	0.059	1.968(0.68,5.671)	0.210
<i>HIV related stigma</i>				
Low	Ref		Ref	
Moderate	1.333(0.464,3.834)	0.593	0.780(0.232,2.623)	0.688
High	2.667(0.942,7.550)	0.065	1.640(0.502,5.356)	0.413
<i>Social support</i>				
Low	2.000(0.451,8.868)	0.362	0.933(0.170,5.122)	0.936
Moderate	1.813(0.704,4.669)	0.217	0.922(0.303,2.806)	0.887
High	Ref		Ref	
<i>Hope</i>				
Low	9.771(2.690,35.490)	0.001	9.212(2.158,39.318)	0.003
Moderate	1.667(0.379,7.323)	0.499	1.753(0.375,8.201)	0.476
High	Ref		Ref	

4.4 Association between social demographic and psychological factors with suicidal ideation among adolescents living with HIV.

4.4.1 Bivariate analysis

Among the psychological factors, hope showed a significant association with suicidal ideation (p-value 0.000). Participants who had low levels of hope were more likely to have suicidal thoughts (57.4%) when compared to those with high (21.1%) and moderate (16.9%) levels of hope. Furthermore, HIV related stigma also showed significant association with suicidal ideation (p-value 0.013) of which participants who experienced moderate level of stigma (33.3%) were found to be more suicidal compared to those who experienced high (25.5%) or low level of stigma (19.0%). Perceived social support showed insignificant association with suicidal ideation (p-value 0.111) whereby adolescents with moderate perceived social support (38.0%) had more suicidal thoughts compared to those with low (26.7%) and high (22.2%).

Table 4, shows factors that are associated with suicidal among adolescents living with HIV/AIDS. There was no significant association between socio demographic factors (age, sex, level of education and orphan status) of the participants and suicidal ideation.

Table 4: Bio- psychosocial factors associated with suicidal ideation among adolescents receiving care and treatment at KCMC

Variable	No suicidal ideation N (%)	Suicidal ideation N (%)	Total	Chi-square	P-value
Age					
10-14	49(73.1%)	18(26.9%)	67 (100%)	0.958	0.328
15-19	68(66.0%)	35(34.0%)	103 (100%)		
Sex					
Male	48(64.9%)	26(35.1%)	74 (100%)	0.957	0.328
Female	69(71.9%)	27(28.1%)	96 (100%)		
Level of education					
Primary education	35(68.0%)	16(32.0%)	51 (100%)	0.626	0.956*
Secondary education	71(68.3%)	33(31.7%)	104 (100%)		
College/ university	11(73.3%)	4(26.7%)	15 (100%)		
Orphan status					
Not orphan	60(75.0%)	20(25.0%)	80 (100%)	2.866	0.239
Both parents	15(60.0%)	10(40.0%)	25 (100%)		
One parent	42(64.6%)	23(35.4%)	65 (100%)		
HIV related stigma					
Low	51(81.0%)	12(19.0%)	63 (100%)	8.636	0.013
Moderate	42(66.7%)	21(33.3%)	63 (100%)		
High	24(54.5%)	20(25.5%)	44 (100%)		
Social support					
Low	11(73.3%)	4(26.7%)	15 (100%)	4.518	0.111*
Moderate	57(62.0%)	35(38.0%)	93 (100%)		
High	49(77.8%)	14(22.2%)	63 (100%)		
Hope					
Low	23(42.6%)	31(57.4%)	54 (100%)	25.605	0.000
Moderate	49(83.1%)	10(16.9%)	59 (100%)		
High	45(78.9%)	12(21.1%)	57 (100%)		

* Fisher's Exact Test

4.4.2 Multivariate Analysis

With regard to suicidal ideation, HIV related stigma and hope were found to significantly predict the occurrence of suicidal thoughts among adolescents. Participants who experienced high level of HIV related stigmas were 2.7 times more likely to have suicidal ideations compared to those with low level (OR, 2.7, 95% CI: 1.01-7.37). Furthermore participants with low level of hope were also 3.8 times more likely to have suicidal ideation compared to those with high levels (OR, 3.84, 95% CI: 1.50-9.84). None of the socio demographic factor was found to show significant prediction of depression or suicidal ideation among the participants.

Table 5: Logistic regression of independent factors of suicidal ideation among adolescents receiving care and treatment at KCMC

Variable	OR95%CI	P-value	AOR95%CI	P-value
<i>Age</i>				
10-14	Ref		Ref	
15-19	1.401(0.712,2.757)	0.329	1.110(0.497,2.479)	0.799
<i>Sex</i>				
Male	Ref		Ref	
Female	0.722(0.376,1.387)	0.329	0.607(0.286,1.289)	0.193
<i>Orphan status</i>				
Not orphan	Ref		Ref	
Both parents	2.000(0.776,5.155)	0.151	1.898(0.642,5.610)	0.246
One parent	1.643(0.802,3.366)	0.175	1.135(0.491,2.624)	0.768
<i>HIV related stigma</i>				
Low	Ref		Ref	
Moderate	2.125(0.937,4.817)	0.071	1.675(0.673,4.168)	0.267
High	3.542(1.492,8.408)	0.004	2.732(1.012,7.372)	0.047
<i>Social support</i>				
Low	1.273(0.351,4.620)	0.714	0.529(0.116,2.408)	0.410
Moderate	2.149(1.038,4.451)	0.039	1.500(0.649,3.465)	0.343
High	Ref		Ref	
<i>Hope</i>				
Low	5.054(2.194,11.644)	0.000	3.837(1.495,9.844)	0.005
Moderate	0.765(0.301,1.943)	0.574	0.579(0.215,1.562)	0.281
High	Ref		Ref	

5.0 DISCUSSION

The broad objective of this study was to assess the prevalence of depression and suicidal ideation and its associated factors among adolescents living with HIV. Specifically, the current study examined the effect socio demographic characteristics, HIV related stigma, perceived social support and hope on adolescents with depression and suicidal ideation. The discussion will include findings of univariate descriptive statistics, bivariate and multivariate analysis based on the specific research questions of the study.

5.1 Prevalence of depression.

Finding of this study revealed the prevalence of depression among adolescents living with HIV to be 15.9% by the cut-off point of 5 on the PHQ-A. This finding is almost similar to a Ugandan study in 2018 whereby among 224 adolescents living with HIV, 16% had major depressive disorder as classified using MINI kid (Ashaba et al., 2018). Furthermore, the finding is slightly higher compared to a study done in Moshi, Tanzania in 2014 to assess mental health difficulties of adolescents living with HIV, of which prevalence of depressive symptoms was 12.1% by using PHQ-9 with >10 as a cutoff point (Dow et al., 2016) . However this finding is lower compared to other studies done in SSA, a study from Kenya showed that 17.8% of HIV infected children and adolescents between 6- 18 years had major depressive disorder by using Mini International Neuropsychiatric Interview for Children and Adolescents (MINI kid) (Kamau et al., 2014.). Another study from Ethiopia showed that 35.5% of HIV positive youths aged 15- 24 years had depressive symptoms as screened by using Beck Depression Inventory II (Abebe et al., 2019).

In comparison with developed countries, studies done in USA and Thailand showed the prevalence of depression to be higher than this finding. In the USA, study among youths aged 11- 25 years, showed the prevalence of depression to be 24% and in Thailand it was found to be 27.8% (Lee et al., 2011; Walsh et al., 2017). Patient Health Questionnaire (PHQ-9) and Thai Children's Depression Inventory (CDI) were used to screen for depression in these studies.

The current study show higher prevalence (15.9%) compared to a similar study done five years ago in Kilimanjaro region, Tanzania (12.1%) (Dow et al., 2016). The difference could be due to

long duration between the two studies, and psychosocial issues related to the time of study i.e. this study was done during COVID 19 pandemic, also (Dow et al., 2016) used an adult screening tool with higher cut off points. The Kenyan study show a higher prevalence compared to this study, this is because (Kamau et al., 2014) used a diagnostic tool for DSM-IV criteria to diagnose depression. The variations in prevalence between countries/ continents could be due to several factors such as variation tools; some used diagnostic tools while others screening tools with valid cut off scores.

5.2 Prevalence of suicidal ideation

The study found the prevalence of suicidal ideation to be 31.2% using the PHQ-A tool. This finding is higher compared to most of the studies done in SSA. Study from Ethiopia showed that 27.1% of youths living with HIV had suicidal ideation (Wonde et al., 2019). Another study in Nigeria showed the prevalence of current and lifetime suicidal ideation to be 14.9% and 33.3% respectively (Adeyemo et al., 2019). In Kenya, a study done in 2016 found 18% of the adolescents had suicidal risk but not attempts or plans with variations on age, whereby the older adolescents had higher rate of suicidal risk than the younger adolescents (Kamau et al., 2014). Another study from South Africa showed only 8% of adolescents living with HIV had suicidal thoughts (Casale et al., 2019). The prevalence in this study is higher due to the nature of PHQ-A tool adapted for adolescent populations with a specific focus on suicidality, which is common in this age group.

The prevalence of suicide attempt is 14.7%, this is slightly lower compared to an Ethiopian study which showed prevalence to be 16.9% (Wonde et al., 2019). However, the finding is higher compared to a study in South Africa which show prevalence of suicide attempt to be 4%, assessed by the Mini International Psychiatric Interview for Children and Adolescents Suicidality and self harm subscale (Casale et al., 2019). In a Kenyan study by (Kamau et al., 2014) no adolescent reported any suicide attempt.

5.3 Factors associated with depression and suicidal ideation among adolescents living with HIV

5.3.1 Socio demographic factors

Findings of this study showed that, there were no socio demographic factors that were associated with depression and suicidal ideation among adolescents living with HIV. This varies from other studies done in SSA whereby, different socio demographic factors had influences on diagnosis of depression or suicidal thoughts among adolescents living with HIV. Studies from Kenya and Ethiopia showed that adolescents/ youths in the older age group i.e from 15 – 24 years had increased risk of depression and suicidal thoughts (Abebe et al., 2019; Kamau et al., n.d.). Sex has also been found to be highly associated with depression and suicidal ideation among adolescents living with HIV (Adeyemo et al., 2019).

5.3.2 Social support

High social support is believed to be a one of the stress buffers in moderating psychosocial factors predisposing an individual to depression or suicidal ideation. However, results from this study show no significant association between social support and depression or suicidal ideation among adolescents living with HIV. Several studies have shown that adolescents with high social support were less likely to have depressive symptoms or suicidal thoughts (Abebe et al., 2019; West et al., 2019; Wonde et al., 2019). Overall, it is important to have family and peer led interventions so as to enhance support among adolescents living with HIV and thus useful in prevention and management of depression and suicidal ideation.

5.3.3 HIV related stigma

Findings of this study have shown that adolescents experiencing HIV related stigma had increased risk of having suicidal ideation. This is similar to study done among South African adolescents whereby, those who had higher HIV related stigma were more likely to have depression and suicidal ideation (Casale et al., 2019). Moreover, Studies done in Ethiopia showed that HIV related stigma was significantly associated with depressive symptoms and suicidal ideation among youths infected with HIV. Also in Rwanda a study done to compare mental health of adolescents infected with HIV and those unaffected showed that HIV infected adolescents faced higher rate of stigma than the unaffected group and hence increased their risk of depression and other mental health challenges (Abebe et al., 2019; Kinyanda et al., 2012).

5.3.4 Hopefulness

Hope can be described as believing life to be worth living at the present and in the future (Kylmä et al., 2001). This study has found that adolescents with low hope were 9 times likely to have depression and 3.8 times likely to have suicidal ideations. This finding is similar to studies done SSA among PLWH showed that feeling of hopelessness predisposed an individual to mental disorders such as depression, anxiety and suicidality (Abler et al., 2017; Siril et al., 2020). The tool used to assess hope is new and a study to set the cutoff points on the hope scale used for this population is of paramount importance, as it has not yet been done.

6.0 CONCLUSIONS, RECOMMENDATIONS AND LIMITATIONS

6.1 Conclusion

This study aimed to assess prevalence of depression and suicidal ideation and associated factors among adolescents living with HIV receiving care at KCMC. The findings revealed the prevalence of depression and suicidal ideation to be 15.9% and 32.5% respectively. Psychosocial factors such as stigma and hope have been found to be associated with depression and suicidal ideation among this population.

6.2 Recommendations

From the findings of this study, we recommend the following:

- Regular screening and early intervention for depression in all patients attending treatments should be done
- We suggest implementation research, adapting mental health intervention for adolescents living with HIV, who have depression and other mental health concerns.

Study strengths

- It is one of the few studies that has explored mental health concerns in AWHIV

Study limitations

- Recall bias could have interfered with the results in answering time-framed questions such as two weeks for depression.
- The following tools have not been validated in Tanzania.
 - Patient Health Questionnaire 9 Adolescent version (PHQ-A)
 - HIV Stigma Scale
 - Multidimensional Scale for Perceived Social Support Scale (MSPS)

REFERENCE

- Abebe, H., Shumet, S., Nassir, Z., Agidew, M., & Abebaw, D. (2019). Prevalence of Depressive Symptoms and Associated Factors among HIV-Positive Youth Attending ART Follow-Up in Addis Ababa, Ethiopia. *AIDS Research and Treatment*, 2019. <https://doi.org/10.1155/2019/4610458>
- Abler, L., Hill, L., Maman, S., DeVellis, R., Twine, R., Kahn, K., MacPhail, C., & Pettifor, A. (2017). Hope Matters: Developing and Validating a Measure of Future Expectations Among Young Women in a High HIV Prevalence Setting in Rural South Africa (HPTN 068). *AIDS and Behavior*, 21(7), 2156–2166. <https://doi.org/10.1007/s10461-016-1523-6>
- Adeyemo, S., Olorunkoya, O. G., Chinelo, O. L., Babalola, G., & Abojei, C. O. (2019). Prevalence and psychosocial correlates of suicidal ideation among adolescents living with HIV in Southwestern Nigeria, West Africa. *HIV and AIDS Review*, 18(4), 273–278. <https://doi.org/10.5114/hivar.2019.85949>
- Apuke, O. D. (2017). Quantitative Research Methods : A Synopsis Approach. *Kuwait Chapter of Arabian Journal of Business and Management Review*, 6(11), 40–47. <https://doi.org/10.12816/0040336>
- Ashaba, S., Cooper-Vince, C., Maling, S., Rukundo, G. Z., Akena, D., & Tsai, A. C. (2018). Internalized HIV stigma, bullying, major depressive disorder, and high-risk suicidality among HIV-positive adolescents in rural Uganda. *Global Mental Health*, 5. <https://doi.org/10.1017/gmh.2018.15>
- Bankole, K. O., Bakare, M. O., Edet, B. E., Igwe, M. N., Ewa, A. U., Bankole, I. A., & Olose, E. E. (2017). Psychological complications associated with HIV / AIDS infection among children in South-South. *Cogent Medicine*, 6(1), 1–16. <https://doi.org/10.1080/2331205X.2017.1372869>

- Beevers, L. (1968). Protein degradation and proteolytic activity in the cotyledons of germinating pea seeds (*pisum sativum*). *Phytochemistry*, 7(10), 1837–1844.
[https://doi.org/10.1016/S0031-9422\(00\)86656-X](https://doi.org/10.1016/S0031-9422(00)86656-X)
- Betancourt, T., Scorza, P., Kanyanganzi, F., Fawzi, M. C. S., Sezibera, V., Cyamatare, F., Beardslee, W., Stulac, S., Justin, I., Stevenson, A., & Kayiteshonga, Y. (2014). *HIV and Child Mental Health : A Case-Control Study in Rwanda*.
<https://doi.org/10.1542/peds.2013-2734>
- Borges, G., Nock, M. K., Abad, J. M. H., Sampson, N. A., Alonso, J., Helena, L., Angermeyer, M. C., Beautrais, A., Sagar, R., Tomov, T., Uda, H., & Williams, D. R. (2010). Twelve Month Prevalence of and Risk Factors for Suicide Attempts in the WHO World Mental Health Surveys. *Journal of Clinical Psychiatry*, 71(12), 1617–1628.
<https://doi.org/10.4088/JCP.08m04967blu.Twelve>
- Boyes, M. E., Cluver, L. D., Meinck, F., & Casale, M. (2018). Mental health in South African adolescents living with HIV : correlates of internalising and externalising symptoms
Mental health in South African adolescents living with HIV : correlates of internalising and externalising symptoms. *AIDS Care*, 0(0), 1–10.
<https://doi.org/10.1080/09540121.2018.1524121>
- Breuer, E., Myer, L., Struthers, H., & Joska, J. A. (2011). HIV/AIDS and mental health research in sub-Saharan Africa: A systematic review. *African Journal of AIDS Research*, 10(2), 101–122. <https://doi.org/10.2989/16085906.2011.593373>
- Casale, M., Boyes, M., Pantelic, M., Toska, E., & Cluver, L. (2019). Suicidal thoughts and behaviour among South African adolescents living with HIV: Can social support buffer the impact of stigma? *Journal of Affective Disorders*, 245, 82–90.
<https://doi.org/10.1016/j.jad.2018.10.102>

- Chenneville, T., Gabbidon, K., Lynn, C., Rodriguez, C., Chenneville, T., Gabbidon, K., Lynn, C., & Rodriguez, C. (2019). *Psychological factors related to resilience and vulnerability among youth with HIV in an integrated care setting*. 0121. <https://doi.org/10.1080/09540121.2018.1488032>
- Cheung, A., & Dewa, C. (2006). Canadian Community Health Survey: Major Depressive Disorder and Suicidality in Adolescents. *Healthcare Policy / Politiques de Santé*, 2(2), 76–89. <https://doi.org/10.12927/hcpol.2007.18540>
- Dambi, J. M., Corten, L., Chiwaridzo, M., Jack, H., Mlambo, T., & Jelsma, J. (2014). Outcomes of keloid surgery: A 5-year retrospective review. *Journal of the American Academy of Dermatology*, 70(5), AB195. <https://doi.org/10.1016/j.jaad.2014.01.810>
- Dow, D. E., Mmbaga, B. T., Turner, E. L., Gallis, J. A., Tabb, Z. J., Cunningham, C. K., Donnell, K. E. O., Dow, D. E., Mmbaga, B. T., Turner, E. L., Gallis, J. A., Tabb, Z. J., Cunningham, C. K., & Donnell, K. E. O. (2019). *Building resilience : a mental health intervention for Tanzanian youth living with HIV*. 0121. <https://doi.org/10.1080/09540121.2018.1527008>
- Dow, D. E., Turner, E. L., Shayo, A. M., Mmbaga, B., Cunningham, C. K., Donnell, K. O., Dow, D. E., Turner, E. L., Shayo, A. M., & Mmbaga, B. (2016). *Evaluating mental health difficulties and associated outcomes among HIV-positive adolescents in Tanzania*. 0121(March). <https://doi.org/10.1080/09540121.2016.1139043>
- Epstein, R., Borrell-Carrio, F., & Suchman, A. (2004). The Biopsychosocial Model 25 Years Later: Principles, Practice, and Scientific Inquiry. *Annals Of Family Medicine*, 2(6), 576–582. <https://doi.org/10.1370/afm.245>.Department
- Fleischmann, A. (2019). Suicide in the world, global estimates. *Who*.

- Hudelson, C., & Cluver, L. (2015). Factors associated with adherence to antiretroviral therapy among adolescents living with HIV/AIDS in low- and middle-income countries: A systematic review. *AIDS Care - Psychological and Socio-Medical Aspects of AIDS/HIV*, 27(7), 805–816. <https://doi.org/10.1080/09540121.2015.1011073>
- Idele, P., Gillespie, a, Porth, T., Suzuki, C., Mahy, M., Kasedde, S., & Luo, C. (2014). Epidemiology of HIV and AIDS among adolescents: Current status, inequities, and data gaps. *Journal of Acquired Immune Deficiency Syndromes*, 66, S144–S153. <https://doi.org/10.1097/QAI.0000000000000176>
- Ishrat Rizwan* and Erum Irshad. (2015). Suicide Risk among Individuals with HIV/AIDS. *Bahria Journal of Professional Psychology*, 14(1). <https://doi.org/10.1017/CBO9781107415324.004>
- Johnson, J. G., Harris, E. S., Spitzer, R. L., & Williams, J. B. W. (2002). The Patient Health Questionnaire for Adolescents: Validation of an instrument for the assessment of mental disorders among adolescent primary care patients. *Journal of Adolescent Health*, 30(3), 196–204. [https://doi.org/10.1016/S1054-139X\(01\)00333-0](https://doi.org/10.1016/S1054-139X(01)00333-0)
- Kalichman, S. C., Heckman, T., Kochman, A., Sikkema, K., & Bergholte, J. (2000). Depression and thoughts of suicide among middle-aged and older persons living with HIV-AIDS. *Psychiatric Services*, 51(7), 903–907. <https://doi.org/10.1176/appi.ps.51.7.903>
- Kamau, J. W., Kuria, W., Mathai, M., Atwoli, L., & Kangethe, R. (2014). *AIDS Care : Psychological and Socio-medical Aspects of AIDS / HIV Psychiatric morbidity among HIV-infected children and adolescents in a resource-poor Kenyan urban community. October 2014*, 37–41. <https://doi.org/10.1080/09540121.2011.644234>
- Kinyanda, E., Hoskins, S., Nakku, J., Nawaz, S., & Patel, V. (2012). The prevalence and characteristics of suicidality in HIV/AIDS as seen in an African population in Entebbe district, Uganda. *BMC Psychiatry*, 12. <https://doi.org/10.1186/1471-244X-12-63>

- Kodali, P. B. (2018). Mental Health Needs of People Living with HIV/AIDS: A Thematic Overview. *MOJ Public Health*, 7(1), 5–9. <https://doi.org/10.15406/mojph.2018.07.00195>
- Kylmä, J., Vehvilainen-Julkunen, K., & Lähdevirta, J. (2001). Hope, despair and hopelessness in living with HIV/AIDS: A grounded theory study. *Journal of Advanced Nursing*, 33(6), 764–775. <https://doi.org/10.1046/j.1365-2648.2001.01712.x>
- Lee, B., Chhabra, M., & Oberdorfer, P. (2011). Depression among vertically HIV-infected adolescents in northern Thailand. *Journal of the International Association of Physicians in AIDS Care*, 10(2), 89–96. <https://doi.org/10.1177/1545109710397892>
- Maria, D., Galano, E., Célia, R., Succi, D. M., Maria, C., & Ribeiro, E. (2016). Original article Adolescents growing with HIV / AIDS : experiences of the transition from pediatrics to adult care. *Brazilian Journal of Infectious Diseases*, 20(3), 229–234. <https://doi.org/10.1016/j.bjid.2015.12.009>
- Martínez-Mesa, J., González-Chica, D. A., Duquia, R. P., Bonamigo, R. R., & Bastos, J. L. (2016). Sampling: How to select participants in my research study? *Anais Brasileiros de Dermatologia*, 91(3), 326–330. <https://doi.org/10.1590/abd1806-4841.20165254>
- Masese, R. V, Ramos, J. V, Rugalabamu, L., Luhanga, S., Shayo, A. M., Stewart, K. A., Cunningham, C. K., & Dow, D. E. (2019). *Challenges and facilitators of transition from adolescent to adult HIV care among young adults living with HIV in Moshi , Tanzania*. 1–10. <https://doi.org/10.1002/jia2.25406/full>
- Mutumba, M., Bauermeister, J. A., Musiime, V., & Byaruhanga, J. (2015). *Psychosocial Challenges and Strategies for Coping with HIV Among Adolescents in Uganda: A Qualitative Study*. January. <https://doi.org/10.1089/apc.2014.0222>
- Nock, M. K., Borges, G., Bromet, E. J., Cha, C. B., Kessler, R. C., & Lee, S. (2008). Suicide and suicidal behavior. *Epidemiologic Reviews*, 30(1), 133–154. <https://doi.org/10.1093/epirev/mxn002>

- Pao, M., Lyon, M., Angelo, L. J. D., Schuman, W. B., Tipnis, T., & Mrazek, D. A. (2016). *Psychiatric Diagnoses in Adolescents Seropositive for the Human Immunodeficiency Virus*. *154*, 240–244.
- Patel, V., Flisher, A. J., Hetrick, S., & McGorry, P. (2007). Mental health of young people: a global public-health challenge. *Lancet*, *369*(9569), 1302–1313.
[https://doi.org/10.1016/S0140-6736\(07\)60368-7](https://doi.org/10.1016/S0140-6736(07)60368-7)
- Pence, B. W., Mills, J. C., Bengtson, A. M., Gaynes, B. N., Breger, T. L., Cook, R. L., Moore, R. D., Grelotti, D. J., Cleirigh, C. O., & Mugavero, M. J. (2018). *Association of Increased Chronicity of Depression With HIV Appointment Attendance, Treatment Failure, and Mortality Among HIV-Infected Adults in the United States*. *27599*.
<https://doi.org/10.1001/jamapsychiatry.2017.4726>
- Ramaiya, M. K., Sullivan, K. A., Donnell, K. O., Cunningham, K., Shayo, A. M., Mmbaga, B. T., & Dow, D. E. (2016). *A Qualitative Exploration of the Mental Health and Psychosocial Contexts of HIV-Positive Adolescents in Tanzania*. 1–13.
<https://doi.org/10.1371/journal.pone.0165936>
- Reinius, M., Wettergren, L., Wiklander, M., Svedhem, V., Ekström, A. M., & Eriksson, L. E. (2017). Development of a 12-item short version of the HIV stigma scale. *Health and Quality of Life Outcomes*, *15*(1), 1–9. <https://doi.org/10.1186/s12955-017-0691-z>
- Remien, R. H., Stirratt, M. J., Nguyen, N., Robbins, R. N., Pala, A. N., & Mellins, C. A. (2019). Mental health and HIV/AIDS: The need for an integrated response. *Aids*, *33*(9), 1411–1420. <https://doi.org/10.1097/QAD.0000000000002227>
- Rundell, J. R., Kyle, K. M., Brown, G. R., & Thomason, J. L. (1992). Risk Factors for Suicide Attempts in a Human Immunodeficiency Virus Screening Program. *Psychosomatics*, *33*(1), 24–27. [https://doi.org/10.1016/S0033-3182\(92\)72017-9](https://doi.org/10.1016/S0033-3182(92)72017-9)
- Schlebusch, L., & Govender, R. D. (2015). Elevated Risk of Suicidal Ideation in HIV-Positive Persons. *Depression Research and Treatment*, *2015*, 1–7.

<https://doi.org/10.1155/2015/609172>

Siril, H., Smith Fawzi, M. C., Todd, J., Somba, M., Kaale, A., Minja, A., Killewo, J., Mugusi, F., & Kaaya, S. F. (2020). The value of hope: Development and validation of a contextual measure of hope among people living with HIV in urban Tanzania a mixed methods exploratory sequential study. *BMC Psychology*, *8*(1), 1–16.

<https://doi.org/10.1186/s40359-020-0376-y>

Smith, M. C., Ngakongwa, F., Liu, Y., Rutayuga, T., Siril, H., Somba, M., & Kaaya, S. F. (2019). Neurology , Psychiatry and Brain Research Validating the Patient Health Questionnaire-9 (PHQ-9) for screening of depression in Tanzania. *Neurology, Psychiatry and Brain Research*, *31*(April 2018), 9–14.

<https://doi.org/10.1016/j.npbr.2018.11.002>

Sullivan, K. M., & Dean, A. (2009). On Academics. *Public Health Reports*, *124*(June), 471–474. <https://doi.org/10.1016/j.neuroimage.2010.04.247>

TACAIDS. (2018). *Tanzania Commission for AIDS, annual report, 2018*. 1–43.

Toth, G., Mburu, G., Tuot, S., Khol, V., Ngin, C., Chhoun, P., & Yi, S. (2018). Social - support needs among adolescents living with HIV in transition from pediatric to adult care in Cambodia : findings from a cross - sectional study. *AIDS Research and Therapy*, 1–12. <https://doi.org/10.1186/s12981-018-0195-x>

Traube, D., Dukay, V., Kaaya, S., Reyes, H., & Mellins, C. (2010). Cross-cultural adaptation of the child depression inventory for use in tanzania with children affected by HIV. *Vulnerable Children and Youth Studies*, *5*(2), 174–187.

<https://doi.org/10.1080/17450121003668343>

Uddin, R., Burton, N. W., Maple, M., Khan, S. R., & Khan, A. (2019). Suicidal ideation, suicide planning, and suicide attempts among adolescents in 59 low-income and middle-income countries: a population-based study. *The Lancet Child and Adolescent Health*, *3*(4), 223–233. [https://doi.org/10.1016/S2352-4642\(18\)30403-6](https://doi.org/10.1016/S2352-4642(18)30403-6)

- UNAIDS. (2014). Reduction of stigma and discrimination. In *Unaided*.
- United Nation. (2018). *Un Aids Data 2019*.
- Vreeman, R. C., Mccoy, B. M., & Lee, S. (2017). Review article Mental health challenges among adolescents living with HIV. *Journal of the International AIDS Society*, 20(3), 100–109. <https://doi.org/10.7448/IAS.20.4.21497>
- Vyavaharkar, M., Moneyham, L., Tavakoli, A., Phillips, K. D., Murdaugh, C., Jackson, K., & Meding, G. (2007). Social Support, Coping, and Medication Adherence Among HIV-Positive Women with Depression Living in Rural Areas of the Southeastern United States. *AIDS Patient Care and STDs*, 21(9), 667–680. <https://doi.org/10.1089/apc.2006.0131>
- Walsh, A. S. J., Wesley, K. L., Tan, S. Y., Lynn, C., O’Leary, K., Wang, Y., Nguyen, D., Chenneville, T., & Rodriguez, C. A. (2017). Screening for depression among youth with HIV in an integrated care setting. *AIDS Care - Psychological and Socio-Medical Aspects of AIDS/HIV*, 29(7), 851–857. <https://doi.org/10.1080/09540121.2017.1281878>
- Wang, W., Xiao, C., Yao, X., Yang, Y., Yan, H., & Li, S. (2018). Psychosocial health and suicidal ideation among people living with HIV/AIDS: A cross-sectional study in Nanjing, China. *PLoS ONE*, 13(2), 1–17. <https://doi.org/10.1371/journal.pone.0192940>
- West, N., Schwartz, S., Mudavanhu, M., Hanrahan, C., Nel, J., Mutunga, L., Bernhardt, S., Bassett, J., West, N., Schwartz, S., Mudavanhu, M., Hanrahan, C., Nel, J., Mutunga, L., Bernhardt, S., Bassett, J., & Rie, A. Van. (2019). *Mental health in South African adolescents living with HIV Mental health in South African adolescents living with HIV. 0121*. <https://doi.org/10.1080/09540121.2018.1533222>
- WHO. (2017). *Depression and Other Common Mental Disorders Global Health Estimates*.
- WHO. (2020). *Suicide : facts and figures*.

- Willis, N., Mavhu, W., Wogrin, C., Mutsinze, A., & Kagee, A. (2018). Understanding the experience and manifestation of depression in adolescents living with HIV in Harare, Zimbabwe. *PLoS ONE*, *13*(1), 1–11. <https://doi.org/10.1371/journal.pone.0190423>
- Wonde, M., Mulat, H., Birhanu, A., Biru, A., Kassew, T., & Shumet, S. (2019). The magnitude of suicidal ideation, attempts and associated factors of HIV positive youth attending ART follow ups at St. Paul's hospital Millennium Medical College and St. Peter's specialized hospital, Addis Ababa, Ethiopia, 2018. *PLoS ONE*, *14*(11), 1–15. <https://doi.org/10.1371/journal.pone.0224371>
- Woollett, N., Cluver, L., Bandeira, M., & Brahmabhatt, H. (2017). *Identifying risks for mental health problems in HIV positive adolescents accessing HIV treatment in Johannesburg*. 0583(March). <https://doi.org/10.2989/17280583.2017.1283320>
- Yadav, S. (2010). *Perceived social support , hope , and quality of life of persons living with HIV / AIDS : a case study from Nepal*. 157–166. <https://doi.org/10.1007/s11136-009-9574-z>
- Zimet, G. D., Dahlem, N. W., Zimet, S. G., Gordon, K., & Farley, G. K. (1988). The Multidimensional Scale of Perceived Social Support The Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment*, *52*(1), 37–41. <https://doi.org/10.1207/s15327752jpa5201>

APPENDIX**Appendix I:- Questionnaire – English version****GENERAL INFORMATION**

Date of Interview:/...../ 2020

Name of the interviewer

Questionnaire serial No.....

PART 1: SOCIO-DEMOGRAPHIC DATA AND HIV RELATED INFORMATION

1. Number of interviewee
2. Age:
3. Residence.....
4. Gender
 - a) Male
 - b) Female
5. Have you attained puberty?
 - a) Yes
 - b) No
6. Are you currently enrolled in school?
 - a) Yes
 - b) No
7. What is your highest level of education?
 - a) Never attended school
 - b) Primary school
 - c) Secondary school
 - d) College/University
8. Who do you live with?
 - a) Alone (independent)
 - b) Biological parents/parent
 - c) Relative
 - d) Adopted/Fostered

9. Orphan-hood

- a) One parent
- b) Both parent

10. Employment status of the parent/caretaker

- c) Unemployed
- d) Employed
- e) Self-employee

11. Do you know your HIV status/ why do you attend CTC clinic?

- a) Yes
- b) No

If yes go to QN 12, if no skip QN 12

12. HIV status of the parent/caretaker

- c) Positive
- d) Negative

13. Have you ever been treated /are you currently on treatment for mental illness?

- a) Yes
- b) No

14. Is there history of mental illness in your family members?

- a) Yes
- b) No

15. In relation to drug use, have you in the past twelve months used (if yes, put more than one response where applicable?)

- (i) Yes
 - a) Alcohol
 - b) Cannabis
 - c) Cigarette
 - d) Opiates, e.g. Heroin
 - e) Cocaine
 - f) Khat
 - g) Valium
 - h) Solvents e.g. petrol, glue
- (ii) No

PART 2: SYMPTOMS OF DEPRESSION AND SUICIDAL IDEATION

No		(0) Not at all	(1) Several days	(2) More than half the days	(3) Nearly every day
1.	Feeling down, depressed, irritable, or hopeless?				
2.	Little interest or pleasure in doing things?				
3.	Trouble falling asleep, staying asleep, or sleeping too much?				
4.	Poor appetite, weight loss, or overeating?				
5.	Feeling tired, or having little energy?				
6.	Feeling bad about yourself – or feeling that you are a failure, or that you have let yourself or your family down?				
7.	Trouble concentrating on things like school work, reading, or watching TV?				
8.	Moving or speaking so slowly that other people could have noticed? Or the opposite – being so fidgety or restless that you were moving around a lot more than usual?				
9.	Thoughts that you would be better off dead, or of hurting yourself in some way?				

In the **past year** have you felt depressed or sad most days, even if you felt okay sometimes?

Yes No

If you are experiencing any of the problems on this form, how **difficult** have these problems made it for you to do your work, take care of things at home or get along with other people?

Not difficult at all Somewhat difficult Very difficult Extremely difficult

Has there been a time in the **past month** when you have had serious thoughts about ending your life?

Yes No

Have you **EVER**, in your **WHOLE LIFE**, tried to kill yourself or made a suicide attempt?

Yes No

PART 3: HIV RELATED STIGMA

The HIV Stigma Scale consists of four subscales intended to measure personalized stigma, disclosure concerns, concerns with public attitudes and negative self-image.

For each item, give your answer:

Strongly disagree (SD), Disagree (D), Agree (A), or Strongly agree (SA)

Personalized Stigma

1. Some people avoid touching me if they know I have HIV
2. People I care about stopped calling after learning I have HIV
3. I have lost friends by telling them I have HIV

Disclosure Concerns

1. Telling someone I have HIV is risky
2. I work hard to keep my HIV a secret
3. I am very careful who I tell that I have HIV

Concerns with Public Attitudes

1. People with HIV are treated like outcasts
2. Most people believe a person who has HIV is dirty
3. Most people are uncomfortable around someone with HIV

Negative Self-Image

1. I feel guilty because I have HIV
2. I feel like I am a bad person because of HIV
3. I feel I'm not as good a person as others because I have HIV

PART 4: MULTIDIMENSIONAL SCALE OF PERCEIVED SOCIAL SUPPORT

We are interested in how you feel about the following statements. Read each statement carefully.

Indicate how you feel about each statement.

Circle the “1” if you **Very Strongly Disagree**

Circle the “2” if you **Strongly Disagree**

Circle the “3” if you **Mildly Disagree**

Circle the “4” if you are **Neutral**

Circle the “5” if you **Mildly Agree**

Circle the “6” if you **Strongly Agree**

Circle the “7” if you **Very Strongly Agree**

- | | |
|---|---------------|
| 1. There is a special person who is around when I am in need. | 1 2 3 4 5 6 7 |
| 2. There is a special person with whom I can share joys and sorrows. | 1 2 3 4 5 6 7 |
| 3. My family really tries to help me. | 1 2 3 4 5 6 7 |
| 4. I get the emotional help & support I need from my family. | 1 2 3 4 5 6 7 |
| 5. I have a special person who is a real source of comfort to me. | 1 2 3 4 5 6 7 |
| 6. My friends really try to help me. | 1 2 3 4 5 6 7 |
| 7. I can count on my friends when things go wrong. | 1 2 3 4 5 6 7 |
| 8. I can talk about my problems with my family. | 1 2 3 4 5 6 7 |
| 9. I have friends with whom I can share my joys and sorrows. | 1 2 3 4 5 6 7 |
| 10. There is a special person in my life who cares about my feelings. | 1 2 3 4 5 6 7 |
| 11. My family is willing to help me make decisions. | 1 2 3 4 5 6 7 |
| 12. I can talk about my problems with my friends. | 1 2 3 4 5 6 7 |

PART 5: HOPE SCALE		
1	I am satisfied with my progress since I started treatment	Definitely false 1 Somewhat false 2 Somewhat true 3 Definitely true 4
2	I believe to follow advice from counsellor will bring good results for my health	Definitely false 1 Somewhat false 2 Somewhat true 3 Definitely true 4
3	All my health care need for my condition are met	Definitely false 1 Somewhat false 2 Somewhat true 3 Definitely true 4
4	I feel I have improved since I started treatment	Definitely false 1 Somewhat false 2 Somewhat true 3 Definitely true 4
5	I feel encouraged	Definitely false 1 Somewhat false 2 Somewhat true 3 Definitely true 4
6	I am happy	Definitely false 1

		Somewhat false 2	
		Somewhat true 3	
		Definitely true 4	
7	I feel I have new strength	Definitely false 1	
		Somewhat false 2	
		Somewhat true 3	
		Definitely true 4	
8	I have peace	Definitely false 1	
		Somewhat false 2	
		Somewhat true 3	
		Definitely true 4	
9	My heart is cheerfull	Definitely false 1	
		Somewhat false 2	
		Somewhat true 3	
		Definitely true 4	
10	I believe in my plans	Definitely false 1	
		Somewhat false 2	
		Somewhat true 3	
		Definitely true 4	
11	I can reach my goals	Definitely false 1	
		Somewhat false 2	
		Somewhat true 3	

		Definitely true 4	
12	I have authority over my life	Definitely false 1 Somewhat false 2 Somewhat true 3 Definitely true 4	
13	I can live a long life and continue with my routine activities	Definitely false 1 Somewhat false 2 Somewhat true 3 Definitely true 4	
14	I feel good if something bad that I had anticipated didn't happen	Definitely false 1 Somewhat false 2 Somewhat true 3 Definitely true 4	
15	Personally I am self aware of my cancer situation	Definitely false 1 Somewhat false 2 Somewhat true 3 Definitely true 4	
16	I feel relieved by knowing my cancer diagnosis	Definitely false 1 Somewhat false 2 Somewhat true 3 Definitely true 4	

17	I think about my future plans	Definitely false 1 Somewhat false 2 Somewhat true 3 Definitely true 4	
18	I always have someone to talk to me when I lost hope	Definitely false 1 Somewhat false 2 Somewhat true 3 Definitely true 4	
19	My relatives encourage me when I have lost hope	Definitely false 1 Somewhat false 2 Somewhat true 3 Definitely true 4	
0	The information I received from other people on how to solve my problems, gives me strength	Definitely false 1 Somewhat false 2 Somewhat true 3 Definitely true 4	

Appendix II: questionnaire- Kiswahili version**SEHEMU YA KWANZA: MAELEZO YA AWALI**

Tarehe ya mahojiano: ____/____/2020

Jina la mhojaji.....

Namba ya dodoso

SEHEMU YA KWANZA: MAELEZO BINAFSI

1. Namba ya mshiriki:
2. Umri:
3. Unaishi wapi.....
4. Jinsia
 - a. Mume
 - b. Mke
5. Je umebalehe?
 - a. Ndiyo
 - b. Hapana
6. Je, sasa hivi unasoma shule?
 - a) Ndio
 - b) Hapana
7. Je una kiwango gani cha elimu?
 - a. Sijasoma
 - b. Elimu ya msingi
 - c. Elimu ya sekondari
 - d. Elimu ya chuo/chuo kikuu
8. Je unaishi na nani?
 - a. Pekee
 - b. Wazazi wa kukuzaa
 - c. Ndugu
 - d. Wazazi walezi /umeasiliwa

9. Wewe ni ya tima?
 - a. Wazazi wote wawili wa mefariki
 - b. Mzazi Mmoja amefariki
 10. Ningependa unieleze hali ya ajira ya mzazi/ mlezi wako
 - a. Amejiriwa
 - b. Hana ajira
 - c. Amejiaajiri
 - d. Anamiliki biashara
 11. Unajua kwanini unakuja klinikiya CTC?
 - a. Ndiyo
 - b. Hapana
- Kama ndio, jibuswali la 12, kama hapana usijibu swali la 12
12. Je unajua hali ya wazazi /walezi wako ya maambukizi ya virus ivya ukimwi?
 - a. Ndiyo
 - b. Hapana
 13. Je umewahi kutibiwa au hivi sas aupo kwenye tiba ya magonjwa ya akili?
 - a. Ndiyo
 - b. Hapana
 14. Je katika familia yako, kuna mtu amewahi kuugua au yupo kwenye tiba ya magonjwa ya akili?
 - a. Ndiyo
 - b. Hapana
 15. Kuhusu matumizi ya vilevi, Je miezi kumi na mbili iliyopita umetumia vile vifuatavyo?
(weka jibu zaidi ya moja inapohitajika)
 - a. Ndiyo
 - i. Pombe
 - ii. Bangi
 - iii. Sigara/tumbaku
 - iv. Opiodi (heroini)
 - v. Kokeni
 - vi. Mirungi
 - vii. Valiam
 - viii. Vinuswa, kamapetroli, gundi
 - b. Hapana

SEHEMU YA 2: DALILI ZA SONONA NA MAWAZO YA KUJIUA

		(0) Hapana kabisa	(1) Siku kadhaa	(2) Zaidi ya nusu siku hizi	(3) Karibu kila siku
1	Kujisikia chini, unyogovu, hasira, au kukosa. . matumaini?				
2	Hamu au raha kidogo ya kufanya vitu?				
3	Tatizo kupata usingizi, kula la kwa kushtuka au . kulala sana?				
4	Kutoku anahamu ya kula, kupungua uzito au . kulasana?				
5	Kuhisi uchovu, au kuwa nangu vukidogo ?				
6	Kujisikia vibaya mwenyewe - au unahisi ku wa . wewe umeshindwa, au umejishusha au umeshusha chini familia yako?				
7	Tatizo kwenye kuzingatia vitu kama kazi ya shule, . kusoma, au kutazama Runinga?				
8	Kusogea au kuzungumza polepole sana . hataingeweza kuonekana kwa watu wengine. Ama kinyume kuwa na mashaka/wasiwasi au kutotulia kiasi hata umekuwa ukitembeatembea sana kuliko kawaida?				
9	Fikira kwa mbani heri ukifa, au fikira za kujiumiza . kwa njia fulani?				

<p>Katika mwaka uliopita umejisikia unyogovu au huzuni siku nyingi, hata ikiwa ulijiona nisawa wakati mwingine?</p> <p>Ndio Hapana</p>
<p>Kama umejibu maswali yote, kwa kiasi gani haya matatizo yamefanya vigumu kufanya kazi zako, kutunza vizuri vitu nyumbani au kuelewana na watu wengine?</p> <p>Sio ngumu hata kidogo Kiasi Fulani ni ngumu Ni ngumu sana. Kwa shida zaidi</p>
<p>Je! Kuna wakati katika mwezi uliopita umekuwa na mawazo mazito juu ya kukatisha uhai wako?</p> <p>Ndio Hapana</p>
<p>Je! Umewahi, katika maisha yako yote, kujaribu kujiua au kufanya jaribio la kujiua?</p> <p>Ndio Hapana</p>

SEHEMU YA 3: UNYANYAPAA UTOKANAO NA VVU

Kipimo cha Unyanyapajiwa VVU kina sehemu ndogondogo zilizokusudiwa kupima unyanyapaji wa kibinafsi, wasiwasi wa kufichua hali yako ya kiafya, wasiwasi na mitazamo ya umma na picha hasi ya ubinafsi.

Kwa kila kitu, toa jibu lako

Sikubaliani sana (SS), Sikubaliani (S) ,Nakubali (N), au nakubali kabisa (NK)

Unyanyapaa wa kibinafsi

1. Watu wengine huepuka kunigusa ikiwa wanajua nina VVU
2. Watu ninao wajali waliacha kupiga simu baada ya kujifunza kuwana VVU
3. Nimepoteza marafiki kwa kuwaambia kuwa nina VVU

Hofu za kufichuahaliyakiafya

1. Kumwambia mtu kuwa na VVU nihatari
2. Ninajitahidi kuweka siri yangu ya VVU kwa siri
3. Niko mwangalifu sana kwa ambaye ninamwambia nina VVU

Hofu na Mtazamo kutoka kwa Umma

1. Watu waliona VVU huchukuliwa kama wafukuzwaji
2. Watu wengi wanaamini mtu ambaye ana VVU nimchafu
3. Watu wengi hawana raha kuwa karibu na mtu aliye na VVU

Picha hasi ya ubinafsi

1. Ninajiona nahatia kwa sababuni na VVU
2. Ninahisi kama mimi ni mtu mbaya kwa sababu ya VVU
3. Ninahisi sio mtu mzuri kama wengine kwa sababu nina VVU

SEHEMU YA 4: KIWANGO CHA USHIRIKIANO WA JAMII

Tunavutiwa na jinsi unavyohisi juu ya taarifa zifuatazo. Soma kila taarifa kwa uangalifu.

Onyesha jinsi unavyo hisi juu ya kila taarifa.

Zungusha "1" ikiwa haukubaliani kiwango cha juu

Zungusha "2" ikiwa haukubaliani

Zungusha "3" ikiwa haukubaliani kidogo

Zungusha "4" ikiwa ukoupande wowote

Zungusha "5" ikiwa unakuba likidogo

Zungusha "6" ikiwa unakubali

Zungusha "7" ikiwa unakubali kiwango cha juu

1. Kuna mtu maalum ambaye yuko karibu name wakati nina muhitaji. 1 2 3 4 5 6 7
2. Kuna mtu maalum ambaye ninaweza kumshirikisha furaha na huzuni yangu. 1 2 3 4 5 6 7
3. Familia yangu inajaribu sana kunisaidia. 1 2 3 4 5 6 7
4. Ninapata msaada wa kihisiana msaada ninao uhitaji kutoka kwa familia yangu. 1 2 3 4 5 6 7
5. Nina mtu maalum ambaye nichanzo halisi cha faraja kwangu. 1 2 3 4 5 6 7
6. Marafiki zangu hujari busa na kunisaidia. 1 2 3 4 5 6 7
7. Ninaweza kutegemea marafiki izangu wakati mambo yanaenda vibaya. 1 2 3 4 5 6 7
8. Ninaweza kuzungum za juu ya shida zangu na familia yangu. 1 2 3 4 5 6 7
9. Nina marafiki ambao naweza kuwashirikisha furaha yangu nahuzun iyangi. 1 2 3 4 5 6 7
10. Kuna mtu maalum maishani mwangu anayejali hisia zangu. 1 2 3 4 5 6 7

11. Familia yangu ikot ayari kunisaidia kufanya maamuzi. 1 2 3 4 5 6 7

12. Ninaweza kuzungumza juu ya shida zangu na marafiki wangu. 1 2 3 4 5 6 7

SEHEMU YA 5: KIPIMO CHA MATUMAINI		
1	Nimeridhika na maendeleo yangu tangu nimeanza matibabu ya VVU	Si kweli kabisa 1 Si kweli kwa kiasi fulani 2 Ni kweli kwa kiasi fulani..... 3 Ni kweli kabisa.....4
2	Naamini kwamba, kufuata ushauri kutoka kwa wataalamu wangu, kutaniletea matokeo mazuri kwa ajili ya afya yangu	Si kweli kabisa 1 Si kweli kwa kiasi fulani 2 Ni kweli kwa kiasi fulani..... 3 Ni kweli kabisa.....4
3	Mahitaji yangu yote ya matunzo ya afya kwa ajili ya hali ya VVU yanatimizwa	Si kweli kabisa 1 Si kweli kwa kiasi fulani 2 Ni kweli kwa kiasi fulani..... 3 Ni kweli kabisa.....4
4	Nahisi nimepata nafuu tangu nianze matibabu ya VVU	Si kweli kabisa 1 Si kweli kwa kiasi fulani 2 Ni kweli kwa kiasi fulani..... 3 Ni kweli kabisa.....4
5	Nahisi nimetiwa moyo	Si kweli kabisa 1 Si kweli kwa kiasi fulani 2 Ni kweli kwa kiasi fulani..... 3

		kabisa.....4	
11	Naweza kufikia malengo yangu	Si kweli kabisa 1 Si kweli kwa kiasi fulani 2 Ni kweli kwa kiasi fulani..... 3 Ni kweli kabisa.....4	
12	Nina mamlaka juu ya maisha yangu	Si kweli kabisa 1 Si kweli kwa kiasi fulani 2 Ni kweli kwa kiasi fulani..... 3 Ni kweli kabisa.....4	
13	Naweza kuishi maisha marefu na kuendelea na shughuli zangu za kawaida	Si kweli kabisa 1 Si kweli kwa kiasi fulani 2 Ni kweli kwa kiasi fulani..... 3 Ni kweli kabisa.....4	
14	Najisikia vizuri iwapo jambo baya nililokuwa naliogopa halikutokea	Si kweli kabisa 1 Si kweli kwa kiasi fulani 2 Ni kweli kwa kiasi fulani..... 3 Ni kweli kabisa.....4	
15	Binafsi, najitambua kuhusu hali yangu ya kansa	Si kweli kabisa 1 Si kweli kwa kiasi fulani 2 Ni kweli kwa kiasi fulani..... 3 Ni kweli kabisa.....4	
16	Najihisi kupata kwa kujua ukweli kuwa nina kansa	Si kweli kabisa 1 Si kweli kwa kiasi fulani 2 Ni kweli kwa kiasi fulani..... 3	

		Ni kweli kabisa.....4	
17	Natafakari kuhusu mipango yangu ya huko baadae	Si kweli kabisa 1 Si kweli kwa kiasi fulani 2 Ni kweli kwa kiasi fulani..... 3 Ni kweli kabisa.....4	
18	Mara zote ninakuwa nina mtu wa kuzungumza naye pale ninapokuwa nimekosa matumaini	Si kweli kabisa 1 Si kweli kwa kiasi fulani 2 Ni kweli kwa kiasi fulani..... 3 Ni kweli kabisa.....4	
19	Ndugu zangu wananitia moyo ninapokuwa nimekata tamaa	Si kweli kabisa 1 Si kweli kwa kiasi fulani 2 Ni kweli kwa kiasi fulani..... 3 Ni kweli kabisa.....4	
20	Taarifa nilizopata kutoka kwa watu wengine kuhusu namna ya kutatua matatizo yangu zinanipa nguvu	Si kweli kabisa 1 Si kweli kwa kiasi fulani 2 Ni kweli kwa kiasi fulani..... 3 Ni kweli kabisa.....4	

Appendix III: Consent Form- English Version

**MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES
SCHOOL OF MEDICINE
DEPARTMENT OF PSYCHIATRY AND MENTAL HEALTH**



STUDY TITLE: - PREVALENCE OF DEPRESSION AND SUICIDAL IDEATION AND ITS ASSOCIATED FACTORS AMONG ADOLESCENTS LIVING WITH HIV/AIDS RECEIVING CARE AT KCMC.

Introduction

My name is Dr. Editruda Gamassa, a resident at Muhimbili University of Health and Allied Sciences (MUHAS) in Dar- es- Salaam. I am conducting a study on the prevalence of depression and suicidal ideation and its associated factors among adolescents living with HIV/AIDS receiving care at KCMC.

You are invited to participate in this study, kindly read this form and understand the content before agreeing to participate. Any queries you may have or words that you don't understand shall be answered. If you have questions, please ask me or the doctor/nurse.

Purpose of the research

The purpose of this research is to determine magnitude of depression and suicidal ideation and its associated factors among adolescents living with HIV/AIDS receiving care at KCMC.

What does participation involve?

This research will involve an interview type of questionnaire

You sign this consent form and answer the questions in the questionnaire as well as you can.

We are inviting all adolescents with HIV infection together with parents/caregivers who are attending the adolescent/youth CTC clinic to participate.

Participant information

Your participation in this research is entirely voluntary. Whether you choose to participate or not, all the services you receive at this clinic will continue and nothing will change. You may change your mind later and stop participating even if you agreed earlier.

Confidentiality

Information about you that will be collected during the research will be kept confidential and no-one but the researchers will be able to see it. We will not be sharing the identity of those participating in the research.

Risks

By participating in this research, you will not be subjected to any risk.

Management of patients during clinic visits shall continue with no interruption from the principal investigator or assistants.

Benefits

The benefits will be participation in a study that will lead to early diagnosis of symptoms depression and suicidal ideation, and for those with symptoms will be referred to psychiatrists for further expert evaluation and management.

If you have any questions related to this study, or your health you can contact the principal researcher Editruda Gamassa 0655- 128586 or my supervisor Dr. Ester Steven 0788- 202020.

You can also contact the chairperson of the Research Senate and Publication committee, Dr.Bruno Sunguya- 0685-217272

P.O. Box 65001 Dar es Salaam

Certificate of consent

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions and any questions that I have asked have been answered to my satisfaction. I consent voluntarily to participate as a participant in this research.

Name of Participant _____

Signature of Participant _____

Date _____

Day/month/year

If Illiterate

A literate witness must sign (if possible, this person should be selected by the participant and should have no connection to the research team). Participants who are illiterate should include their thumb-print as well.

I have witnessed the accurate reading of the consent form to the potential participant, and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely.

Name of witness _____

AND

Thumb print of participant

Signature of witness _____

Date _____

Day/month/year



Appendix IV: Fomu ya ridhaa kwa mzazi

**MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES
SCHOOL OF MEDICINE
DEPARTMENT OF PSYCHIATRY AND MENTAL HEALTH**



KICHWA CHA HABARI: UTAFTI KUHUSU DALILI ZA UGONJWA SONONA NA MAWAZO YA KUJIUA NA SABABU ZINAZOHUSIANA NA UGONJWA HUU KWA VIJANA WANA OISHI NA VVU / UKIMWI WANAPOKEA HUDUMA KATIKA HOSPITALI YA KCMC

Utangulizi:

Habari, naitwa Dkt. Editruda Gamassa, mwanafunzi wa shahada ya uzamili ya udaktari wa magonjwa na afya ya akili katika Chuo cha Sayansi Shirikishi cha Muhimbili.

Tunafanya utafiti kuhusu dalili za ugonjwa wasonona kwa watoto wanaopata tiba kwenye kliniki ya wagonjwa wenye maambukizi ya virusi vya Ukimwi. Nitakupa maelezo nakukualika kushiriki katika utafiti huu, kabla ya kuamua unaweza kuongea na mtu yeyote kupata maelezo ya kutosha, kama kuna maneno hujaelewa vizuri unaweza kumwuliza daktari au muuguzi yeyote.

Lengo la huu utafiti

Lengo kuu ni kujua ukubwa watatizo hili la ugonjwa sononana mawazo y akujiu anasababu zinazohusiana na ugonjwa huu kwa vijana wanaoishi na vvu / ukimwi wanapokea huduma katika hospitali ya KCMC

Kushiriki kutahusisha nini:

Kama unakubali mwanao ashiriki katika utafiti huu, tutakuuliza maswali kuhusu mwanao na familia yako.

Kushirik ikwako nikwahiari namwanao atapata huduma zote stahiki hataka mahutashiriki kwenye utafiti, pia kama baadae ukiamua kujitoa kwenye utafiti mwanao ataendelea kuhudumiwa vile vile.

Usiri wa taarifa

Taarifa zote zitaka zopatika na katika utafiti huu zitabakiku wa nisiri. Tutatumia namba ya hospitali na namba ya utambulisho ya utafiti kwaajili ya kuwatambua washiriki wa utafiti, hakuna majina ya takayo tumika katika utafiti huu au katika machapisho yoyote yakiutafiti yatakayotokana na utafiti huu hapo baadaye. Majina yataonekana kwenye hii fomu ya ridhaa tu, ambayo itatunzwa na mtafiti, mbali na fomu nyingine za washiriki.

Madhara ya kushiriki

Kwa kushiriki kwenye utafiti huu hautapata madhara yeyote.

Je, nitalipwa kwa ushiriki?

Kushiriki kwenye utafiti ni hiari. Hakuta kuwa namalipo kwa kushiki kwako kwenye utafiti. Piaha utahitajika kulipia chochote ili mwanaoa shirik ikatika utafiti.

Kama una maswali zaidi ambayo ungependa kuuliza kuhusiana na utafitihuu, tafadhali wasiliana na

Mtafiti Mkuu

Editruda Gamassa 0655- 128586

Idara ya magonjwa ya akili

Chuo Kikuu cha afya Muhimbili

Dr.Bruno Sunguya- 0685217272

Mwenyekiti wa kamati ya utafiti na machapisho ya chuo

S.L.P. 65001 Dar es salaam, Tanzania

Tamko la ridhaa

Mimi nimesoma yaliyomo kwenye hii fomu ya ridhaa, au nimesomewa yaliyomo kwenye hii fomu ya ridhaa. Maswali yangu yote yamejibiwa nanimepewa nakala ya hii fomu ya ridhaa. Ninakubali kwahiari yangu mwenyewe kuruhusu mwanangu ashiriki katika utafiti huu

Sainiyamzazi/mlezi Tarehe:

Tamko la shahidi wa mzazi/mlezi asiyejua kusoma au kuandika

Miminimeshuhudia mzazi/mlezi wa mtoto akisomewa fomu hii ya ridhaa kwa usahihi. Mzazi/mlezi wa mtoto alipata nafasi ya kuuliza maswali ambayo yote yalijibiwa. Ninathibitisha kuwa mzazi/mleziwa mtoto ameruhusu kwahiari yake mwanaeashirikikatika utafiti.

Saini ya shahidi Tarehe:

Dole gumba la mzazi/mlezi

Appendix V: Assent form (English Version)

**MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES
SCHOOL OF MEDICINE
DEPARTMENT OF PSYCHIATRY AND MENTAL HEALTH**



Principal Investigator: Dr. Editruda Gamassa

Study Title: Prevalence of depression and suicidal ideation and its associated factors among adolescents living with HIV/AIDS receiving care at KCMC.

I am doing research on assessing the Prevalence of depression and suicidal ideation and its associated factors among adolescents living with HIV/AIDS receiving care at KCMC. This will help in advancing knowledge and knowing the magnitude of depression and suicidal ideation. During the procedure, I will use your CTC- 1 and CTC-2 card to obtain HIV related information, I will ask questions to know if you have symptoms of depression and suicidal ideation. Your cooperation is highly needed, feel free to speak up when you feel uncomfortable with the questions that I will be asking. You will not have to pay anything for you to participate in this study.

If in case you will be diagnosed with symptoms of depression and suicidal ideation during the study, I will refer you to a psychiatrist for further evaluation and treatment that will further improve your quality of life. All information obtained from you will be kept confidential. You do not have to be in this study if you do not want to be. You can also quit anytime during the study if you wish so. Your parents/ guardian will be informed about the study too. If you decide you want to be in this study, please sign your name.

I, _____, have understood in full sound and in my best knowledge, I want to be part of this research study.

Researcher Signature and Date.....

Child signature and Date.....

Participant no:.....

Appendix VI: Assent form (Kiswahili Version)

**MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCE
SCHOOL OF MEDICINE
DEPARTMENT OF PSYCHIATRY AND MENTAL HEALTH**



Mtafiti: Dr. Editruda Gamassa

Mada ya utafiti: Utafiti kuhusu dalili za ugonjwa sononana mawazo ya kujiuana sababu zinazohusia nanaugonjwa huukwa vijana wanaoishi na VVU / UKIMWI wanapokea huduma katika hospitali ya KCMC

Taarifa kuhusu utafiti huu

Mimi ninafanya utafiti kutaka kujua kuhusu ugonjwa wasonona na mawazo yakujiuana sababu zinazo husianana ugonjwa huu kwa vijana wanaoishi na VVU/ UKIMWI wanaopatiwa huduma katika hospitali ya KCMC. Hii itasaidia kujua zaidi kuhusu ugonjwa wa sonona nakurahisisha kugundulika mapema kabla haujaleta madhara na kupata matibabu mapema kwa vijana hao. Wakati wa utaratibu, nitatumia CTC- 1 kadi yako kupata taarifa kuhusu ugonjwa wa UKIMWI, nitauliza maswali kujua kama una dalili yoyote ya ugonjwa huu. Nitahitaji sana ushirikiano wako kuweza kujua kama una dalili za ugonjwa huu .Jisikie huru kusema chochote kama hautajisikia vizuri kwa swali lolote nitakalokuuliza. Kwa kushiriki kwenye utafiti huu hautapata madhara yoyote na hutalipa chochote. Ikiwa utagundulika na dalili za ugonjwa wa sonona na mawazo ya kujiua, tutakusaidia kupatiwa msaada zaidi na madaktari bingwa wa magonjwa ya akili na kupatiwa matibabu sahihi kama itahitajika kutibiwa. Maelezo yote utakayotoa yatakua ni siri. Si lazima kwako kushiriki kwenye utafiti hii, unaweza pia kuacha wakati wowote kama utaona hivyo. Wazazi / mlezi wako watakuwa na taarifa kuhusu utafiti huu. Ukiamua unataka kushiriki katika utafiti huu, tafadhali weka sahihi yako.

Mimi _____,nimeelewa kwa kwaujuzi wangu bora, nataka kushiriki kwenye utafiti huu.

Sahihi



Sahihi ya mtafiti na tarehe

Sahihi ya mtoto/ kijana na tarehe

Namba ya ushiriki

Appendix vii- Ethical Clearance

UNITED REPUBLIC OF TANZANIA
 MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY
 MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

OFFICE OF THE DIRECTOR - RESEARCH AND PUBLICATIONS

Ref. No.DA.282/298/01.C/ Date: 11/02/2021

Ref. No.DA.282/298/01.C/ Date: 11/02/2021

MUHAS-REC-02-2021-490

Editruda Gamassa
 MMed Psychiatry,
 School of Medicine
 MUHAS

**RE: APPROVAL FOR ETHICAL CLEARANCE FOR A STUDY TITLED:
 PREVALENCE OF DEPRESSION AND SUICIDAL IDEATION AND ITS
 ASSOCIATED FACTORS AMONG ADOLESCENTS LIVING WITH HIV/AIDS
 RECEIVING CARE AT KCMC.**

Reference is made to the above heading.

I am pleased to inform you that the Chairman has on behalf of the University Senate, approved ethical clearance of the above-mentioned study, on recommendations of the Senate Research and Publications Committee meeting accordance with MUHAS research policy and Tanzania regulations governing human and animal subjects research.

APPROVAL DATE: 11/02/2021
 EXPIRATION DATE OF APPROVAL: 11/02/2022

STUDY DESCRIPTION:

Purpose:

The purpose of this observational cross sectional study is to determine the prevalence of depression and suicidal ideation and associated factors among adolescents living with HIV/AIDS receiving care at KCMC.

The approved protocol and procedures for this study is attached and stamped with this letter, and can be found in the link provided:
<https://irb.muhas.ac.tz/storage/Certificates/Certificate%20-%20351.pdf> and in the MUHAS archives.

The PI is required to:


1. Submit bi-annual progress reports and final report upon completion of the study.
2. Report to the IRB any unanticipated problem involving risks to subjects or others including adverse events where applicable.
3. Apply for renewal of approval of ethical clearance one (1) month prior its expiration if the study is not completed at the end of this ethical approval. You may not continue with any research activity beyond the expiration date without the approval of the IRB. Failure to receive approval for continuation before the expiration date will result in automatic termination of the approval for this study on the expiration date.
4. Obtain IRB amendment (s) approval for any changes to any aspect of this study before they can be implemented.
5. Data security is ultimately the responsibility of the investigator.
6. Apply for and obtain data transfer agreement (DTA) from NIMR if data will be transferred to a foreign country.
7. Apply for and obtain data transfer agreement (DTA) from NIMR if data will be transferred to a foreign country.
8. Apply for and obtain material transfer agreement (MTA) from NIMR, if research materials (samples) will be shipped to a foreign country.
9. Any researcher, who contravenes or fail to comply with these conditions, shall be guilty of an offence and shall be liable on conviction to a fine as per NIMR Act No. 23 of 1979, PART III section 10 (2)
10. The PI is required to ensure that the findings of the study are disseminated to relevant stake holders.
11. PI is required to be versed with necessary laws and regulatory policies that govern research in Tanzania. Some guidance is available on our website <https://drp.muhas.ac.tz/>.




Dr. Bruno Sunguya
Chairman, MUHAS Research and Ethics Committee



Appendix viii- introduction letter to KCMC



UNITED REPUBLIC OF TANZANIA
 MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY
 MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES
 OFFICE OF THE DIRECTOR – POSTGRADUATE
 STUDIES



In reply quote;
 Ref. No. HD/MUH/T.222/2018 15th February, 2021

The Executive Director,
 Kilimanjaro Christian Medical Centre,
 P.O. Box 3010,
KILIMANJARO.

Re: INTRODUCTION LETTER


The bearer of this letter is Dr. Editruda Gamassa, a student at Muhimbili University of Health and Allied Sciences (MUHAS) pursuing MMed. Psychiatry.

As part of her studies she intends to do a study titled: *“Prevalence of Depression and Suicidal Ideation and Its Associated Factors Among Adolescents Living with HIV/AIDS Receiving Care at KCMC.”*

The research has been approved by the Chairman of University Senate.

Kindly provide her the necessary assistance to facilitate the conduct of her research.

We thank you for your cooperation.



For: DIRECTOR, POSTGRADUATE STUDIES

cc: Dean, School of Medicine, MUHAS
 cc: Dr. Editruda Gamassa

9 United Nations Road; Upanga West; P.O. Box 65001, Dar Es Salaam: Tel. G/Line: +255-22-2150302/6; Ext. 1015; Direct Line: +255-22-2151378; Telefax: +255-22-2150465; E-mail: dpgs@muhas.ac.tz; Web: <https://www.muhas.ac.tz>

Appendix ix: Permission letter from KCMC



KILIMANJARO CHRISTIAN MEDICAL CENTRE

An institution of the Good Samaritan Foundation

P. O. Box 3010, Moshi, Tanzania

Tel: 255-027-2754377 / 80

Fax: 255-027-2754381

Email: kcmadmin@kcmc.ac.tz

Website: <http://www.kcmc.ac.tz>

Our Ref No: KCMC/P.I/Vol. XII /108

26.02.2021

DEAN SCHOOL OF MEDICINE,
P. O. BOX 65001,
DAR ES SALAAM-TANZANIA.

RE: PERMISSION TO CONDUCT RESEARCH STUDY "PREVALENCE OF DEPRESSION AND SUICIDAL IDEATION AND ITS ASSOCIATED FACTORS AMONG ADOLESCENT LIVING WITH HIV/AIDS RECEIVING CARE AT KCMC.

In reference to the above.

I would like to inform you that, permission is hereby granted for your Student (Dr. Editruda Gamassa) to conduct Data Collection at KCMC starting from the date of this letter, 2021.

However, you may note in advance that during your study at KCMC you should adhere medical ethics, procedures, rules and regulations that stipulated at our Centre.

However upon completion of your research study at our Centre you should to bring a copy of your final report at KCMC Hospital Management.

You're warmly welcome.

Mr Kessy Kessale

For: EXECUTIVE DIRECTOR



Copy: HoD - CCFCC

All correspondences should be addressed to the Executive Director.