Alan J Flisher Centre
for Public Mental Health

Common Mental Disorders and Barriers to Adherence to HIV Medications among Emerging Adults living with HIV using Healthcare Services in Harare

By

Emily Wendy Saruchera

SCREMI001

Submitted to the University of Cape Town

In (dissertation only) fulfilment of the requirements for the degree

Master of Philosophy Public Mental Health

Faculty of Health Sciences

University of Cape Town

Date of submission: 30 October 2020

Supervisors:

Associate Prof Marguerite Schneider, University of Cape Town

Prof Melanie Abas, Kings College London

Dr Munyaradzi Madhombiro, University of Zimbabwe

Declaration

I, Emily Wendy Saruchera, hereby declare that the work on this dissertation/thesis is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of this has been, is being, or is to be submitted for another degree in this or any other university.

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Acknowledgment

I would like to thank AMARI for funding my MPhil course. Without your financial support, I could have not completed this thesis. Many thanks to my supervisors: Prof Marguerite Schneider for your encouragement and follow ups; Prof Melanie Abas you for always being there when I needed you the most and for, your continued support which kept me going; and Dr Madhombiro for your positive feedback and encouragement. The three of you inspired me, your support and guidance enabled me to accomplish this thesis. I would also like to acknowledge Emily Garman, who assisted me with the analysis of the data.

Thank you to Nancy Jonhera and Rumbidzai Nyanda for helping me with data collection. I also want to thank the Parirenyatwa centre of excellence staff members for their support during data collection and all the participants who agreed to take part and participated in this study. Without the participants, the study would have not happened, once again thank you participants.

Finally, I would like to extend my gratitude to my family members, my mother, sister, husband and my son Taropafadzwa. My mother, your prayers kept me going and Marshall, your kindness and support during the times I was busy with my studies was just amazing. Taropafadzwa my son thanks for understanding and encouraging me to study.

Dedication

Firstly, I dedicate this dissertation to the Lord almighty who gave me the strength to complete this study. The thesis is also a dedication to all emerging adults living with HIV who are having adherence problems due to Common Mental Disorders (CMDs) and other barriers to Antiretroviral Therapy (ART). It is my hope and desire that the knowledge and experiences you shared with me will assist in development of interventions to reduce barriers and improve adherence to ART.

Abstract

Background

Emerging adulthood (18 to 29 years old) is a critical age group in relation to the Human Immunodeficiency Virus (HIV) epidemic and to mental health. A major public health concern globally, in management of HIV, is that emerging adults have suboptimal antiretroviral therapy (ART) adherence, yet they are the largest group initiating ART. In addition, common mental disorders (CMDs), including depression and anxiety have their peak incidence during this period and they have been found to increase risk of non-adherence to ART. Those with CMDs may have different types of barriers than those without CMDs. Furthermore, those with CMDs might be more likely to have a greater number of barriers to adherence than those without because of the way symptoms of CMDs impact on memory, problem solving skills and concentration.

Aims

The main aim of this study was to describe barriers to adherence to ART in emerging adults living with HIV with probable CMDs (i.e. depression and/or anxiety) and accessing HIV treatment at a government clinic in Harare, Zimbabwe, compared to emerging adults living with HIV without probable CMDs. The specific objectives were:

a. to determine the prevalence of probable CMDs among emerging adults living with HIV
b. to describe the prevalence, severity and common barriers to ART adherence, measured using the 22-item Barriers to Adherence (BARTA scale) in emerging adults living with HIV with probable CMDs and to compare this with those without probable CMDs.

Methods

A representative sample of 223 emerging adults aged 18 to 29 years were recruited in a cross-sectional study using the random sampling technique. The Patient Health Questionnaire-9 (PHQ-9), Generalized Anxiety Disorder-7 (GAD-7) and Barriers to Adherence Scale (BARTA scale) were used to assess probable depression, probable anxiety and barriers to adherence respectively.

Data Analysis

Univariate Descriptive statistics were used to describe the socio-demographic, prevalence of probable CMDs, prevalence of barriers to adherence, overall median of total BARTA score (severity of barriers to ART adherence) for the whole sample and overall median number of barriers to ART adherence for the whole sample.

Chi-square analyses were used to compare the prevalence of barriers (no barrier vs. at least one) between participants with and without probable CMDs.

Non-parametric Wilcoxon rank-sum tests and Kruskal Wallis tests (for variables with more than two categories) were used to

I. Compare the number of barriers to ART adherence between participants with and without a probable CMDs;
II. Compare the severity of barriers to ART adherence between participants with and without probable CMDs, using overall scores on the BARTA scale
III. Assess the relationship between demographic variables, HIV related variables, Substance Use Disorders (SUD) and total BARTA scores.

Variables which were significantly associated with BARTA scores were entered into a negative binomial regression model, to assess the relationship between CMDs and severity of barriers to ART adherence, this time controlling for possible demographic confounding factors.

Results

The prevalence of probable CMDs (i.e. probable depression and/or probable anxiety) was 33.2%. Specifically, 31.8% had probable depression and 16.1% had probable anxiety. Results showed that 76.2 % of the sample experienced at least one barrier to ART adherence and that 94.5% of those with CMDs experienced at least one barrier to adherence compared to 67.1% of those without CMDs ($p>0.001$).

We found a significant difference ($U=-7.209$, $p<0.001$) between the number of barriers experienced by participants with and without CMDs: participants with a CMD reported a greater number of barriers (median (md) =5, IQR=3-7) compared to those without CMDs (md= 1, IQR=0-4).

A statistically significant difference was also found in total BARTA scores between participants with and without CMDs: participants with a CMD reported a greater BARTA score (md=7, IQR=4-12) compared to those without a CMD (md= 2, IQR=0-4; U=-7.415, p<0.001).

The most frequent barriers reported by emerging adults living with HIV with probable CMDs were 'forgetting' (68.0%), 'thinking too much' (49.0%), 'having to take ART in front of others' (41.0%) and 'not having a reminder' (39.0%). The most frequent barriers for emerging adults living with HIV without probable CMDs were 'forgetting' (30%), 'not having medications with them' (21%), 'not wanting others to know their status' (20%) and 'not having a reminder' (19%). Although 'forgetting' and 'not having a reminder' were among the top barriers in both groups, those with probable CMDs reported them more frequently.

Conclusion

This study has shown that firstly, CMDs and barriers to ART adherence are prevalent among emerging adults living with HIV. Secondly, emerging adults living with HIV with probable CMDs experience a high number of barriers to ART adherence and more severely than those without probable CMDs. Finally, emerging adults with CMDs reported barriers such as forgetting and not having a reminder more frequently than those without CMDs. This calls for routine screening for probable CMDs and barriers to ART adherence in HIV clinics. Furthermore, there is need to come up with tailored psychological interventions that can simultaneously treat CMDs and reduce barriers to ART adherence among emerging adults living with HIV.

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List of Acronyms

ART	Antiretroviral therapy
BARTA scale	Barriers to adherence scale
CDQ	Client Diagnostic Questionnaire
CMDs	Common Mental Disorders
COM-B	Capability, Opportunity, Motivation- Behaviour
DSM-5	Diagnostic and Statistical Manual of Mental Disorders, 5th edition
GAD-7	Generalized Anxiety Disorders-7
HADS	Hospital Anxiety and Depression Scale
HICs	High Income countries
HIV	Human Immunodeficiency Virus
LIMCs	Low- and Middle-Income Countries
Md	Median
MoH	Ministry of Health
PHQ-9	Patient Health Questionnaire-9
PLWH	People Living with Human Immunodeficiency Virus
SCAN	Schedule for Clinical Assessment in Neuropsychiatry
SSA	Sub Saharan Africa
SUDs	Substance Use Disorders
USA	United States of America
WHO	World Health Organization

CHAPTER 1: INTRODUCTION

The study focuses on Common Mental Disorders (CMDs) and barriers to antiretroviral therapy (ART) adherence among emerging adults living with Human Immunodeficiency Virus (HIV) at an HIV clinic in Harare, Zimbabwe. This chapter presents the background of the study, statement of the problem, significance of the study, research question, aims, and hypothesis.

Background to the study

Emerging adulthood is the period between adolescence and entry into adulthood lasting from 18 years to 29 years (Arnett & Padilla-Walker, 2015). This is a critical age group both in relation to the HIV epidemic and mental health. An estimated 3.9 million individuals aged 15 to 24 years are living with HIV globally (UNAIDS, 2017). Nearly 85 percent of individuals between the ages of 15 to 24 years living with HIV reside in Sub-Saharan Africa (SSA) (UNAIDS, 2017; UNICEF, 2016). In Zimbabwe - a country in SSA, 5.5% and 10.9% of emerging adults aged 20-24 years and 25-29 years respectively are living with HIV (Ministry of Health and Child Care (MOHCC) Zimbabwe., 2017).

New HIV infection rates remain high among emerging adults worldwide. In 2014, emerging adults aged 15 to 24 years and 25 to 34 years represented approximately 34.0% and 32.0% of all new infections in adults respectively (UNAIDS, 2015). Most of these new diagnoses occurred among young females aged 15 to 24 years (370 000) compared to (280 000) young males (UNAIDS, 2015). Young women are at high risk of new HIV infections because of their biological make up and by engaging in sexual relationships with older men (intergenerational sex), and engaging in sex in exchange for gifts (transactional sex) (Idele et al., 2014; Kilburn et al., 2018; Somse et al., 2017).

In addition, mental disorders are also common in this age group, especially depression and anxiety (Institute of Medicine and National Research Council, 2013; Patel et al., 2007). It is estimated that 20.0% of lifetime prevalence of mental disorders like depression, begin to appear by the age of 14 years and 75.0% by the age of 24 years (Martinez et al., 2009b). In 2015, depression affected approximately 6.8% of young females and 5.5% of young males while anxiety affected nearly 5.5% and 3.5% of young females and males aged 20 to 24 years respectively, worldwide (WHO, 2017). Despite emerging adults being at risk of common

mental disorders, depression and anxiety disorders are usually undiagnosed and untreated among this age group due to lack of recognition, fear of stigma, and limited mental health resources (Davey & Mcgorry, 2019; Smith, 2014). A systematic review conducted in Africa, reported that people living with HIV (PLWH) are at increased risk of CMDs compared to those who are HIV negative (Brandt, 2009). A study conducted in Zimbabwe among adults aged 18 years and above found a high prevalence rate (68.5%) of depression among PLWH compared to 47.2% among those who were HIV negative (Chibanda, Cowan, et al., 2016).

Substance use disorders (SUDs), which may co-occur with CMDs in PLWH, are also at peak prevalence during emerging adulthood (Gammarel et al., 2016). Many people start using substances during adolescence and reach peak prevalence during emerging adulthood (Wisk & Weitzman, 2016). The most common substances that are used by emerging adults include alcohol, tobacco and marijuana (Wisk & Weitzman, 2016). Prior studies from high-income countries (HICs) have shown high rates of SUDs among emerging adults living with HIV. In HICs, the estimated prevalence rate of alcohol use ranges from 19.0% to 87.0%, and of other substances such as tobacco and marijuana ranges from 20.4% to 45.5% (Conner et al., 2013; Gamarel et al., 2018; Martinez et al., 2009b; Nichols et al., 2014; Thompson et al., 2018). Also, a systematic review conducted in SSA found that alcohol and drug use was more prevalent among emerging adults living with HIV compared to their uninfected peers (Ssewanyana et al., 2018). The prevalence of alcohol use among emerging adults living with HIV residing in SSA ranges from 3.8% to 35.9% while the prevalence of other substances ranged from 4.4% to 46% (Bultum et al., 2018; Jewkes et al., 2006; Kiunyu, 2015; Kuteesa et al., 2020; Mabunda et al., 2019; Test et al., 2012). Emerging adults living with HIV may use marijuana and alcohol as a coping strategy for living with a chronic disease (Bruce et al., 2013). This could be one of the reasons why the rate of substance use is high among this population. While the prevalences from these different studies show that substance use is common among this population, the rates vary widely. This could be because of different age ranges and different tools that assess alcohol and substance use.

Emerging adults with CMDs are at increased risk of substance use compared to those without CMDs as they may use them to deal with the symptoms of CMDs (Mckenzie et al., 2011). While PLWH may use substances as a coping strategy, substance use has several negative consequences, such as failure to meet daily routines at school, not completing homework and

may lead to clinically significant functional impairment and health problems (Bough & Pollock, 2018; Hasin et al., 2014; World Health Organization, 2017).

CMDs have a great impact on HIV treatment as they may contribute to low rates of engagement in care and non-adherence to ART among PLWH (Tesfaw et al., 2016). Studies from both HIC and LMICs found that PLWH with symptoms of CMDs are less likely to achieve good adherence to ART compared to those without CMDs (Gonzalez, Batchelder, et al., 2011; Kong et al., 2012; Mayston et al., 2012; Memiah et al., 2014; Moraes & Casseb, 2017; Nakimuli-Mpungu et al., 2012; Uthman et al., 2014). However, other studies found no association between poor ART adherence and CMDs among PLWH world-wide (Binagwaho et al., 2016; Fawzi et al., 2016; Kitshoff et al., 2012; Kyser et al., 2011). Different findings could be attributed to tools used to measure CMDs and ART adherence as well as different study population. Furthermore, some studies did not use validated tools to measure CMDs and ART adherence (Kitshoff et al., 2012; Springer et al., 2012).While CMDs have an impact on adherence, very few clinics routinely screen for these mental conditions (Dawson-Rose et al., 2018). Poor adherence to ART may have serious consequences for the patient including falling CD4 counts, developing drug resistance, limited future treatment options, disease progression and more hospitalisation (Ehlers & Tshisuyi, 2015). Failure to adhere to medication does not only affect the patient but also the healthcare system and the government as the virus builds resistance, thereby requiring drugs that are more sophisticated and expensive for the government to purchase (Gellad et al., 2009). Due to this, it is of great importance to examine the prevalence of CMDs among emerging adults living with HIV in Zimbabwe where a high rate of CMDs (68.5%) has been recorded among adults aged 18 years and above (Chibanda, Cowan, et al., 2016).

Barriers to ART adherence among HIV infected emerging adults

One of the major public health concerns globally is that emerging adults have suboptimal ART adherence, yet they are the largest group of people initiating ART (MacDonell et al., 2013). Studies from African countries have found that 14.0 to 29.0% of emerging adults living with HIV have poor adherence to ART (Gebrezgabher et al., 2017; Letta et al., 2015; Mukui et al., 2016). Furthermore, it has been reported in Zimbabwe that emerging adults living with HIV have lower rates of viral suppression (48.6%) among females aged 15 to 24 years, 40.2% and 37% among males aged 25 to 34 years) compared to older adults with a viral suppression rate

of 78.7% and 71.1% among females aged 45 to 54 years and males aged 55 years and older respectively (ZIMPHIA, 2016). For this and other reasons to be discussed below, it is imperative to examine barriers that hinder adherence among this critical age group.

A barrier to medication adherence can be defined as any factor that can make it difficult to take medication or that can contribute to non-adherence behaviour (Engler et al., 2018). Barriers can be broadly categorised into patient-related barriers, interpersonal barriers and structural barriers (Davis et al., 2018). These categorises will be explained in detail in the next chapter. Although the Zimbabwean government has dealt with some of the structural barriers to ART by providing ART at no cost to the HIV patients and making it accessible, adherence to HIV medication remains a challenge and PLWH still face barriers to taking ART (Apollo et al., 2013; Rudy, Murphy, Harris, Muenz, & Ellen, 2010). A recent study conducted at an HIV clinic in Harare, Zimbabwe, among adults aged 18 and above reported that 48.0% of adults living with HIV experienced at least one barrier to ART (Croome et al., 2018).

A number of barriers have previously been found to be associated with decreased adherence to ART. The most frequently reported barriers among adults are patient-related barriers which include forgetting, lack of adequate food, fear of side effects and being away from home (Croome et al., 2018; Shubber et al., 2016). However, few studies have examined the most common barriers to ART adherence among emerging adults living with HIV in Zimbabwe or in other countries in SSA. It is critical to examine barriers to ART adherence among emerging adults living with HIV in SSA particularly in Zimbabwe for a number of reasons discussed below.

Firstly, as mentioned above, emerging adults have poor adherence to ART compared to older adults (35 years and above) (Heestermans et al., 2016; Memiah et al., 2014). This could be due to transition of care from child to adult HIV services which involves major changes, for example change in healthcare providers, changing of model of care and taking responsibility of their own health (Dahourou et al., 2017). Also it could be due to increased risk taking, and decreased parental control and guidance (MacDonell et al., 2013). As stated above, poor adherence to ART has several consequences including increased hospitalisation, decreased quality of life, and increased mortality rates (Ehlers & Tshisuyi, 2015). In low and middle income countries (LMICs) like Zimbabwe where ART options available are limited, it is

imperative for emerging adults living with HIV to maintain good adherence to first line medication in order to have long-lasting treatment benefits (Coetzee et al., 2015). For emerging adults to maintain first or second line medication, early identification of barriers to ART adherence could be helpful, not only among those with high viral load but also among those with viral suppression. Early identification of barriers to ART adherence among those with viral suppression may allow intervention before this clinical indicator deteriorates (Engler et al., 2018).

Secondly, emerging adults are at a developmental stage which is characterised by a shift from adolescence into adulthood (Arnett & Padilla-Walker, 2015). This stage involves a large number of changes, such as moving out of their parents' home, limited parental control, increased risk taking, completing education, searching for stable employment and engaging in stable relationships that may lead into marriage (Arnett, 2003). During this stage, emerging adults may face stressors such as low educational achievement, inability to cope with peer pressure, and difficulties in finding employment (Arnett, Žukauskienė, Sugimura, & Since, 2014). These stressors and the characteristics of this developmental stage may expose emerging adults to certain patient-related barriers to ART adherence more frequently than any other age group. Understanding the pattern and the most common barriers to ART adherence, among this particular age group, is critical as it may help to inform adherence-counselling approaches.

Common mental disorders and barriers to ART adherence

CMDs are at their peak during emerging adulthood (Davey & Mcgorry, 2019; Whiteford et al., 2015). HIV infected emerging adults are at higher risk of developing CMDs than those who are HIV negative, as they have the extra burden of taking ART every day at the same time and dealing with HIV related stigma and discrimination (Myer et al., 2009; UNAIDS, 2018).

For HIV infected individuals, those with CMDs, may find adhering to ART more difficult compared to those without CMDs (Tlhajoane et al., 2017). This is because adherence to medications requires motivation, energy, and good cognitive functioning. The symptoms of CMDs, such as having negative thoughts, low mood, and poor concentration, may negatively affect ART adherence (Akincigila et al., 2011; Kidia et al., 2015b). These symptoms can make people with CMDs forgetful and having less interest in taking their medication which can

make them skip their medications (Kidia et al., 2015). It is therefore possible that these barriers can be more frequent among emerging adults with CMDs. It is important to determine which barriers to ART adherence are experienced more frequently by HIV infected emerging adults with CMDs than those without CMDs. Such findings will help to develop strategies that are tailored to treat CMDs and overcome barriers to ART simultaneously to improve adherence and ART outcomes.

Knowledge gap

While there are studies in SSA that focused on mental health and barriers to ART adherence among PLWH, we identified major gaps in the literature (Abas et al., 2017; Chibanda, Cowan, et al., 2016; Croome et al., 2017). Firstly, in Zimbabwe, mental health studies, have not specifically focused on the prevalence of CMDs among emerging adults living with HIV. Secondly, there are limited studies in SSA that examined common barriers to ART adherence among HIV infected emerging adults with and without CMDs particularly in Zimbabwe, where new HIV infections and suboptimal ART adherence rates are still high in this population. Finally, to my knowledge, there are no studies that compared barriers to ART adherence between HIV infected emerging adults with CMDs and HIV infected emerging adults without CMDs. It could be possible that these two groups experience barriers to ART adherence that are different. In order to fill in these gaps, this study focused on the prevalence of probable CMDs and describes barriers to ART adherence among HIV infected emerging adults with CMDs in comparison to those without CMDs.

Significance of the study

Although the results cannot be generalised, this additional information may help to understand the

1. Prevalence of probable CMDs among emerging adults living with HIV. This will add to current evidence for the CMDs for the specific age group and point to the need for routine screening for CMDs in HIV clinics.

2. Prevalence, severity and common barriers to ART adherence reported by emerging adults living with HIV with probable CMDs in comparison to those without probable CMDs. This will inform adherence counselling approaches and also point to the need for routine screening for barriers to ART in HIV clinics. Furthermore, the results may

guide future studies to come up with tailored adherence interventions can that best promote and maintain adherence among this young generation.

Aims

The aim of this study was to describe barriers to ART adherence in emerging adults living with HIV with probable common mental disorders (i.e. depression and/or anxiety) compared to emerging adults living with HIV without probable common mental disorders accessing treatment at Parirenyatwa Centre of Excellence in Harare, Zimbabwe.

Objectives

1. To determine the prevalence of probable common mental disorders among emerging adults living with HIV
2. To describe the prevalence, number, type and severity of barriers to ART adherence, measured using the 22-item Barriers to ART adherence scale (BARTA scale) in emerging adults living with HIV with probable CMDs and to compare this with those without probable CMDs.

Hypothesis

1. Emerging adults living with HIV with probable common mental disorders have a greater number of barriers to ART adherence than those without probable common mental disorders
2. Barriers to ART adherence are more severe (high total BARTA score) among emerging adults with probable common mental disorders than those without common mental disorders

CHAPTER 2: LITERATURE REVIEW

This chapter focuses on a review of the literature describing the prevalence of common mental disorders (CMDs) and barriers to antiretroviral therapy (ART) adherence among emerging adults living with Human Immunodeficiency Virus (HIV). The sections in this chapter are guided by the research aim and the objectives of the study. Finally, the knowledge gap, that the study intends to fill is identified..

Search strategy

In order to review the literature, I was guided by the tools of systematic reviews. I used principles of using search terms to identify relevant papers, but I did not do a systematic checking of all databases to identify relevant articles, nor systematic checking of all papers identified to extract information. The databases I searched were PubMed, PMC, Science direct, Psychoinfo and Cochrane database from 1 February 2018 to 31 August 2019. Database searches included a variety of combinations of terms as shown in the table below (Table 1). The boolean operators have been used in the search terms to identify the literature. The search included publications from high, middle- and low-income countries and it was not restricted by date.

Table 1: Illustrating the search strategy

	Specific search terms
Prevalence	(((prevalence) OR rate) OR statistics) OR burden
Common mental disorders	(((common mental disorders) OR CMDs) OR depression) OR anxiety
Barriers to ART adherence	((((barriers to antiretroviral therapy adherence) OR factors affecting adherence to ART) OR barriers to adherence to ARVs) OR barriers to ART adherence) OR barriers to HIV medication adherence
Emerging adults	(((((emerging adults living with HIV) OR HIV infected emerging adults) OR young adults living with HIV) OR HIV infected young adults) OR youth living with HIV) OR HIV infected youth
The prevalence of common mental disorders and barriers to ART adherence among emerging adults living with HIV	(((((((prevalence) OR rate) OR statistics) OR burden)) AND ((((common mental disorders) OR CMDs) OR depression) OR anxiety)) AND (((((barriers to antiretroviral therapy adherence) OR factors affecting adherence to ART) OR barriers to adherence to ARVs) OR barriers to ART adherence) OR barriers to HIV medication adherence)) AND ((((((emerging adults living with HIV) OR HIV infected emerging adults) OR young adults living with HIV) OR HIV infected young adults) OR youth living with HIV) OR HIV infected youth)

Inclusion and exclusion criteria

The articles were selected based on the combination of the study aims and objectives. Articles were included if they focused on either;

1. *Prevalence of common mental disorders (i.e. depression and anxiety) among HIV infected individuals*. Articles were included if they focused either on combined anxiety and depression or anxiety or depression only. Samples should have included HIV infected individuals with any of the ages between 18 to 29 years. Those with adolescents were included if the sample included those aged 18 years and above while those with adult populations were included if the sample included those aged 18 to 29 years.
2. *Barriers to ART adherence among HIV infected individuals*. Samples should have included HIV infected individuals with any of the ages between 18 to 29 years. Those with adolescents were included if the sample included those aged 18 years and above while those with adult population were included if the sample included those aged 18 to 29 years.

Articles that did not meet the inclusion criteria were removed based either on the review of the title, abstract or on the full article. Articles were excluded if they dealt with issues that were not related to the study aims and objectives such as major mental disorders (e.g. psychosis, schizophrenia and common mental disorders among the general population). Articles that were not written in English were also excluded.

Number of articles found and data extraction

The search yielded 4847 articles using the search terms shown in Table 1 and 15 articles found from the reference list of the identified articles and grey literature were added. A total number of 4730 articles were excluded based upon irrelevant titles and abstracts. From the remaining 85 articles, 27 were found not to be relevant and were excluded. The remaining 58 articles were reviewed to extract the relevant information as informed by the research aim and questions.(see the flow diagram below (fig 1) for illustration of the procedure).

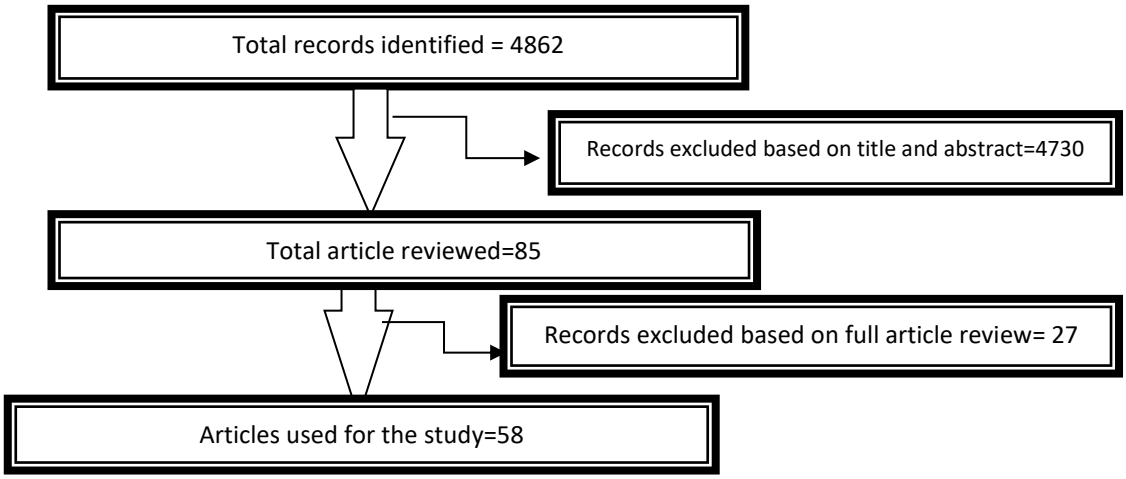

Figure 1: A flow chart illustrating the process of article selection for the literature review

Prevalence of Common mental disorders in HIV infected emerging adults

The main purpose of this section is to review the literature I identified on the prevalence of common mental disorders (CMDs) among emerging adults living with HIV. Key terms are defined in the beginning of the section and these include common mental disorders, depression and anxiety. It is important to note that there are limited data on the prevalence of CMDs in emerging adults aged 18 to 29 years, so articles that included those slightly below the age of 18 and slightly above the age of 29 years were included in the review.

Defining Common mental disorders

Common mental disorders (CMDs) refer to two main mental health conditions - depressive disorders and anxiety disorders (WHO, 2017). These conditions were termed 'common' because they are highly prevalent in the population (WHO, 2017). Depression and anxiety normally begin during adolescence and are at their peak during emerging adulthood (Craske & Stein, 2016; Davey & Mcgorry, 2019).

Defining depression

According to the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5), depression is a mood disorder characterised by low mood, poor concentration, sadness, feeling of tiredness, loss of interest or pleasure, loss of appetite, feeling guilt or low self-worth and disturbed sleep (APA, 2013). These symptoms can impair one's ability to perform daily activities such as work related, school related and household duties (World Health Organization, 2017). For one to be diagnosed with depression, these symptoms should be present and interfering with everyday activities such as sleep, work and study for two weeks

or more (NIH, 2016). Depression affects nearly 300 million people worldwide and is ranked by WHO as the single largest contributor to global disability (WHO, 2017). Depressive disorders are divided into two sub-categories: major depressive disorders; and dysthymia (WHO, 2017).

Prevalence of depression among emerging adults living with HIV

Depression is common among individuals living with HIV especially emerging adults (Abebe et al., 2019). Prevalence of depression among individuals living with HIV remains high as compared to their uninfected peers (Mellins & Malee, 2013). High rates of depression among emerging adults living with HIV could be attributed to HIV related psychosocial challenges that they may face such as stigma and burden of taking pills every day at the same time (Le Prevost et al., 2018; Mellins & Malee, 2013).

Studies from High-income countries (HICs) have demonstrated that depression is common among emerging adults living with HIV. A cross sectional study of 335 emerging adults aged 18 to 30 years from USA found a depression prevalence of 11.6% as measured by the Patient health questionnaire (PHQ-9) (Shacham et al., 2017). Similar results were also found in two studies that were conducted in USA and England, where the depression rates were 15.0% as measured by the Client Diagnostic Questionnaire (CDQ) among individuals aged 14 to 24 years and 16.0% as measured by the Hospital Anxiety and Depression Scale (HADS) among individuals aged 13 to 21 years (Le Prevost et al., 2018; Martinez et al., 2009b). Two studies from USA among individuals aged 13 to 24 years and 12 to 24 years, found the prevalence of depression to be 24.0% and 32.1% respectively (Rudy et al., 2009; Salama et al., 2013). The highest rate of depression of 52.0% was found in a study that was conducted in USA among individuals aged 12 to 24 years using the Brief Symptom Inventory (BSI) (Tanney et al., 2012). While the studies from HICs have shown that depression is prevalent among emerging adults living with HIV, the rates are not consistent as they range from 11.6% to 52.0%. This could be due to different tools being used to assess depression.

Studies from low and middle income countries (LMICs) have also shown that depression is common among emerging adults living with HIV. The lowest prevalence of depression of 12.1%, which was found in a study that was conducted in Tanzania among individuals aged 12 to 24 years (Dow et al., 2016). The study screened for depression using the PHQ-9 which however, was not validated in their context (Dow et al., 2016). A study from South Africa that

examined depression in adults living with HIV aged 18 years and above, stratified by age found 23.3% of emerging adults aged 18 to 29 years screened positive on the PHQ-9 (Cholera et al., 2017). Although the study utilised a validated tool, the sample included in the study were adults who had unknown HIV status, and who identified as HIV positive at the study visit - i.e. newly diagnosed (Cholera et al., 2017).

The highest prevalence of depression (35.5%) as assessed by the Beck Depression Inventory-11 (BDI-11) was reported among individuals between the ages of 15 to 24 years in a study that was conducted in Tanzania although no information was provided on validation of the BDI-11 in that setting. (Abebe et al., 2019). While depression is prevalent in emerging adults residing in LMICs, the prevalence from the reviewed studies vary widely (12.1% to 35.5%). The wide range could be due to the use of different tools and age groups. Moreover, some studies from Africa were using tools that were not validated in their context.

This review has shown that the rates for depression among emerging adults living with HIV residing in HICs (11.6% to 52.0%) differ from those residing in LMICs (12.1% to 35.5%). While emerging adults living with HIV both in HICs and LMICs, have to deal with HIV-related stressors such as managing disclosure, HIV-related stigma and the burden of taking HIV medication and its side effects, the highest prevalence of depression of 52.0% was reported in HICs (Abebe et al., 2019; Salama et al., 2013). There is a possibility that the prevalence of depression in LMICs were underestimated since the majority of these studies used tools that were developed in HICs and were not validated in their context. These tools could have not suited their cultures.

Defining Anxiety disorders

According to the DSM-5, anxiety disorders are mental conditions characterised by excessive fear and worry that are difficult to control and which can make life extremely difficult for individuals with these disorders (APA, 2013). It is estimated that 300 million individuals suffer from a range of anxiety disorders globally and they are ranked by WHO as the 6th largest contributor to global disability (WHO, 2017). The types of anxiety disorders include separation anxiety disorder, social anxiety disorder, panic disorder, and generalised anxiety disorders (GAD) (APA, 2013). This study focused on generalised anxiety disorder.

Generalised anxiety disorder (GAD) is defined as a type of anxiety characterised by excessive worry and anxiety about several activities and events, such as family, work, health, money

etc. (APA, 2013). The symptoms of anxiety include worrying thoughts, fearful anticipation, muscle tension, disturbed sleep, sensitivity to noise, being easily fatigued, breathlessness, restlessness, irritability, dry mouth, and difficulty concentrating (Hoge, Ivkovic, & Fricchione, 2012; Olagunju, Adeyemi, Erinfolami, & Ogundipe, 2012). Individuals with symptoms of GAD normally find it difficult to control their worry and this worry usually negatively affects how they function (American Psychiatric Association, 2013).

Prevalence of anxiety

Compared to depression, there is limited evidence on the prevalence of anxiety among emerging adults living with HIV. A few studies conducted in different countries with varying age groups and using different instruments to measure anxiety have shown varying prevalence. A study conducted in USA among emerging adults aged 18 to 30 years found the prevalence of anxiety to be 15.5% as assessed by the Generalised Anxiety Disorder 7 scale (GAD-7) (Shacham et al., 2017). Another study from USA found the rate of anxiety to be 37.8% using GAD-7 among those aged 18 to 34 years (Shacham et al., 2012). In England, 40.0% of individuals aged 13 to 21 years screened positive for anxiety on HADS (Le Prevost et al., 2018). A study from Nigeria (a LMIC) found 22.0% of HIV infected emerging adults aged 21 to 30 years had an anxiety disorder using the Schedule for Clinical Assessment in Neuropsychiatry (SCAN) (Olagunju et al., 2012). Although studies from both HICs and LMICs have shown varying rates of anxiety, they have all demonstrated that anxiety is highly prevalent among PLWH. High rates of anxiety among emerging adults in both HICs and LMICs could be attributed, in part, to the diagnosis of a chronic illness and the stigma associated with it.

Varying rates could be explained by the use of different tools to screen for anxiety. For example a study conducted in United Sates of America (USA) among emerging adults aged 18 to 30 years used the GAD-7 to screen for anxiety while in England the HADS was used to assess for anxiety among individuals aged 13 to 21 years (Le Prevost et al., 2018; Shacham et al., 2017). In addition, prevalence estimates that are presented in this review included those aged below 18 years and above 29 years. (Le Prevost et al., 2018; Shacham et al., 2012).

Barriers to Antiretroviral Therapy adherence among HIV infected emerging adults

This section aims to describe the barriers of antiretroviral therapy (ART) adherence that emerging adults living with HIV face regardless of their mental health conditions. The section begins by explaining what adherence means, why it is important and how emerging adults

adhere to ART compared to other age groups. Chapter 1 has provided the rate of non-adherence among this age group.

Adherence to antiretroviral therapy among emerging adults living with HIV

Adherence can be defined as the extent to which patients take medication as prescribed (Paterson et al., 2000). In the HIV pandemic, optimal adherence to medication is required especially among emerging adults who are becoming sexually active (Asaolu et al., 2016; Naswa & Mafartia, 2010; Patel et al., 2007). Individuals who adhere to their medication are more likely to be virally suppressed thereby minimising the chances of transmitting the virus to their partners (Suleiman & Momo, 2016). Without good adherence, it is difficult to experience the benefits of the medication such as improved quality of life, and reduced mortality and morbidity rate (Gross & Hosek, 2016; Hornschuh et al., 2017; Vreeman et al., 2017). Furthermore, as stated in the introduction chapter, poor adherence may contribute to drug resistance which may lead to needing more complex treatment, which maybe expensive to purchase (Ehlers & Tshisuyi, 2015).

Suboptimal ART adherence is higher in emerging adults compared to younger and older people (Palmer et al., 2018). A study conducted in USA found that emerging adults aged 17 to 24 years had higher viral loads compared to older adults (Ryscavage et al., 2011). Previous studies in SSA showed poorer HIV treatment outcomes including suboptimal adherence, missed clinic visits and high viral loads among emerging adults between the ages of 18 to 24 years compared to younger adolescents (below 18 years) and older adults (Bygrave et al., 2012; Maskew et al., 2016).

Barriers to antiretroviral therapy adherence

Studies that examined ART adherence reported several factors that can make emerging adults delay or skip taking their medications. Furthermore, there are several theories that can be used to explain non-adherence behaviour. In this study, three theories including ecological model of health, Capability, Opportunity, Motivation and Behaviour (COM-B) model, and Necessity-Concerns Framework were used to explain barriers to ART adherence among emerging adults living with HIV.

Ecological model for health promotion

While this study mainly focuses on the patient-related barriers to ART adherence, it is also important to have an understanding of other types of barriers of adherence including

interpersonal and structural that can make it difficult to take medications as prescribed. Barriers to ART adherence can be grouped in several ways. I used the ecological model for health promotion to explain the different levels of barriers to ART adherence among emerging adults living with HIV as shown below (Figure 2).

The ecological model for health promotion was adopted from Bronfenbrenner's ecological model in 1979 (Bronfenbrenner, 1977; McLeroy et al., 1988). Both models state that the individual's behaviour is not only influenced by an individual's attitude, beliefs, knowledge and skills but also by other environmental factors at different levels. According to the Brofenbrenner theory, behaviour can be influenced by microsystem, mesosystem, exosystem and macrosystem (Bronfenbrenner, 1977; McLeroy et al., 1988). The ecological model of health promotion, following the original Bronfenbrenner model, states that behaviour is determined by intrapersonal, interpersonal, institutional, , community and public policy factors (McLeroy et al., 1988). Intrapersonal factors are individual's characteristics such as attitudes, behaviour, knowledge and self- concept, while the interpersonal factors involve informal and formal social network and social support systems including friends, work groups and family (McLeroy et al., 1988). Institutional factors are characteristics related to social institution and organizational rules and regulations for operation, while community factors are relationships among institutions, informal networks and organisations within defined boundaries. The public policy level involves state, local and national laws and policies (McLeroy et al., 1988). Adherence, just like any other behaviours, can also be influenced by the individual's context at multiple levels (Fields et al., 2017). In relation to this review, barriers to ART adherence can be grouped into patient-related, interpersonal and structural barriers – a simplified version of McLeroy's model (Davis et al., 2018).

Patient-related barriers are factors that are related to the patient's personal characteristics, behaviour, emotions and perceptions that can make it difficult for them to take their medications as prescribed (Castro et al., 2015). Some of the patient-related barriers to ART adherence include forgetting, fear of side effects, being away from home, depression and alcohol use (Fields et al., 2017; Hornschuh et al., 2017). The interpersonal barriers are factors that are related to interpersonal face to face relationships that are manifested in different contexts for example at home or at the hospital (Castro et al., 2015). Some of the interpersonal barriers to ART adherence may include poor relationships with the healthcare

providers, peer pressure and lack of social support (Castro et al., 2015; Davis et al., 2018). The structural barriers are institutional, cultural, economic and political factors that can affect adherence to medication, including poverty, lack of transport to healthcare providers, and long waiting time to receive treatment at clinics (Freed et al., 2013; Kagee et al., 2011).

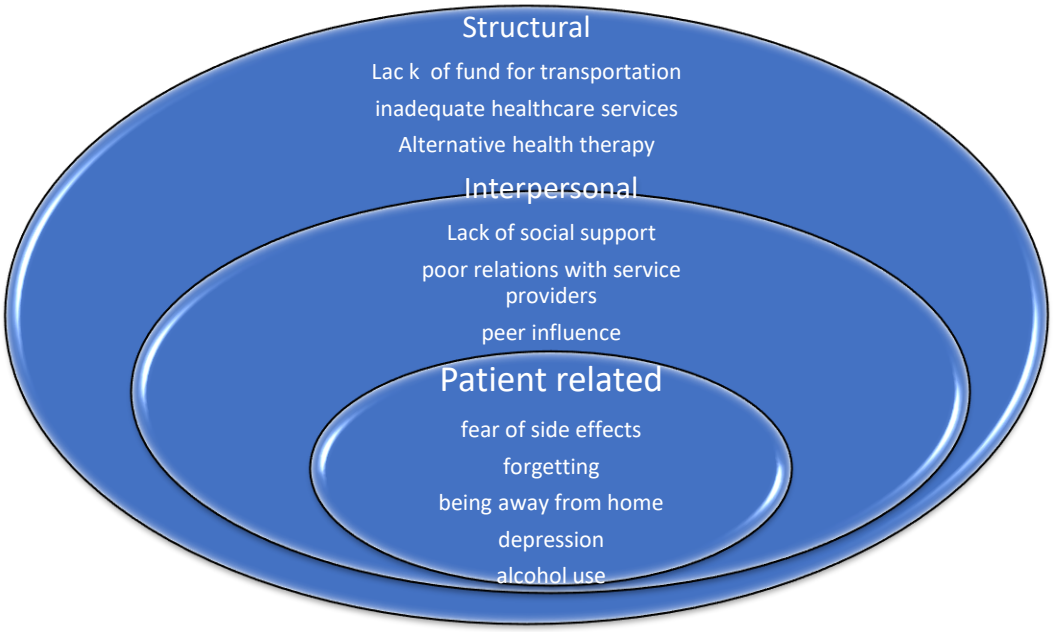

Figure 2: The ecological model for health promotion showing the different levels of barriers to ART adherence (adapted from Liu et al., (2018) and McLeroy et al., (1988))

Capability Opportunity Motivation -Behaviour change model (COM-B)

The Capability, Opportunity, Motivation and Behavior (COM-B) model which forms part of the Behavior Change wheel framework, is a theory of behaviour that can contribute insights into adherence behaviour (Mcdonagh et al., 2018). The model was developed by Michie and according to the model, behavior is influenced by the components, namely capability, opportunity and motivation (see Fig 3) (Michie et al., 2011). Capability can be defined as a psychological (knowledge) or physical (skills) capacity to participate in the activity concerned; for example lack of knowledge and forgetting (Ayakaka et al., 2017; Mcdonagh et al., 2018). Opportunity can be defined as the social (societal influences) or physical (environmental resources) that makes a behaviour possible (Mcdonagh et al., 2018; Michie et al., 2011). Motivation includes emotion, beliefs and intentions, or the brain processes that direct behaviour (Mcdonagh et al., 2018; Michie et al., 2011). Using this theory helps to identify some of the barriers to ART adherence faced by emerging adults living with HIV. Furthermore, the theory can be used together with the Behaviour Change Wheel (BCW) to come up with

interventions that can improve adherence among emerging adults living with HIV (Mcdonagh et al., 2018) .

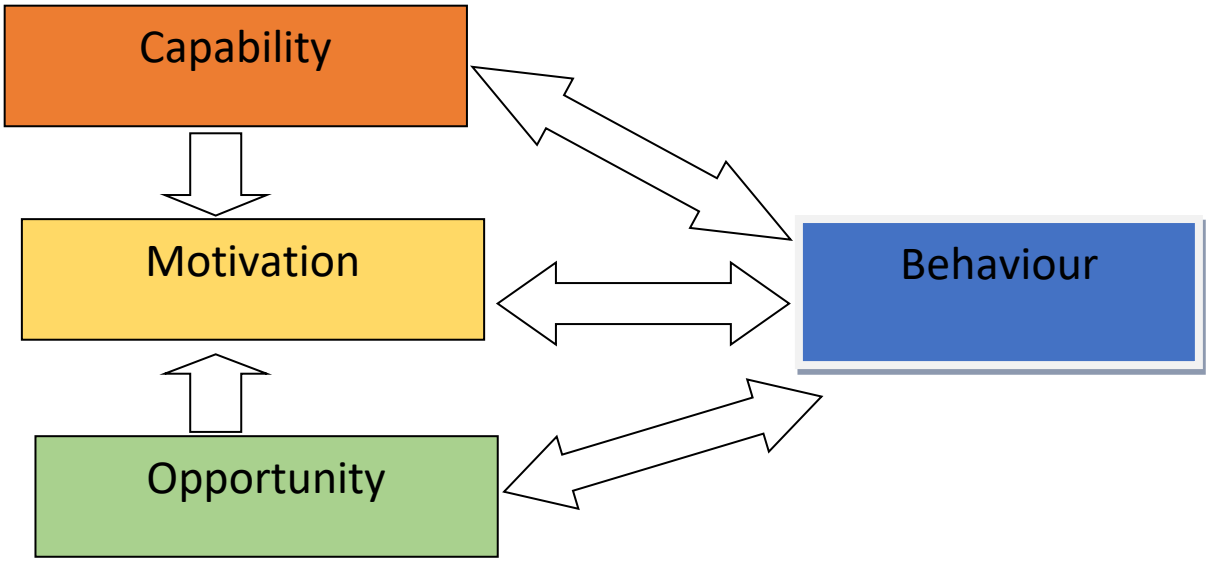

Figure 3: COM-B adopted from (Michie et al., 2011)

The Necessity-Concerns Framework

The necessity-concerns theory was developed by Horne et al as an extension of common sense model of self-regulation (Chapman et al., 2015). The necessity theory suggests that patients' adherence behaviour is influenced by their judgements of the personal need for treatment (necessity beliefs) and the concerns the patients have regarding the potential negative consequences of the treatment (concerns) (Chapman et al., 2015). The theory states that, patients have pre-existing beliefs about their disease and medication, which may influence their evaluation, perception, adherence and health outcomes (Horne et al., 2013). This framework has shown to be useful in explaining adherence behaviour (Brandstetter et al., 2016).

Common barriers to antiretroviral therapy adherence among emerging adults living with HIV

Studies have shown that forgetting to take medication is one of the common barriers to ART adherence in both HICs and LMICs among emerging adults and adults above the age of 29 years (Croome et al., 2017; MacDonell et al., 2013). Forgetting to take medication among emerging adults could be linked to behavioural issues, such as poor planning, for example,

balancing work and school, college lifestyle and recreation (Fields et al., 2017). However, it is also possible that patients may report that they forgot when they deliberately decided not to take medication (MacDonell et al., 2013).

Disclosure of HIV has also been reported as a major barrier to ART adherence among emerging adults in both LMICs and HICs (Fields et al., 2017; Mutwa et al., 2013; Nabukeera-Barungi et al., 2015; Yang et al., 2018). Emerging adults are at stage where they engage in serious relationships and marriage where disclosure is needed (Sussman & Arnett, 2014). Fear of rejection by their partner complicates adherence as they may fail to take medications in front of them (Nabukeera-Barungi et al., 2015). Furthermore, emerging adults rarely disclose their HIV status to their peers due to fear of stigma and discrimination (Fields et al., 2017). When they are at college or boarding school where there is limited privacy, taking medication in front of peers who do not know their status is difficult. Hence they may delay or skip taking their medications (Maccarthy et al., 2018; Mutwa et al., 2013). For those who are working, fear of losing their jobs if people know their status can make it difficult for them to go to the hospital to get medications or to take their medication in front of others (Nabukeera-Barungi et al., 2015).

Also, emerging adults living with HIV avoid taking pills as they constantly reminds them about their HIV status (Fields et al., 2017). For emerging adults who acquired HIV through vertical transmission, taking medication reminds them of how they grew up different from their uninfected peers who do not take medication (MacDonell et al., 2013). For newly diagnosed emerging adults, taking pills remind them of their new chronic illness (MacDonell et al., 2013).

Factors related to treatment regimens among emerging adults living with HIV have been reported in low, middle and high-income countries. People who take ART medication usually complain of side effects especially with Tenolam E, a frequently used first line drug in Zimbabwe (Benton et al., 2013). Due to these side effects, such as stomach pain and nausea, many emerging adults delay or skip taking their medication (Fields et al., 2017; Galano et al., 2016). However, some patients tolerate the side effects of the medication for the sake of maintaining a healthy life (Rao et al., 2007).

Another common barrier to ART adherence among individuals living with HIV is being away from home (Croome et al., 2017). Emerging adults are at a stage where they want to explore

new things and are less monitored by their parents or caregivers (Arnett, 2014). During this period hanging out with friends, parties and sleepovers are common (Hornschuh et al., 2017). When they are away from home with their peers, HIV infected emerging adults skip their medication due to fear of unintended disclosure, embarrassment and HIV related stigma and discrimination (Hornschuh et al., 2017).

In LMICs, poverty is one of the major barrier among emerging adults, especially orphans (Nabukeera-Barungi et al., 2015). In Sub Saharan Africa (SSA), there is a high unemployment rate and this directly affects emerging adults who are at a stage of looking for employment (Banks, 2016; Maccarthy et al., 2018). Unemployment is associated with poverty. Poverty makes it difficult for them to buy food which they are supposed to eat before swallowing their medication to avoid side effects related to taking medication on an empty stomach (Maccarthy et al., 2018; Yang et al., 2018). Also, emerging adults living in poverty usually find it difficult to get money for the transport to go to the hospital which may lead to defaulting on their medications (Nabukeera-Barungi et al., 2015).

Prevalence of barriers to ART adherence among emerging adults living with HIV

Although there are studies that focused on barriers to ART adherence among emerging adults, few indicated the proportion of emerging adults who experienced the barriers to ART adherence. One such study was a cross sectional study conducted in USA among individuals aged 12 to 24 years (Rudy et al., 2010). They found that 47.2% experienced at least one barrier to ART adherence (Rudy et al., 2010). A similar cross sectional study conducted at an HIV clinic in Harare, Zimbabwe, among adults reported that 48.0% of adults living with HIV aged 18 years and above experienced at least one patient-related barrier to ART (Croome et al., 2018). While these studies were conducted in different settings, their results are similar. However, these studies did not compare the prevalence of barriers to ART adherence between those with CMDs and those without CMDs.

Common mental disorders and barriers to antiretroviral therapy among emerging adults living with HIV

This section aims to describe barriers to ART adherence among emerging adults living with HIV and CMDs in comparison to those without . There are limited studies that compared the prevalence, number, severity and common barriers to ART adherence between emerging adults with CMDs and those without CMDs. Therefore, this section will mainly describe the

barriers to ART adherence among emerging adults with CMDs without comparing to those without CMDs.

Studies suggest that depression is associated with poor adherence (Morrison et al., 2011). This could be because the depressive symptoms, such as loss of interest, feeling of worthlessness, poor concentration and suicidal thoughts, can impair certain functions, such as memory, information processing, which in turn negatively affect self-management activities that are necessary for HIV treatment (Gonzalez, Abigail W. Batchelder, et al., 2011). Due to these symptoms of depression, HIV infected emerging adults with CMDs are more likely to experience certain barriers to ART adherence more frequently than those without CMDs. For instance, HIV infected emerging adults with CMDs are at higher risk of alcohol use compared to those without CMDs as they may use alcohol as a treatment to reduce symptoms of CMDs (Mckenzie et al., 2011). As such, HIV emerging adults with CMDs are more likely to report alcohol use as a barrier to adherence compared to HIV emerging adults without CMDs. Both depression and alcohol can affect decisions about taking ART on time (Fields et al., 2017).

Although forgetting has been reported as a common barrier to ART adherence among HIV emerging adults, regardless of mental health condition, this could be more common among those with CMDs. A study in Zimbabwe found forgetting to be a common barrier among HIV infected adults with depression (Kidia et al., 2015). This is because, as explained in chapter 1, depression can impair memory and concentration, which may result in one forgetting to take his or her medications.

Furthermore, emerging adults with CMDs are likely to report barriers due to their mental conditions. A study conducted in Zimbabwe among adults living with HIV aged 18 years and above has shown that as the scores of depression on PHQ-9 increase (i.e. increase in depressive symptoms), the total score of barriers to ART experienced by participants also increased (Croome et al., 2018). However, in that study the results were not stratified according to age, making it difficult to generalise these results among emerging adults.

Also there is a possibility that emerging adults with CMDs report a higher number of barriers to ART adherence compared to those without CMDs. A study that was conducted in USA among adolescents and emerging adults aged 14 to 24 years (MacDonell et al., 2013) found that a high total number of barriers to ART adherence was associated with high psychological

stress (MacDonell et al., 2013). Having multiple barriers to ART adherence has been found to be associated with worse adherence (Rudy et al., 2009).

Literature Gap

In SSA, where the HIV prevalence rate is still high in emerging adults, depression and anxiety among this population remain under diagnosed. Research on mental health, for example in Zimbabwe, mainly focused on the adult population, a few on adolescents, but emerging adults were generally underrepresented (Abas et al., 2017; Chibanda, Benjamin, Weiss, & Abas, 2014; Chibanda, Cowan, et al., 2016b; Kidia et al., 2015; Willis et al., 2018). Also at the clinic where emerging adults receive treatment for HIV in Harare, the primary concern for their appointments is to receive treatment for HIV and to receive ART drugs rather than identify their risk of mental disorders (Martinez et al., 2009a). Hence, HIV clinic services are not necessarily aware of the prevalence of CMDs among emerging adults living with HIV. Failure to screen and treat CMDs may contribute to non-adherence to HIV medication among this population (Martinez et al., 2009b).

While there are studies on barriers to ART adherence, to my knowledge there are no studies that examined barriers to ART adherence among HIV infected emerging adults with CMDs in SSA particularly in Zimbabwe. Finding from such studies may guide future studies, adherence counselling and development of interventions that treat CMDs and reduce barriers to ART adherence among emerging adults living with HIV in a low and middle-income country.

CHAPTER 3: METHODOLOGY

This chapter focuses on the research methodology used to conduct this study. The chapter outlines the research design, study site, study population and sampling procedure. It further explains the recruitment, data collection procedure, tools, data analysis procedures, ethical considerations and the conflict of interest.

Objectives

1. To determine the prevalence of probable common mental disorders (CMDs) (i.e. depression and/or anxiety) among emerging adults living with HIV accessing treatment at the Parirenyatwa Centre of Excellence
2. To describe the prevalence, number, type and severity of barriers to ART adherence, measured using the 22-item Barriers to Adherence scale (BARTA scale) in emerging adults living with HIV with probable CMDs and to compare this with those without probable CMDs.

Hypothesis

1. Emerging adults living with HIV with probable common mental disorders have a greater number of barriers to ART adherence than those without probable common mental disorders
2. Barriers to ART adherence are more severe (high total BARTA score) among emerging adults with probable common mental disorders than those without common mental disorders.

Study Design

The study adopted a cross-sectional survey study design. Cross-sectional studies are carried out in order to find out the prevalence of a given population characteristic and to compare different populations at one point in time (Pandis, 2014). This design was suitable for the study because the primary aim of the study was to describe prevalence of CMDs and of barriers to ART adherence in emerging adults living with HIV, and to test the hypothesis that those with CMDs compared to those without CMDs would have more barriers to ART adherence. The independent variables and the outcome were collected at the same time point for each participant.

Study Site

The study was carried out at Parirenyatwa Centre of Excellence – the HIV clinic. The Parirenyatwa Group of Hospitals is the second largest referral hospital located in the capital city of Zimbabwe, Harare. The clinic is affiliated with the University of Zimbabwe College of Health Sciences. Parirenyatwa Centre of Excellence provides services that include HIV counselling and testing, initiating both adults and children on ART and offering adherence counselling. At the time of data collection for the study, there were approximately 4923 patients registered at the clinic and on ART. Nearly 2979 of these visit the clinic routinely for their repeat medications, physical check-up, viral load and CD4 count tests. A total of 886 emerging adults aged 18 to 29 years were registered at the HIV Clinic, while only 521 of these were coming for their regular follow up visits. Doctors, nurses and primary care counsellors provide the services. Although all the doctors and nurses have undergone training for screening of mental disorders, the clinic has not implemented routine mental health screening. Patients suspected of having severe mental disorders are referred to a psychiatrist who visits the clinic by appointment, or are referred to Parirenyatwa Hospital-Annex, a mental health referral hospital in Harare. It is situated 200 metres outside the main Parirenyatwa Hospital.

Participants

The study population were emerging adults aged 18 to 29 years.

Inclusion criteria

Participants were

- Between the ages of 18 and 29 years
- Registered at Parirenyatwa Centre of Excellence
- Had initiated ART at least 1 month prior to the interview

Exclusion Criteria

- Patients below the age of 18 and above 29 years
- Emerging adults who were considered by the doctors or nurses to be too physically or severely mental ill to be able to answer the questionnaire

Sample size calculation

A sample size is the number of participants that should be included in the study in order to answer a research question (Noordzij et al., 2011). For a sample size for a cross-sectional study to be calculated, the level of confidence, an estimated prevalence rate and degree of precision are required (Kasiulevičius et al., 2006). In this study, the level of confidence was 95.0% and the degree of precision ±5.0%. The estimated prevalence rate of depression of 11.6% was based on the previous research among emerging adults aged 18 to 30 years living with HIV (Shacham et al., 2017). The previous study used the age group and tool to measure depression that is similar to this current study.

The following formula below was used to calculate the prevalence rate (Singh & Masuku, 2014);

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

$$= \frac{1.96^2 * 0.116\, (1-0.116)}{0.05^2}$$

$$= \frac{3.84x0.116x0.884}{0.025}$$

$$= 158$$

Where n= sample size

z= statistics corresponding to 95% confidence (this will be set at 1.96)

p= prevalence (this was obtained from the previous study)

d= the degree of precision (this will be set at 0.05 or 5.0%)

To compensate for participants who would have refused to participate or stop half way during the assessment, the sample size was adjusted upwards by 10.0%. Thus, the minimum sample aimed to recruit was 173. However, I planned to increase the sample size in order to provide for a more robust sample if time and funding permitted.

Recruitment

The researcher or research assistant (RA) first informed all potential participants about the study through announcing the study in the hall where patients normally wait to collect pills.

They explained the purpose of the study, the sampling process that participation is voluntary, and participants would not lose any of their usual care if they declined to participate. Selected potential participants were invited to a private and quiet room, one at a time, where the researcher or RA fully explained the purpose of the study, procedure and consenting process. After explaining the purpose of the study, the invited potential participants were screened for eligibility. All patients who were approached were recorded in the screening log (see appendix A). Eligible participants were interviewed one at a time in a private and quiet room.

Sampling procedures

Simple random sampling was used to select participants. The researcher/RA was provided with a list of emerging adults that were booked for a visit on that particular day. The clinic operates from Monday to Friday; hence, data were collected during these week days. The aim was to recruit 12 participants per day. All patients on the list were assigned with a unique number. The numbers were then placed in a hat or container and the blindfolded RA picked any 12 numbers from the hat or container. Individuals with numbers selected were invited to a private room as explained above. In cases where some of the participants from the 12 selected were not eligible, they were not replaced by another participant, rather they were noted as non-response. If there were 12 emerging adults or less booked on a particular day, they were all invited to take part in the study. This method was appropriate for this study as it ensures that all eligible patients have an equal chance of being recruited (Singh & Masuku, 2014). Furthermore, it minimises the chances of selection bias (Singh & Masuku, 2014).

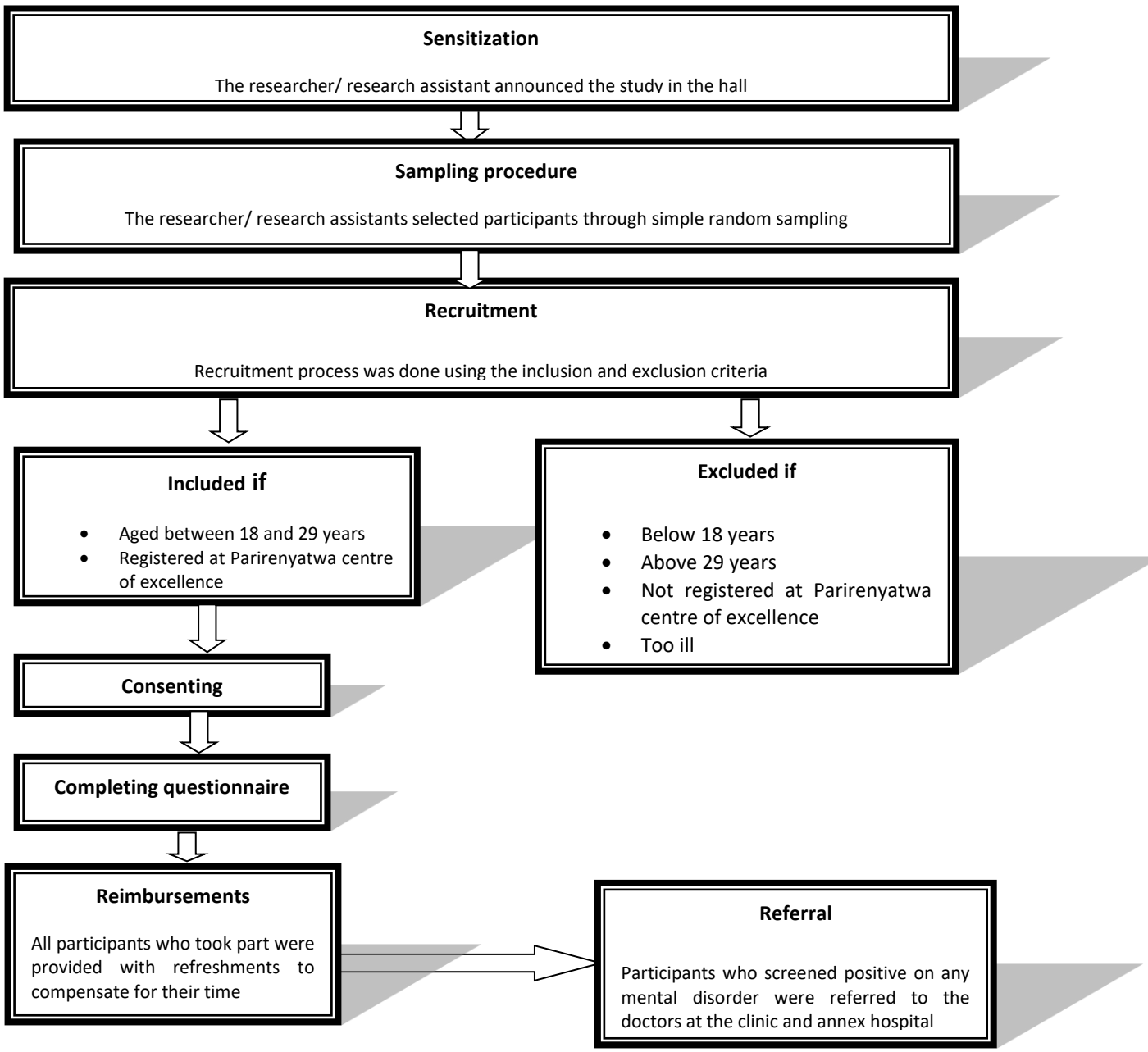

Figure 4: A flow chart illustrating the recruitment process

Data Collection

Eligible participants who agreed to take part in the study were asked to sign the consent form before they started answering the questionnaire. The questionnaire was administered in the participant's language of choice (either English or Shona) by the researcher or RA. Before administering the questionnaire, the researcher or RA explained to the participant how to answer the questions. Participants were encouraged to ask the researcher or RA if they did not understand any question. All data for a participant was collected on the same day.

Participants were recruited from Monday to Friday every week from 01 March 2019 to 31 July 2019.

Measures and instruments

In order to collect data, five instruments were used: Patient Health Questionnaire (PHQ-9), Generalized Anxiety Disorders Scale (GAD-7), Alcohol Use Disorder Identification Test Consumption (AUDIT-C), Drug Use Disorders Identification Test (DUDIT) and Barriers to ART Adherence (BARTA). Information on demographic and HIV-related characteristics were also collected. Detailed information about the instruments is provided below. All these instruments are self-report.

Demographic and HIV- related variables (Appendix B)

The first part of the questionnaire consisted of demographic and HIV-related questions. Some of the questions included date of birth, age, sex, orphan hood status, highest level of education, marital status, and current employment status.

HIV-related data included the following questions: Why are you attending the clinic today?; How do you think you got infected?; Are you on ART medication?; When did you initiate ART?; and did you disclose your status to anyone outside of the clinic, and if yes to who?

Barriers to ART Adherence (BARTA) scale (Appendix C)

Barriers to ART adherence were measured using the tool called Barriers to ART Adherence scale (BARTA). This tool was developed in Zimbabwe in order to measure barriers to ART adherence for adult populations (18 years and above) (Croome et al., 2018). This tool has been recently validated in Zimbabwe and translated into Shona (Croome et al., 2018). The tool consists of 22 items and for each item patients are asked if they skipped or delayed taking their HIV medicines in the past month due to a specific reason. For example:

a. I did not take all of my HIV medicines on time because of religious or spiritual beliefs

b. I did not take all of my HIV medicines on time because I did not believe they were important for my current health (see appendix C for the other 20 items)Each item is scored on a five-point scale ranging from 0-4 (never-0, rarely-1, some of the time-2, most of the time-3 and always-4). The range for the total score is zero to 88.

In this study, the tool was used to measure different aspects of barriers to ART adherence:

a) Severity of barriers to ART adherence- this was measured as the total score. The total score is obtained by adding up the scores for the 22 items. The greater the score the more barriers a participant experiences and/or the more frequently a participant experiences barriers. The total score was used to measure severity.

b) Prevalence of barriers to ART adherence- this was measured by dichotomising the total BARTA score: those who reported no barriers (total score 0) and those who reported at least one barrier (total score>=1).

c) Total number of barriers- Each item score was dichotomised as 0 (no barrier) 1 (experience the barrier at least rarely). The binary scores were then added up to create a variable reflecting the reported number of barriers regardless of severity.

Patient Health Questionnaire-9 (PHQ-9) (Appendix D)

PHQ-9 is an instrument for screening depression based on Diagnostic and Statistical Manual of mental disorders 4th edition (DSM-IV) (Kroenke et al., 2001). The instrument can be self-administered or be interviewer administered in five minutes and can be easily scored (Kroenke et al., 2001).

The instrument asks the patients how often they have been bothered by each of the PHQ-9 symptoms over the last two weeks (Bhatta et al., 2018). It consists of nine items and each item is scored from 0 (not at all) to 3 (nearly every day) (Kroenke et al., 2001). The scores range from 0 which indicates that there are no symptoms of depression to 27 which indicates all symptoms are occurring everyday (Abas et al., 2017). A score of 5 – 9 is defined as mild depression symptoms while 10 – 14 represent moderate depression symptoms, 15 – 19 represent moderately severe depression symptoms and 20 and above is defined as severe depression (Kroenke et al., 2001).

This tool has been validated in Zimbabwe in those aged 18 years and above with an optimal cut off ≥11, sensitivity of 85.0% and specificity of 69.0% against a Structured Clinical Interview SCID diagnosis of depression (Cronbach α=0.86) (Chibanda, Verhey, et al., 2016). For binary outcome, a score of 11 or above was considered to be a positive screen for probable depression, while a score of below 11 was regarded as absence of depressive symptoms (Chibanda, Verhey, et al., 2016).

PHQ-9 has been translated into the local language Shona and it has been used in various studies in Zimbabwe to estimate the prevalence of probable depression among the adult population (Abas et al., 2017; Chibanda, Verhey, et al., 2016).

Generalized Anxiety Disorder scale (GAD-7) (Appendix E)

GAD-7 is a tool used to assess the existence of an anxiety disorder as well as their severity (Spitzer et al., 2006). The tool consists of 7 items that are rated on a 4 point scale from 0 (not at all) to 3 (nearly every day) and the score ranges from 0 to 21 (Spitzer et al., 2006). The tool takes about 5 minutes to complete. This tool has been translated into Shona and validated in Zimbabwe. The optimum cut off is ≥10 with a sensitivity of 89.0% and specificity of 73.0% (Chibanda, Verhey, et al., 2016). A score of 10 and above on GAD-7 is regarded as meeting criteria for probable anxiety.

Alcohol Use Disorder Identification Test- Consumption (AUDIT-C) (Appendix F)

The AUDIT-C was used to measure the frequency and quantity of alcohol consumption. This tool was developed from the Alcohol Use Disorder Identification Test (AUDIT) (Babor et al., 2001; Frank et al., 2008). It consist of a 3 item alcohol screen which are the first three questions on the AUDIT questionnaire (Bradley et al., 2007). AUDIT-C has not been validated in SSA but other countries in this region have validated the full AUDIT including in Zambia (Chishinga et al., 2011). The tool has been translated into Shona in a previous Zimbabwean study and has been used to screen for alcohol misuse among PLWH in some studies conducted in SSA (Abas et al., 2017; Asiimwe et al., 2015; Kruse et al., 2015). Also the tool has been used to screen for alcohol misuse among emerging adults residing in South Africa (Gevers et al., 2013; Louw et al., 2012). AUDIT-C helps to identify individuals who have active alcohol dependence and alcohol abuse or hazardous drinkers (Dawson et al., 2005). The total score ranges from 0 to 12 and the response option of each item is scored on a 0 to 4 point scale, with higher scores indicating more alcohol use (Frank et al., 2008). In USA, cut off scores of ≥3 (with a sensitivity of 0.73 and specificity of 0.93) and ≥4 (with sensitivity of 0.86 and specificity of 0.89) in women and men respectively are regarded as an indicator of hazardous drinking (Bradley et al., 2007). A score of 4 and above for men and a score of 3 and above for women will be regarded as unhealthy drinking (Asiimwe et al., 2015). In this study, these cut off points were used to indicate probable alcohol use disorders.

Drug Use Disorders Identification Test (DUDIT) (Appendix G)

The DUDIT was used to measure the frequency and quantity of drug use. DUDIT is a tool that is used to screen for substance abuse other than alcohol use disorders (Kader et al., 2015). It consists of 11 items, with the first 9 being scored on a five point scale ranging from 0-4 and the last two are scored on a 3 point scale with values 0, 2 and 4 (Hildebrand et al., 2015). In total the scores range from 0-44 (Vythilingum et al., 2012). Scores of ≥6 and ≥2 indicate symptoms of substance abuse in men and women, respectively (Kader et al., 2015; Vythilingum et al., 2012). In this study, these cut off points were used to indicate probable substance use disorders. This tool has not been validated in Zimbabwe, but it has been used in previous studies in Zimbabwe and other SSA countries to assess symptoms of substance use among PLHIV (Kader et al., 2015; Madhombiro et al., 2017).

The overall questionnaire was administered in the following order;

1. Demographic and HIV-related variables
2. Barriers to ART Adherence
    a. Barriers to ART adherence scale (BARTA)
3. Mental health
    a. Patient Health Questionnaire-9 (PHQ9)
    b. Generalized anxiety disorder-7 (GAD-7)
    c. Alcohol Use Disorder Identification Test Consumption (AUDIT)
    d. Drug Use Disorder Identification Test (DUDIT)

Data Analysis

Collected data were entered into Redcap, cleaned, and exported into STATA version 14, which was used to analyse the data. I used univariate, bivariate and multivariate analyses as described below.

Univariate analysis

Univariate statistics are statistics that analyse a single phenomenon (Bertani et al., 2018) and may include frequencies and measures of central tendency. In this current study, the following frequencies are reported:

1. socio-demographic variables including age, gender and employment status;
2. prevalence of CMDs (i.e. depression and/or anxiety);

3. prevalence of substance use disorders (alcohol use disorder and/or drug use disorder);
4. proportion of participants with barriers to ART adherence
5. the overall median of total BARTA score (severity of barriers to ART adherence) for the whole sample
6. the overall median number of barriers to ART adherence for the whole sample

Normality tests using the Shapiro-Wilk Shapiro Francia and skewness/ kurtosis tests, were conducted in order to determine if the scores for BARTA were normally distributed. All tests found that the scores were not normally distributed. Thus, non-parametric tests were used when conducting bivariate analyses involving the BARTA scores.

Bivariate analysis

Bivariate statistics are statistics that are used to analyse the relationship between two variables (i.e. the independent and dependent variables) (Muijs, 2004). Chi-square analyses were used to compare the prevalence of barriers (no barrier vs at least one) between participants with and without a CMD. As a way of reducing type 1 error, only descriptive are reported in the results sections for prevalence of each type of barrier by CMD. Chi-square analyses were also used to compare demographic and HIV related variables between those with and without CMDs. Non-parametric Wilcoxon rank-sum tests (also known as the Mann-Whitney U test) were used to (i) compare the number of barriers to ART between participants with and without a CMD; and (ii) compare the severity of barriers to ART (total BARTA score) between participants with and without a CMD, using overall scores on the BARTA.

Negative binomial regression

Mann-Whitney U tests (for binary variables) and Kruskal Wallis tests (for variables with more than 2 categories) were conducted to assess the relationship between demographic variables, HIV-related variables, SUDs and total BARTA scores. Variables that were significantly associated with BARTA scores were then entered into a negative binomial regression model, to assess the relationship between CMDs and severity of barriers to ART adherence, this time controlling for possible demographic confounding factors. A negative binomial regression was used because the data did not meet the assumptions of a linear regression.

Ethical Considerations

University of Cape Town Human Research Ethics Committee (652/2018), the Joint Parirenyatwa hospital and College of Health Sciences Research Ethics Committee (JREC

297/18) and Medical Research Council of Zimbabwe (B/1623) approved the study before it commenced.

Consenting

Before the interview began, the researcher or RA provided detailed information to the participant about the study such as benefits and possible risks of the study. The consent forms were in English and Shona. Participants were allowed to read and sign a consent form in the language of their choice. All participants who agreed to participate signed a consent form before starting the interview.

Confidentiality

All information collected in this study remains private and confidential. No third party had access to the information. Confidentiality was only breached if a participant screened positive on any CMDs or was at risk of suicide (i.e. if they score 'more than zero' on the suicidal item on PHQ-9 questionnaire). The Parirenyatwa Centre of Excellence has a multi-disciplinary care team with a psychiatrist, psychologist and physician. Participants who screened positive to any of the CMDs or who were at risk of suicide were referred to this multi-disciplinary care team for further assessment and consideration for treatment. In order to ensure anonymity, the researcher did not use the participants' real names in the study, but assigned ID numbers. The real names of the participants only appeared on the consent and compensation form where they signed to indicate that they have received refreshments. The compensation form included the following information: name of the participant, participant ID, date of recruitment, refreshments received, participant phone number, address and signature. Consent and compensation forms were kept separate from the other questionnaires so that the information provided remained confidential.

All data collected in this study were kept in a password-protected database and no unauthorised individual had access to the data. All paperwork was kept in a locked cupboard and a locked office. Only authorised people had access to the paperwork.

Risk or Benefits

There were no direct benefits for participants that were enrolled in this study. Minimal risk of participants having an emotional reaction to the questions was anticipated. In such cases, the researcher (a research psychologist) or RA determined if further referral was required as

described above. Both the researcher and RA had the necessary skills to identify emotional reactions.

Cost, compensation and reimbursements

There were no costs for participants since the study was conducted at the clinic. However, participants received refreshments during the interview.

Conflict of interest

There was no conflict of interest in this study.

CHAPTER 4: RESULTS

This chapter focuses on analysing and presenting findings of the study. The findings are presented according to the objectives of the study. The chapter will however start by presenting on the total number of participants who were included and excluded in the study as well as the findings on the socio-demographic characteristics.

Sample characteristics

Between 5 March and 17 July 2019, 268 emerging adults living with HIV at Parirenyatwa centre of excellence were invited to take part in this study. Of these, 223 (83.2%) participants were recruited, which exceeded the minimum sample required and provided a robust sample. In total 45 (16.8%) participants were excluded from the study; of these 11 (4.1%) were excluded as they did not meet the inclusion criteria (i.e. did not fit age criteria or were too ill to participate), and another 34 participants (12.7%) refused to participate. This is illustrated in Fig 4. Reasons given by participants who refused to participate include being in a rush, not interested in taking part in studies, and wanting to go home and rest.

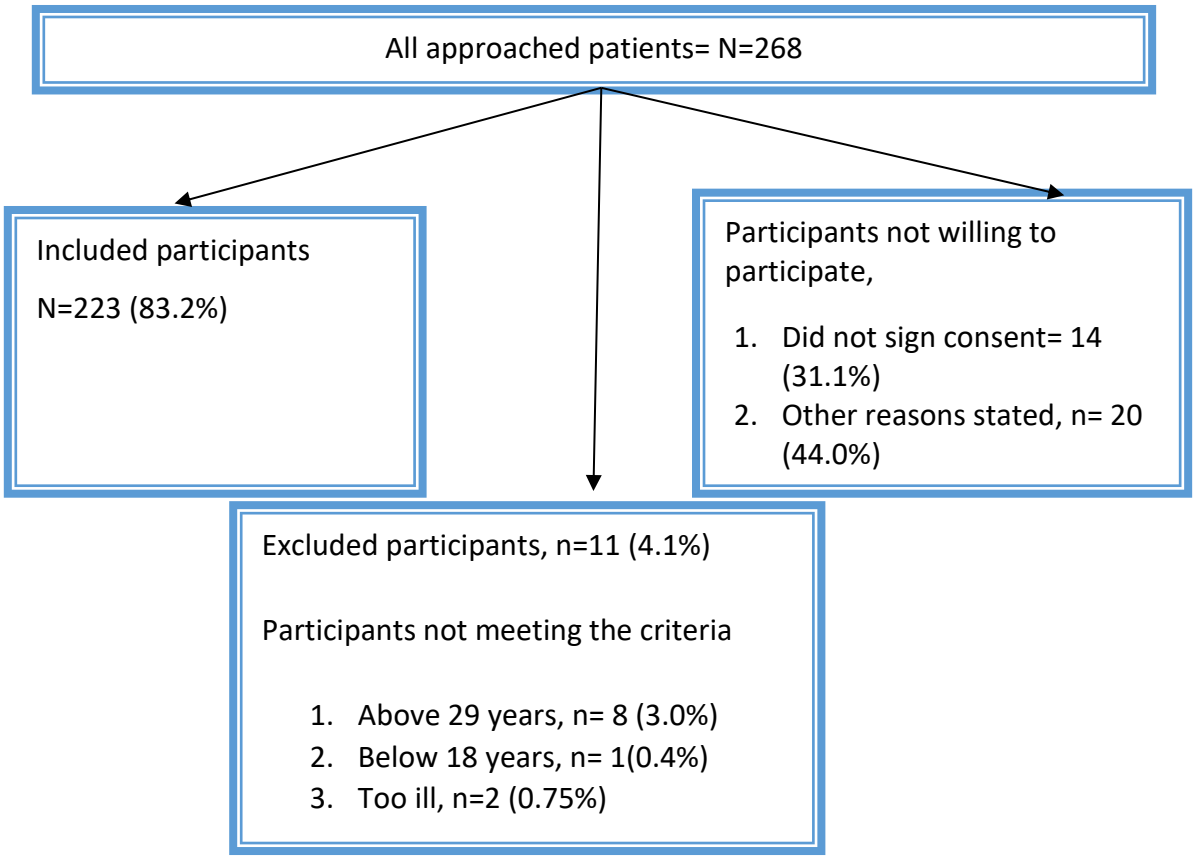

Figure 5: Flow chart showing the recruited and excluded participants

Of the 223 participants included in the analysis, 134 (60.1%) were females and 89 (39.9%) were males, as shown in the Table 2 below.

Participants recruited were between the ages of 18 to 29 years, with a mean age of 23, and the majority were between the ages 18 to 24 years (73.5%).

Only 55 (24.7%) of the participants had both parents alive while the majority were orphans, with 72 (32.3%) having lost both parents, 52 (23.3%) having lost a father only and 44 (19.7%) having lost a mother only. The majority of the participants completed secondary school (175, 78.5%) while only 1 (0.5%) participant had not attended school (see Table 2 below). The largest proportion were unemployed (n=88, 39.5%), while 70 (31.4%) were employed either part time, full time or self-employed, and 65 (29.2%) participants were still at secondary school or at a tertiary institution. The majority of the participants were single (n=153, 68.6%) whereas 29 (13.0%) participants were married, 17 (7.6%) were cohabiting, 22 (9.9%) were divorced or separated and 2 (0.9%) were widowed.

Table 2 shows the socio-demographic information of the participants by CMD. There was a significant difference for gender, employment status and marital status between participants with CMDs and those without. Participants who were unemployed (16.1%; p=0.030) were significantly more likely to have CMDs than those who were self-employed (5.8%), employed part-time (2.2%), employed full time (3.4%) and students (5.4%). Similarly, participants who were single (17.5%) were significantly more likely (p=0.003) to have CMDs than those who were cohabiting (3.6%), married (5.8%) and divorced/separated/widowed (6.3%). Females (23.3%) were significantly more likely (p=0.029) to report a CMD than males (9.9%) .

There was no significant difference for age (p=0.154), orphanhood status (p=0.795) and level of education (p=0.060) between participants with CMDs and without.

Table 2: Socio-demographic characteristics of emerging adults living with HIV, by CMD status (n=223)

Variable	Category			CMDs				
		Total		No		Yes		p-value
		N	%	N	%	N	%	
Gender	Female	134	60.1	82	36.8	52	23.3	0.029
	Male	89	39.9	67	30.0	22	9.9	
Age bracket	18 to 24 years	164	73.5	114	51.1	50	22.4	0.154
	25 to 29 years	59	26.5	35	15.7	24	10.8	
Orphanhood status	Both parents alive	55	24.7	37	16.6	18	8.1	0.795
	Lost a mother	44	19.7	32	14.4	12	5.4	
	Lost a father	52	23.3	34	15.3	18	8.1	
	Lost both parents	72	32.3	46	20.6	26	11.7	
Highest level of education	Primary school or less	13	5.8	5	2.2	8	3.4	0.060
	Secondary school	175	78.5	118	52.9	57	25.7	
	Tertiary	35	15.7	26	11.7	9	4.0	
Employment status	Student	65	29.2	53	23.8	12	5.4	0.030
	Employed full time	27	12.1	19	8.5	8	3.4	
	Employed part time	14	6.3	9	4.0	5	2.2	
	Self employed	29	13.0	16	7.2	13	5.8	
	Unemployed	88	39.5	52	23.3	36	16.1	
Marital status	Single	153	68.6	114	51.1	39	17.5	0.003
	Cohabiting	17	7.6	9	4.0	8	3.6	
	Married	29	13.0	16	7.2	13	5.8	
	Divorced/ separated/widowed	24	10.8	9	4.5	14	6.3	

HIV-related characteristics are reported in Table 3. All participants were taking ART for more than a month when they were recruited in the study. The majority of participants reported that they were HIV positive through vertical transmission (n=144, 64.6%), with 27.3% infected behaviourally, and 16 (7.1%) did not know how they got infected. The majority of the participants had disclosed their status 140 (62.8%). Participants who vertically acquired HIV (17.0%) were significantly more likely (0.009) to have a CMD than those who acquired HIV through behavioural transmission (11.7%). Participants who disclosed their status (22.9%) were more likely to report a CMD than those who did not (10.3%) and the difference was not significant (0.181).

Table 3: HIV related characteristics (n=223)

Variable	Category	Total		CMDs				P-Value
				No		Yes		
		N	%	N	%	N	%	
On ART medications for more than 1 month	Yes	223	100.0					
Mode of HIV transmission	Behaviourally & other means	61	27.4	35	15.7	26	11.7	0.009
	Vertical	144	64.6	106	47.5	38	17.0	
	Unknown or declined	18	8.0	8	3.4	10	4.0	
Disclosed status to anyone	Yes	140	62.8	89	40.0	51	22.9	0.181
	No & declined	83	37.2	60	27.0	23	10.3	

In this study, alcohol and drug use were not reported as probable CMDs, but as probable SUDs. Probable SUDs are reported in Table 4. Altogether, 38 (17.0%) participants screened positive on the AUDIT-C and were at risk of alcohol use disorder, while 19 (8.5%) participants screened positive on the DUDIT. Thus, 43 (19.3%) participants had probable substance use disorders.

Table 4: Substance use Characteristics (n=223)

Variable	Category Frequency	Percentage (%)
Probable Alcohol Use	38	17.0%
Probable Drug Use	19	8.5%
Probable SUDs (alcohol use and/or substance use)	43	19.3%

Prevalence of common mental disorders

The prevalence of probable CMDs (i.e. probable depression and/or probable anxiety) was 33.2% (n=74). Specifically, 71 participants (31.8%) had probable depression only and 36 (16.1%) had probable anxiety only. A higher proportion of females reported a CMD (n=52, 38.8%) compared to their male counterparts (n=22, 24.7%), as shown in Table 5.

Table 5: Prevalence of Common mental disorders among emerging adults living with HIV by gender

Variable	Category	Frequency	Percentage (%)
Probable Depression			
Total (yes) (n=223)		**71**	**31.8**
Gender	Males (n=89)	21	23.6
	Females (n=134)	50	37.3
Probable Anxiety			
Total (yes)		**36**	**16.1**
Gender	Male (n=89)	7	7.9
	Female (n=134)	29	21.6
Probable CMDs (depression and/or anxiety)			
Total (yes) (n=223)		**74**	**33.2**
Gender	Male (n=89)	22	24.7
	Female (n=134)	52	38.8

Barriers to antiretroviral therapy adherence

Out of a total sample of 223, the majority 170 (76.2%) experienced at least one barrier to adherence. Figure 5 presents the box plot of the total BARTA score for the 223 participants, with the median of 3 and interquartile (IQR) of 1-7. The minimum score was '0' while the maximum score was '15' excluding the outliers. There were 7 outliers and the highest score was 49. The participant with the highest score (49) was included in all analyses.

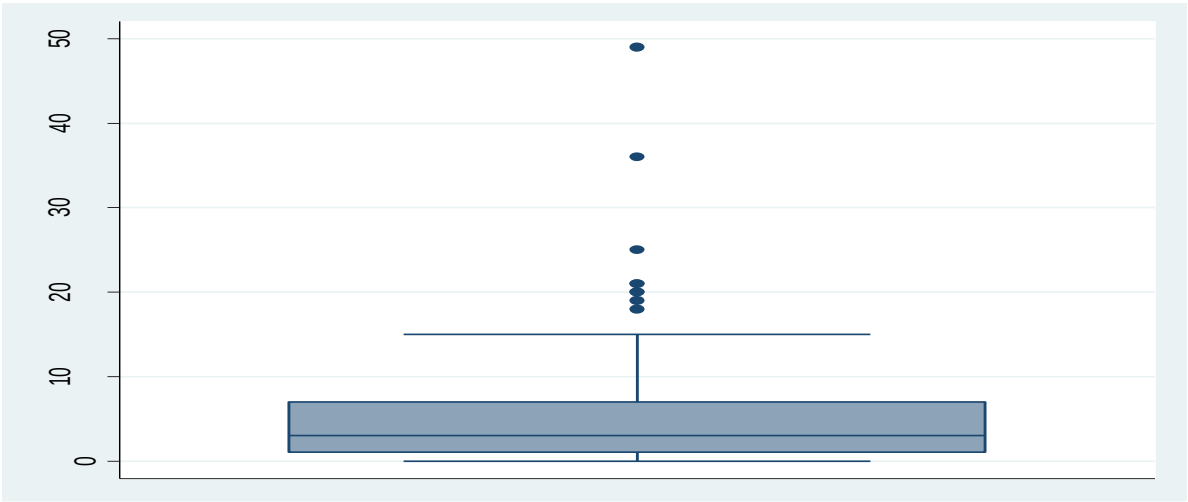

Figure 5: Box plot showing the interquartile range for the total BARTA scores (severity of barriers to ART adherence) for the whole sample

The box plot below (Figure 6) shows the average number of barriers to ART adherence reported among the 223 participants. Participants reported on average 3 barriers to ART adherence, with an IQR of 1-5. The minimum score was '0' while the maximum score was '12'. There were 4 outliers and 17 was the highest score.

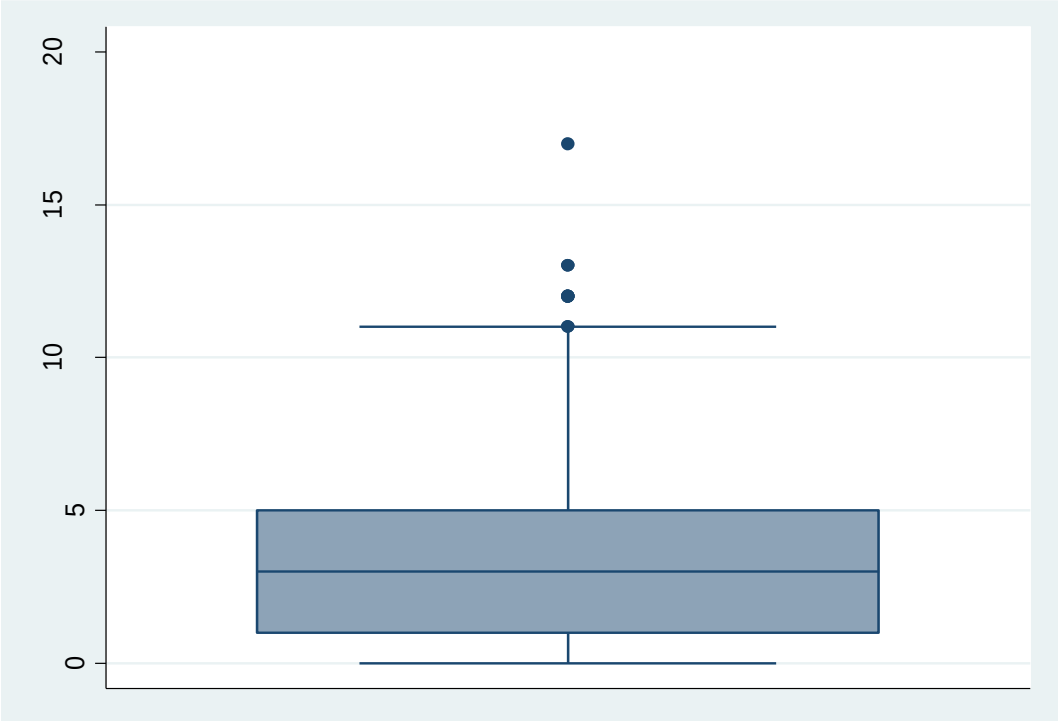

Figure 6: Box plot showing the interquartile range for the total number of barriers to ART adherence for the whole sample

Table 6 below shows the descriptive statistics for barriers to ART adherence for the full sample and by the existence of CMDs. The most common barrier that was reported by the full sample was 'forgetting' (42.0%). This was followed by 'not having the medications with them' (27.0%), 'not having a reminder' (26.0%), and 'not wanting people to know their status' (26.0%).

Table 6: Cross tabulation of Barriers to ART adherence and Common mental disorders

Barrier	**Full sample (n, %) (n=223)**	**Participants with CMDs (n, %) (n=74)**	**Participants without CMDs (n, %) (n=149)**
Forgot	94 (42.2)	50 (67.6)	44 (29.5)
I did not have them with me	60 (26.9)	28 (37.8)	32 (21.5)
Did not have a reminder	58 (26.0)	29 (39.2)	29 (19.5)
I did not want people to know my status	57 (25.6)	27 (36.5)	30 (20.2)
Busy	54 (24.2)	28 (37.8)	26 (17.5)
I was thinking too much or felt stressed	49 (22.0)	36 (48.7)	13 (8.7)
A change in my daily routine	46 (20.6)	28 (37.8)	18 (12.1)
Had to take them in front of others	45 (20.1)	30 (40.5)	15 (10.1)
I was asleep when I was supposed to take them	44 (19.7)	25 (33.8)	19 (12.7)
I did not believe they were important for my current health	32 (14.4)	21 (28.4)	11 (7.4)
I did not fully understand how or when to take them	26 (11.7)	12 (16.2)	14 (9.4)
Side effects	26 (11.7)	14 (18.9)	12 (8.1)
Tired of taking my pills	25 (11.2)	7 (9.5)	18 (12.1)
Felt they were harmful	22 (9.9)	15 (20.3)	7 (4.7)
Drinking alcohol	22 (9.9)	12 (16.2)	10 (6.7)
Feeling well	21 (9.4)	9 (12.2)	12 (8.1)
Worried about the long term effects of my medicines	16 (7.2)	9 (12.2)	7 (4.7)
Felt sick or ill	16 (7.2)	10 (13.5)	6 (4.0)
Did not fully understand how they work	13 (5.8)	6 (8.1)	7 (4.7)
Worried about them interacting with other medication I have to take	8 (3.6)	6 (8.1)	2 (1.3)
Did not have enough food to eat	11 (4.9)	8 (10.8)	3 (2.0)
Religious or spiritual beliefs	7 (3.1)	4 (5.4)	3 (2.1)

Barriers to ART adherence and common mental disorders

Out of the 74 participants with CMDs, 70 (94.5%) reported to have experienced at least one barrier to ART adherence in the previous month, whereas of the 149 participants without CMDs, only 100 (67.1%) reported at least one barrier to ART adherence in the previous month. The difference in proportion was statistically significant (χ^2=20.6; p=<0.001).

The barriers most reported by participants with CMDs include 'forgetting' (67.6%), 'thinking too much' (48.7%), 'had to take the medications them in front of others' (40.5%) and 'not having a reminder' (39.2%) (See Table 6). The top barriers for participants without CMDs were 'forgetting' (29.5%), 'not having the medications with them' (21.5%), 'not want others to know their status' (20.2%) and 'not having a reminder' (19.5%). Although 'forgetting' and 'not having a reminder' were among the top barriers in both groups, the frequency with which they were reported varied greatly.

The number of barriers reporting among participants with and without a CMD is presented graphically in Figure 7. The Mann Whitney U test showed that there is a significant difference (U=-7.209, p<0.001) between the number of barriers of participants with and without CMDs: participants with a CMD reported a greater number of barriers (median (md)=5, IQR=3-7) compared to those without CMDs (md= 1, IQR=0-4).

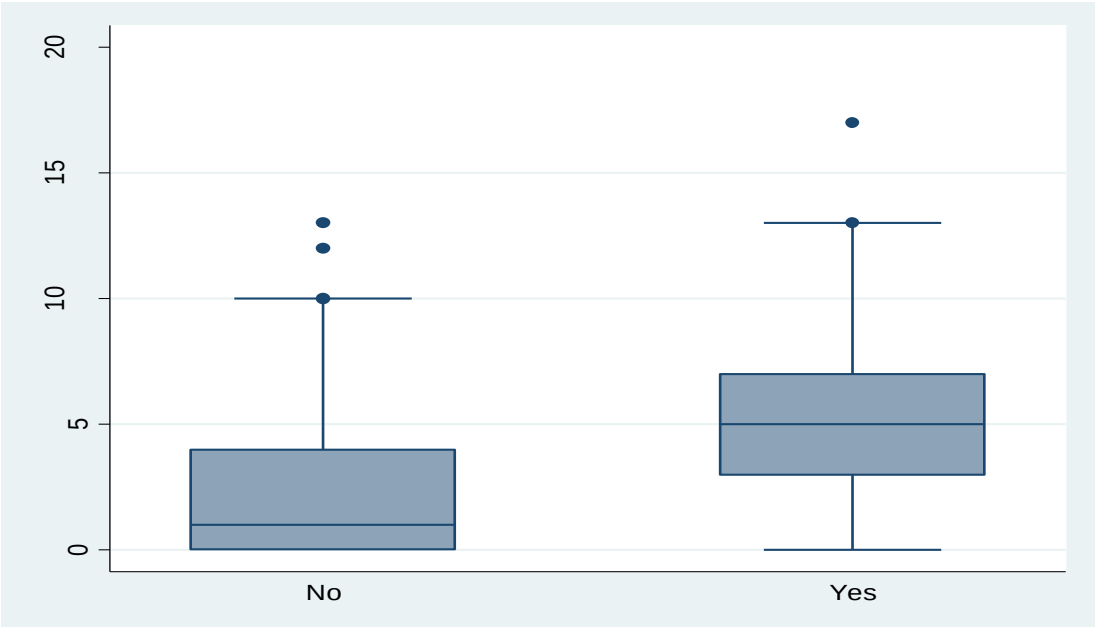

Figure 7: Box plot showing the interquartile range of number of barriers to ART adherence for participants with and without common mental disorders

A significant difference was also found in total BARTA scores between participants with and without CMDs: participants with a CMD reported a greater BARTA score (md=7, IQR=4-12) compared to those without a CMD (see figure 8) (md= 2, IQR=0-4; U=-7.415, p<0.001).

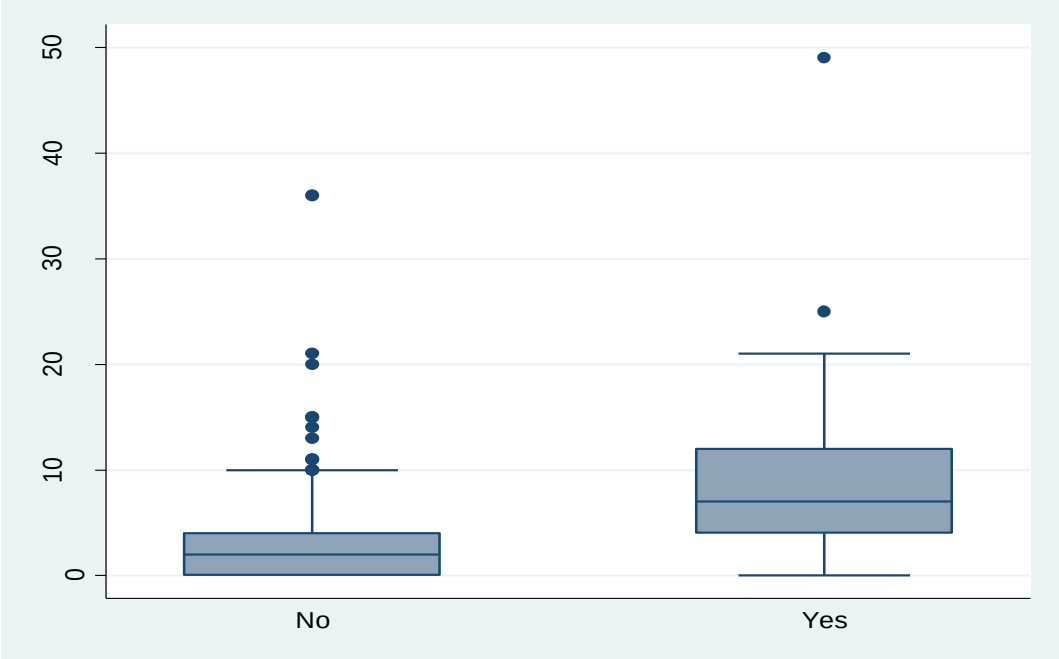

Figure 8: The box plot showing the interquartile range of the total BARTA scores (severity of barriers to ART adherence) for participants with and without common mental disorders

Non-parametric tests, (Mann-Whitney U tests (for binary variables) and Kruskal Wallis tests (for variables with more than 2 categories) indicated that none of the demographic or HIV-related variables were associated with the total BARTA scores as shown in Table 7. The presence of an SUD was, however. Participants with a SUDs reported a greater BARTA score (md=6, IQR=4-11) compared to those without a SUD (md= 2, IQR=0-6; U=4.456, p<0.001). For this reason, only SUD was included in the negative binomial regression model, to control for the effect of SUD when assessing the relationship between CMD and total BARTA scores. Even when controlling for presence of SUD, there was a strong association between BARTA scores and presence of CMD: independent of the presence of SUD, participants who had a CMD had 2.56 times the risk of having greater BARTA scores compared to participants without a CMD (IRR=2.56; p<0.001).

Table 7: Association between HIV related factors, demographic factors, probable substance use disorders and barriers to ART adherence

Variable	Total BARTA score		Univariate analysis		Multivariate analysis		
	Median	IQR	U or χ^2	P value	RR	95% CL	P-value
Gender							
Female	3	1-8	0.462	0.644			
Male	3	1-6					
Age							
18-24	3	1-7	-0.161	0.872			
25-29	4	0-8					
Mode of transmission							
Behaviourally and other means	3	0-7	5.450	0.066			
Vertical	3	1-7					
Unknown and declined to answer	6	3-10					
Education							
Primary and less	4	3-7	3.642	0.162			
Secondary	3	0-7					
Tertiary	4	0-10					
Orphan hood status							
Lost a father	2	1-5.5	0.352	0.949			
Lost a mother	3.5	0-9					
Lost both	3	1-8					
Not an orphan	4	0-8					
Employment status							
Employed by someone full time	2	0-5	3.792	0.435			
Employed by someone part time	4	3-7					
Self-employed	4	1-6					
unemployed	3.5	1-9					
Student	2	1-6					
Marital status							
Cohabiting	3	1-7	1.162	0.762			
Divorced/ widowed/ separated	4	0.5- 9.5					
Married	4	1-6					
single	3	1-7					
Disclosure status							
Yes	3	0-8	-0.642	0.521			
No	3	1-7					
Substance Use							
Yes	6	4-11	4.456	<0.001	ref		
No	2	0-6			.54	.378- .775	0.001
CMD							
Yes	7	4-12	-7.415	<0.001	2.56	1.890-3.472	<0.001
No	2	0-4			ref		

CHAPTER 5: DISCUSSION

This chapter discusses the findings of the study and begins with the main findings according to the objectives of the study. Findings on common barriers to antiretroviral therapy (ART) to adherence among emerging adults living with HIV are explained based on the Ecological model for health promotion. The chapter also highlights the impact of the study as well as some recommendations on the matter under investigation. Finally, the chapter outlines the general conclusions of the study.

Overview of the main findings

The first objective of this study was to examine the prevalence of probable common mental disorders (CMDs) among emerging adults living with HIV. The prevalence of probable CMDs (i.e. probable depression and/or probable anxiety) was high with 33.2% of the participants experiencing probable CMDs. Specifically, 31.8% had depression and 16.1% had anxiety.

The study aimed to describe the prevalence, type, number and severity (the total BARTA score) of barriers to ART adherence among emerging adults living with HIV with probable CMDs compared to those without probable CMDs. The findings were that the prevalence of barriers to ART adherence was higher among those with CMDs (94.5%) than those without CMDs (67.1%) and the difference was statistically significant (χ^2=20.6; p=0.00). Furthermore, those participants with CMDs reported a greater number of barriers with a median score (md) of 5 and interquartile range (IQR) of 1-7 vs (md=1, IQR=0-4). In addition, emerging adults with CMDs experienced barriers to ART adherence more severely (had greater total BARTA score) than those without CMDs (md=7, IQR=4-12) vs (md= 2, IQR=0-4; U=-7.415, p<0.001).

Prevalence of Common mental disorders

This is the first study to examine the prevalence of probable CMDs among emerging adults living with HIV in Zimbabwe. Previous studies in adults in Zimbabwe reported prevalence of CMDs among adults aged 18 and above (Abas et al., 2017; Chibanda, Cowan, et al., 2016). The study found a high rate of probable CMDs of 33.2% among emerging adults living with HIV. The high rate of probable CMDs in this current study could be due, in part, to high levels of unemployment, interpersonal and collective violence and economic hardship prevailing in the country (Lund et al., 2018). A high number (39.5%) of emerging adults in this current study were unemployed. Studies have demonstrated that being unemployed can be risk factor for CMDs (Diraditsile & Ontetse, 2017; Ngum et al., 2017). Another explanation for high rates of

probable CMDs could be a lack of treatment services for CMDs in HIV clinics. During the time of data collection, the study site was not screening for CMDs, which limits identification and appropriate treatment of CMDs.

The prevalence of CMDs found in this study is lower than what has been found in a study that was conducted among adults aged 18 and above in Zimbabwe where the prevalence of CMDs among adults living with HIV was 68.7% (Chibanda, Cowan, et al., 2016). The difference could be due to different tools that were used to determine the prevalence of CMDs. The prior study used the Shona Symptom Questionnaire-14 (SSQ-14) while this current study determined the prevalence of CMDs by combining tools; i.e. Patient Health Questionnaire-9 (PHQ-9) for probable depression and Generalized Anxiety Disorder -7 (GAD-7). Also, the current study did not include individuals aged 30 years and above while the prior study included them.

In this study, probable CMDs were defined as having probable depression and/or anxiety. As reported in Chapter 2, I found that there were limited studies that focused on the prevalence of CMDs specifically among emerging adults living with HIV in both low and middle income countries (LMICs) and high income countries (HIC). Studies with similar populations focused either on depression or anxiety or both but presented the prevalence separately. (Dow et al., 2016; Olagunju et al., 2012). The absence of studies (with similar samples) that provided the prevalence of combined depression and anxiety (i.e. CMDs) makes it difficult to compare the findings of this study with other studies. Hence, the sub-sections below compare the findings of this study on anxiety and pure depression with the findings from other studies with a similar age group in both HIC and LMICs.

Prevalence of probable depression

This study found the prevalence of probable depression among emerging adults living with HIV to be 31.8%. This high rate of probable depression among this population could be linked to some psychosocial stressors associated with living with HIV. In this study, the majority of the sample acquired HIV through vertical transmission (64.6%). Unlike emerging adults who acquired HIV through behavioural transmission, emerging adults who were born HIV positive are more likely to have been exposed to unfavourable childhood experience such as parental HIV/AIDS related illness and death (Cluver et al., 2015). In this study, the majority of the sample had lost at least one parent (75.3%). They could also have faced stressors such as disrupted schooling, being exploited by their caregivers, inadequate care, poverty and limited

social support, which may all contribute to the development of depression (Harms et al., 2010). Furthermore, HIV related stigma, burden of taking ART everyday and frequent hospital visits all pose significant stress which could have contributed to high prevalence of depression among this population in this current study (Abebe et al., 2019; Mellins & Malee, 2013).

Similar results have been found in a study which was conducted in Tanzania where 35.5% of individuals living with HIV aged 15 to 24 years had depression (Abebe et al., 2019). In contrast, a study from US reported a depression rate of 52.0% which was higher than what was found in this study (Tanney et al., 2012). Other studies from England, USA, Tanzania, South Africa found rates that were lower than what was found in this current study and the rates were 16%,15% 11.6%, 12.1% and 23.3% respectively (Cholera et al., 2017; Dow et al., 2016; Le Prevost et al., 2018; Martinez et al., 2009b; Shacham et al., 2017). The different rates could be attributed in part to differences in age and culture and the use of different tool to assess depression.

Prevalence of anxiety

Findings from this study were that 16.1% of the participants had probable anxiety. This rate could be linked to a number of reasons, such as engaging in romantic relationships, poverty and unemployment (Olagunju, Adeyemi, Ogbolu, & Campbell, 2012). One of the developmental tasks in emerging adulthood is the ability to form and maintain a healthy romantic relationship (Sussman & Arnett, 2014).. While forming healthy relationships may not be challenging for emerging adults with no chronic health conditions like HIV, this may pose anxiety for those who are living with HIV. Emerging adults may find it difficult to disclose their status due to fear of rejection, condom negotiation, public exposure, stigma and transmitting the disease to others (Shacham et al., 2012).

The current high unemployment rate in Zimbabwe could have contributed to this high prevalence of anxiety in this study. As mentioned earlier the high number of emerging adults in this study were unemployed, while some were still at college. Emerging adulthood is a stage where people want to have a stable employment in order to secure their future and be able to contribute positively to their families and society (Arnett, 2015). Failure to get a job may lead to anxiety as they may fear of not having a bright future, or, if they get a job, they may face stigma and discrimination at the workplace because of their HIV status.

While there are limited studies that examined the prevalence of anxiety among emerging adults living with HIV, results from this study are consistent with studies in both HICs and LMICs. A study conducted in US among 18 to 30 year old emerging adults living with HIV found the prevalence of anxiety to be 15.5% using the GAD-7 (Shacham et al., 2017). On the other hand, this study found rates for anxiety that were lower than reported in England (40%) among individuals living with HIV aged 13 to 21 years and USA (37,8%) among those aged 18 to 34 years living with HIV (Le Prevost et al., 2018; Shacham et al., 2012). Cultural differences, use of different tools to assess anxiety and different sample could have contributed to the different rates.

Barriers to ART adherence among emerging adults living with HIV

This section describes findings on the prevalence, severity, number and common barriers to ART adherence among emerging adults living with HIV regardless of their mental health conditions.

Prevalence, number and severity of barriers to ART adherence

The prevalence, number and severity of barriers to ART adherence were investigated. Results from this study have shown that 76.2 % of the sample experienced at least one barrier to adherence and this is different from what has been reported in adults aged 18 years above in Zimbabwe, where 48% reported to have experienced at least one barrier to adherence. This variation could be explained by the fact that this current study focused specifically on emerging adults aged 18 to 29 years who are at a developmental stage where risk taking is common while the other study from Zimbabwe included adults aged 18 and above and the majority of were aged above 29 years. Also a large number of emerging adults may be less likely to take their medication due to fear of being rejected by their friends compared to adults who may be more concerned about living longer in order to take care of their families.

Findings from this study also indicated a higher prevalence of barriers to ART adherence among emerging adults than what has been found in a study that was conducted in US where 47.2% of the individuals living with HIV aged 12 to 24 years reported to have experienced at least one barrier to ART adherence (Rudy et al., 2009). This difference could be attributed to different developmental stages of life. The sample in this study were individuals who are transitioning or have already transitioned into adult roles, while the study from USA were mainly adolescents. Emerging adults, especially those residing in an African country like

Zimbabwe face a number of challenges that may complicate their adherence including unemployment, financial instability and poverty. Having financial problems may make it difficult for emerging adults to go to the clinic to collect their medications. In addition, emerging adults are more likely to have less parental control than adolescents. Therefore, emerging adults may be more likely to report barriers to ART adherence than adolescents.

The total score on the BARTA scale in this study indicated the severity of barriers to ART adherence. The results showed that the sample experienced severe barriers to ART adherence with the median (md) score of 3 and interquartile range (IQR) of 1-7. These results suggest that the primary care clinic should routinely screen for barriers to ART adherence.

Common barriers to ART adherence among emerging adults living with HIV

The COM-B model guided the results in this sub-section. The COM-B model of health promotion indicates that behaviour, for example, adhering to medication as prescribed) is determined by capability, opportunity and motivation (Ellis et al., 2019; Michie et al., 2011). In this study, emerging adults living with HIV reported 22 patient related barriers to ART adherence and they covered all the domains of COM-B (see Fig 6). As discussed in Chapter 2, the COM-B states that for a certain behaviour to be performed, one must a) be physically and psychologically capable to perform it; b) have physical and psychological opportunities to do so; and c) be motivated to perform the behaviour (Michie et al., 2011).

In this study factors such as forgetting, not being able to understand how and when to take the medications, and not understanding how the medication works influenced emerging adult's capability to take their medications. Barriers to ART reported in this study that were grouped under opportunity include not having the medication, being busy, not wanting other people to know their HIV status and being asleep. Barriers to adherence, including tired of taking medication, feeling well and feeling sick, were categorised under motivation.

'Forgetting' which can be categorised under psychological capability in the COM-B model was found to be the most common barrier to adherence. These results are in line with other studies carried out both in high and low and middle income countries, where forgetting was found to be among the top reasons for non-adherence to ART among PLWH (Croome et al., 2017; MacDonell et al., 2013). Emerging adults may be trying to balance completing tertiary education, finding ways to earn a living in a harsh economy and at the same time trying to

take care of their extended families. Having a lot to do in a day may make emerging adults forget to take their medications.

Closely related to this barrier is 'not having a reminder', a physical opportunity in the COM-B model, which was among the top barriers to ART adherence reported by this age group Some people forget to take their medications if they do not have anyone or anything to remind them. Setting an alarm is a common way of reminding oneself to take medications. However, emerging adults who usually spend much of their time with their peers may avoid using this system as they may think that, if they peers continue hearing this alarm at the same time every day, they may suspect them of being HIV positive. Hence, they may opt not to make use of it. Some people living with HIV (PLWH) in Zimbabwe may make use of the support from their family members who may remind them to take their medication. This is however difficult for emerging adults who may be staying away from home as they will be at college or have relocated to some other areas due to employment.

Findings of this study also confirm that emerging adults may not adhere to their HIV medications as they worry about stigma (Fields et al., 2017; MacDonell et al., 2013; Mutwa et al., 2013; Nabukeera-Barungi et al., 2015). Stigma can be grouped under social opportunity (Mcdonagh et al., 2018). While the Zimbabwean government and non-governmental organisations have put effort into reducing stigma by raising awareness, PLWH still face stigma and the disease has been associated with promiscuity (UNDP National AIDS Council of Zimbabwe, 2019). Emerging adults living with HIV usually do not disclose their HIV status to their peers, as they want to appear to be normal just like them and not to be labelled as being promiscuous. Due to this, when they are with other people they delay or skip their doses just to avoid being seen taking ART (Mutwa et al., 2013).

Another barrier that was among the top barriers and that was common in both groups (with and without CMDs) was 'not having the medication with them' which can be categorised under physical opportunities. This finding echoes with findings from previous studies (Croome et al., 2017). A possible reason for this barrier could be travelling or being away from home where they store their medications. Due to fear of unintended disclosure and public exposure, emerging adults may opt to take their medications inside their homes only and may be unwilling to take their drugs outside their homes.

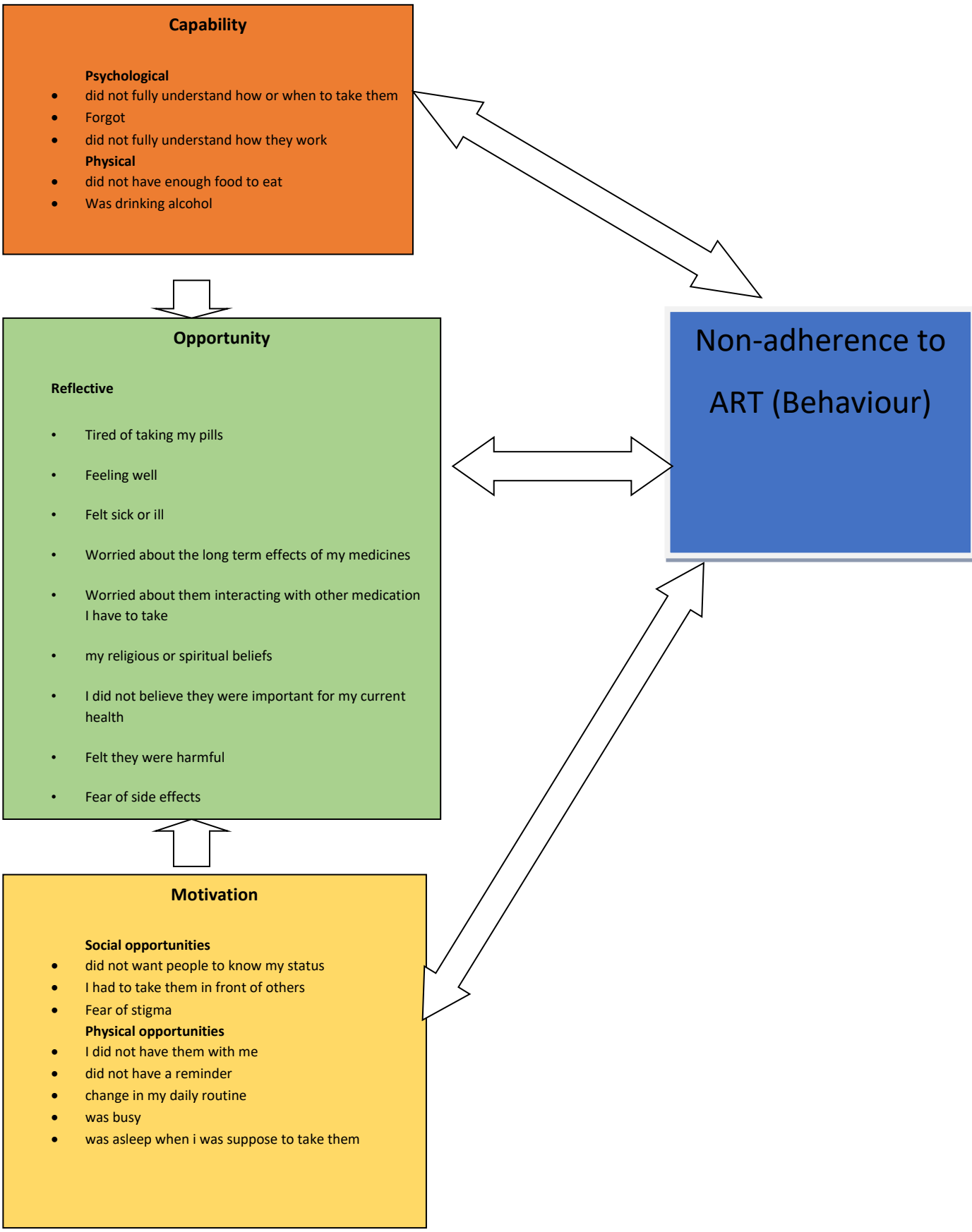

Figure 6: Explaining barriers to adherence using COM-B adapted from (Michie et al., 2011)

Common mental disorders and barriers to ART adherence among emerging adults living with HIV

This section describes findings of this study on barriers to ART adherence among emerging adults living with HIV and CMDs in comparison to those without CMDs. To my knowledge, this is the first study to describe common barriers and the prevalence, number and severity of barriers to ART adherence among emerging adults living with HIV with CMDs in comparison to those without CMDs.

Common barriers to ART adherence and common mental disorders

The strength of this study is that it examined the barriers to ART adherence that are specific to emerging adults living with HIV with CMDs. In the analysis, findings were that only emerging adults with CMDs included 'thinking too much' among their top barriers. Thinking too much is one of the symptoms of CMDs which can make it difficult for PLWH to take their medications as prescribed (Kidia et al., 2015b). 'Thinking too much' among this age group, particularly in Zimbabwe, could have be triggered by stressors, such as unemployment, disclosing their status especially to their partners and fear of stigma. 'Thinking too much' could make it hard for emerging adults living with HIV with CMDs to concentrate, thereby forgetting to take their medications on time (Kidia et al., 2015b).

Although 'forgetting' was a top barrier in both groups, it was more frequently reported among emerging adults with CMDs (67.6%) than those without CMDs (29.5%). In addition, 'not having a reminder' was more frequently reported by those with CMDs (39.2%) than those without CMDs (19.5%). This could be because as explained in previous chapters CMDs, particularly depression may affect attention to specific tasks which may result in impaired memory recall thereby making one forget to take their medications (Kidia et al., 2015b; Wagner et al., 2011).

Although not among the top barriers, alcohol use was reported more frequently among emerging adults with CMDs (16.2%) than those without (6.7%). These findings are similar to a study that was conducted in Australia where they found that emerging adults with symptoms of depression and anxiety were at higher risk of alcohol abuse or dependence than those without depression and anxiety (Mckenzie et al., 2011). The use of alcohol among emerging adults living with HIV and CMDs in Zimbabwe can be regarded as a coping strategy to stressors such as being unemployed and HIV related stigma. Unemployed emerging adults

with CMDs may opt to hang around with friends while using alcohol rather than spending the day at home being idle. Moreover, they use alcohol as a way of dealing with the shame of failing to contribute financially for their families. The use of alcohol may complicate adherence as alcohol impairs judgment and decision making which may make one forget to take medication on time (Durvasula & Miller, 2015).

Common mental disorders and prevalence, number and severity of barriers to ART adherence

The prevalence of emerging adults living with HIV who reported to have experienced at least one barrier to ART adherence in the previous month was higher among those with CMDs (94.5%) than those without CMDs (67.1%).

This study found a significant difference in the severity of barriers to ART adherence between emerging adults living with HIV with and without CMDs. Emerging adults living with HIV and suffering from CMDs experienced more severe levels of barriers to ART adherence (md=7, IQR=4-12) compared to those without a CMD (see figure 8) (md= 2, IQR=0-4; U=-7.415, $p<0.001$). Confounding factors including gender, age, mode of transmission, education, orphan hood status, marital status, and disclosure were not associated with severity of barriers to ART adherence except for substance use disorders (SUDs). After I controlled for presence of SUDs, Ifound that there was a strong association between the severity barriers to ART adherence and CMDs, and emerging adults with CMD had 2.56 times the risk of experiencing severe levels of barriers to ART adherence compared to those without a CMD (IRR=2.56; $p<0.001$). The greater number and severity of barriers to ART adherence among emerging adults with CMDs compared to those without CMDs may be linked to the impairment caused by some of the symptoms of depression. The symptoms of depression can affect many areas such as concentration, judgement, memory and problem solving that are necessary when one is taking medications (Kidia et al., 2015a). This may contribute to experiencing a greater number of barriers to ART adherence and more severely. For instance, symptoms of depression may impair problem solving, which may results in one failing to identify and solve some of the factors that hinder adherence. In addition, memory impairment and poor judgement may result in one forgetting to take their medication and abuse alcohol respectively. This further suggests that interventions that aim to improve barriers to ART adherence and adherence to ART should consider treating CMDs.

Limitations of the study

This study utilised a cross sectional design hence causality cannot be inferred. This makes it difficult to conclude whether having a common mental disorder contributes to experiencing barriers to ART adherence, or experiencing barriers leads to CMDs.

Another limitation is that this study did not measure adherence or address the relationship between CMDs and non-adherence. This is because firstly the study did not have sufficient funds and time to measure adherence using viral load monitoring which is the preferred method of measuring ART adherence (WHO, 2013). While the viral load testing is routinely collected in some HIV clinics in low-income countries, some of the results are not updated due to the delays in receiving the results from the laboratories. Hence studies usually conduct viral load testing on their own in order to make use of most recent viral load results (Abas et al., 2017; Phillips et al., 2016). The study could have utilised other methods for measuring adherence such as self-report but self-reports are associated with self-presentation and recall bias (Williams et al., 2013). Secondly, this study's primary aim was to describe barriers to ART adherence in emerging adults living with HIV with probable common mental disorders (i.e. depression and/or anxiety) compared to emerging adults living with HIV without probable common mental disorders. Hence, measuring adherence and addressing the relationship between CMDs and non-adherence was beyond the scope of the current study.

Also, the study was conducted in one HIV clinic in Harare. Considering that the study was conducted at a referral clinic where most patients referred there present with serious conditions, findings of this study could have been overestimated, for example, the prevalence of probable depression. This makes it difficult to generalise these results to primary care clinics. Also the hospital is located in an urban area making it difficult to generalise to emerging adults in rural areas. However, these results can be generalised to other referral hospitals in Zimbabwe such as Harare Hospital, Mpilo Hospital and Chitungwiza General Hospital. Considering that there are no such studies in Zimbabwe that focused on emerging adults, the results in the study may be a point of reference on the prevalence of CMDs and challenges that are being faced by emerging adults when taking their ART. Furthermore, the findings from this study may be useful to inform the development of an intervention and to guide future research.

The study recruited participants using simple random sampling. While this could have minimised selection bias, the study relied on patients who had clinic appointments which could be have potentially excluded emerging adults with missed appointments. Excluding emerging adults with missed appointments could have underestimated the outcomes on barriers to ART adherence and the prevalence of probable CMDs.

As this study relied on screening and not diagnostic tools to determine the prevalence of CMDs, the prevalence of CMDs could have been either underestimated or overestimated. However, the tools that have been used in this study were validated in Zimbabwe among adults and were translated into the local languages with a sensitivity of 85% and specificity of 69% against a Structured Clinical Interview SCID diagnosis of depression (Cronbach α=0.86) (Abas et al., 2017; Chibanda, Cowan, et al., 2016; Croome et al., 2018). The use of a validated tool increased the chances for this study to produce reliable and valid results.

While a validated tool was used to screen for barriers to ART adherence, it was validated among those aged 18 years and above including those aged 29 years and above. The use of this tool could have potentially eliminated barriers that are more specific for this particular age group. Moreover, the tool consisted of patient-related barriers only, yet according to the ecological model for health promotion, adherence cannot be affected by patient related barriers only but by other factors such as structural barriers (e.g. lack of social support, poor relations with service providers, interpersonal and collective violence and peer influence) and interpersonal barriers (e.g. lack of fund for transportation, inadequate healthcare service) (Bronfenbrenner, 1977; Lund et al., 2018; McLeroy et al., 1988).

Lastly, this study did not address interpersonal and collective violence experienced by the participants, and especially gender differences, as a factor that could be a barrier to adherence. For example, a woman may not want to take her medication that reminds her partner of her and, possibly, his HIV status. Lund et al (2018) showed that interpersonal and collective violence is one of the social determinants of mental disorders. The findings showed no gender differences in barriers to ART adherence and the BARTA may not have captured such a barrier.

Potential Impact of the research

Despite the limitations, the findings from this study offer valuable information for those working with emerging adults living with HIV. This novel study provides a starting point for

understanding barriers to ART adherence in emerging adults living with HIV in comparison to those without CMDs. This study demonstrated that CMDs and barriers to ART adherence are highly prevalent among emerging adults living with HIV. Further, it showed that there is a relationship between CMDs and barriers to ART adherence. Emerging adults with CMDs experienced more barriers to ART adherence than those without CMDs. Although the results cannot be generalised, the findings underscore the need for routine screening for CMDs and barriers to ART adherence. Furthermore, they may help to guide the development of interventions that treat mental disorders and reduce barriers to ART adherence simultaneously as discussed earlier.

Recommendations

The recommendations are provided in relation to researchers, service providers, emerging adults with HIV and policy makers.

Researchers

This study utilised a cross sectional design and was conducted at a single clinic in Harare. As such, the results are difficult to generalise and unable to infer causality. Hence, there is need for future studies on this particular topic to be conducted in other setting like rural settings and use a different research design, for example longitudinal studies, and possibly some qualitative studies to understand these barriers further.

Moreover, this study focused on prevalence of probable depression and anxiety as well as comparing the barriers to ART adherence between emerging adults with and without CMDs. Further studies are needed to examine the prevalence of other mental disorders that may be common among emerging adults, such as Posttraumatic stress disorders, and examine their association with barriers to ART adherence. Future studies are encouraged to examine the relationship of PTSD with barriers to ART adherence. This is important as it may guide future studies to come up with necessary interventions. This current study has laid the groundwork as it demonstrated that CMDs are prevalent among emerging adults living with HIV. Moreover, the study has shown that emerging adults living with HIV with CMDs experienced multiple barriers to ART adherence and were more likely to experience severe levels of barriers to ART adherence than those without CMDs. The next step is to come up with an evidence-based intervention focused on CMDs and barriers to ART adherence simultaneously among emerging adults living with HIV.

Several psychological interventions have proven to work in SSA including problem-solving therapy that has been piloted in Zimbabwe for treating depression and poor adherence among adults aged 18 years and above (Abas et al., 2017). Although this therapy may work for emerging adults, this study recommends an intervention tailored for this particular age group experiencing CMDs and barriers to ART adherence. In Zimbabwe, there is a program for emerging adults living with mental health problems and who are at risk of poor adherence (Abas et al., 2018). The program involves a combination of creative arts activities (including drama, music, dance and relaxation techniques), adherence counselling and income generating projects, which aimed to improve mental health, adherence to ART and livelihood. A randomised trial needs to be conducted to test for effectiveness of such an intervention for engaging emerging adults struggling with CMDs and barriers to ART adherence in order to improve mental wellbeing and adherence to ART medication.

As stated in the limitations, this study did not measure adherence and address the relationship between non-adherence and CMDs among emerging adults living with HIV. Therefore, future studies are encouraged to examine the relationship between non-adherence and CMDs among emerging adults living with HIV. Findings from the future studies will expand upon findings from the current study to understand how CMDs affect adherence to ART among emerging adults. This will also contribute to developing interventions that treat CMDs and non-adherence simultaneously among this population.

Service providers and primary care clinics

Since CMDs are associated with barriers to ART adherence, firstly, I would like to recommend routine screening for probable CMDs. There are tools that have been validated in Zimbabwe that can be used to screen for CMDs including the Shona Symptom Questionnaire-14 (SSQ-14), PHQ-9 and GAD-7. Screening for probable CMDs helps to identify individuals who are at risk of developing anxiety and depression and those who may meet the clinical criteria for these disorders. Screening may also help to prevent and treat these CMDs.

Routine screening for barriers to ART adherence is also recommended. The BARTA scale is a tool that has been recently developed in Zimbabwe, which can be used in clinics to identify these barriers to ART adherence. Again early identification of barriers to ART adherence may promote early intervention and improved adherence to ART.

Emerging adults living with HIV

All emerging adults living with HIV are encouraged to communicate with their service providers during the early stages of facing difficulties when taking medications. Failure to take ART as recommended by the service providers may lead to high viral load, which may contribute to treatment failure and opportunistic infections. If barriers to ART adherence were to be identified at an early stage, it might allow early intervention before their viral load increases.

Policy makers

Findings of the study add to the increasing evidence that CMDs are prevalent among emerging adults living with HIV. These findings alone cannot improve the screening and management of CMDs among emerging adults living with HIV. This study has also demonstrated that barriers to ART adherence are prevalent among this age group and those with CMDs are at an increased risk of experiencing barriers to ART adherence. Both barriers to ART adherence and CMDs have been found to be risk factors for non-adherence in previous studies. The Ministry of health (MoH) needs to ensure that all HIV primary care clinics raise awareness of CMDs and routinely screen for CMDs and barriers to ART adherence among emerging adults. Routine screening will promote early recognition of CMDs thus early intervention can occur. Also, if healthcare providers identify barriers to ART adherence early and address them in an effective way, this may assist to improve adherence to ART among this vulnerable population.

Conclusions

Common mental disorders and experiencing barriers to ART adherence are prevalent among emerging adults living with HIV. This study has shown that HIV infected emerging adults experience more barriers to ART adherence than those without CMDs. Prior research provides evidence that treating mental disorders will not only improve mental health functioning but also improve ART adherence and ultimately improve health and quality of life (Pence, 2009). There is a need to come up with tailored psychological interventions that can simultaneously treat CMDs and reduce barriers to ART adherence among emerging adults living with HIV.

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Appendix A: Screening

Screening log

ID	Date	Sex	Date of birth and age	If excluded state reason: 1. Below 18 years 2. Above 29 years 3. Too ill 4. Did not sign consent	State other reason

Appendix B: Demographic and HIV related variables

Instructions

Mirairo

Answer the following questions; please provide one answer for each question.

Pindurai mibvunzo inotevera; ndapota ipa mhinduro imwechete pamubvunzo wega-wega.

Part A: Demographic Data

When were you born?

Makazvarwa riinhi?

_____

i. Orphanhood status:

Are both of parents alive?

Vabereki venyu vose vapenyu here?

a. Yes they are both alive (Not orphan)
   Hongu vese vapenyu (havasi nherera)
b. Lost a Mother
   Amai vakashaya
c. Lost a Father
   Baba vakashaya
d. Lost Both
   Vabereki vose vakashaya

ii. Highest level of education:

What is your highest level of education?

Makadzidza kusvika papi?

a. Did not attend school
   Hamuna kuenda kuchikoro
b. Did not complete primary school
   Hamuna kupedza chikoro chevadiki
c. Completed primary school only
   Makapedza chikoro chavadiki chete
d. Did not complete secondary school
   Hamuna kupedza chikoro chavakuru
e. Completed ordinary level only
   Makapedza danho rechina rechikoro chavakuru
f. Did not complete high school
   Hamuna kupedza danho retanhatu kuchikoro chavakuru
g. Completed advanced level only
   Makapedza danho retanhatu kuchikoro chavakuru
h. Did not complete tertiary level
   Hamuna kupedza kukoreji
i. Completed tertiary
   Makapedza kukoreji

iii. Employment status

What is your current employment status?

Pari zvino munoita basa rei?

a. Student
Mwana wechikoro
b. Unemployed
Hamushandi
c. Self employed
Munozvishandisa
d. Employed by someone part time
Munoshandira mumwe munhu dzimwe nguva
e. Employed by someone full time
Munoshandira mumwe munhu nguva dzose

iv. Marital status

What is your current marital status?

Pari zvino makawanikwa here

a. Single/Never married
Hamusati mawanikwa
b. Cohabiting
Mune wamuri kugarisana naye
c. Married
Makawanikwa
d. Widowed
Makafirwa
e. divorced/separated
Makarambana

Part B: HIV related variables

i. Why are you here at the clinic?
Sei muri pano pachipatara?

_____

ii. Are you aware of your HIV status? Yes No
Munoziva here zvamuri panyaya yeHIV? Houngu **Kwete**

If **No** skip item ii, iii and iv – go to v
If **yes** ask item ii,

iii. How do you think you got infected?
Munofunga kuti makawana sei hutachiwana hweHIV?
a. Vertically – I was born with it
Kuzvarwa nehutachiwana
b. Behaviourally – 1. through having unprotected sexual intercourse
Nekuita bonde risina dzivirirwa
2. Injection drug use
Kushandisa tsono dzinoshandiswa pakushandisa zvinodhaka
3. Blood transfusion
kuwedzerwa ropa
c. I do not know
Hamuzive

d. Or other means (specify) _____
Nedzimwewo nzira (tsanangurai)

iv. Have you disclosed your status to anyone? Yes No
Pane wamakambotaurira here kuti mune hutachiwana hweHIV? Hongu Kwete

v. If yes, who did you disclose it to? _____(write person's relationship to you – not their name)
Kana mati hongu, ndiani wamakazivisa (taurai hukama hwenyu- kwete zita ravo)

vi. Are you on ART medication? Yes No
Muri pamushonga weART here? Hongu Kwete

vii. Date initiated ART_____
Zuva ramakatanga kunwa muushonga weART

Appendix C: Barriers to ART adherence

Taking HIV medicines every day is really difficult. Most people have problems taking their medicines at some point during treatment for a variety of reasons. Some people skip taking their medicines or often take it later than the target time. Here is a list of possible reasons why some people have skipped or delayed taking their HIV medicines. For each reason please say if you did not take all of your HIV medicines on time **in the past month** always, most of the time, some of the time, rarely or never.

Kutora mushonga weHIV mazuva ose kwakaoma. Vanhu vazhinji vanosangana nematambudziko dzimwe nguva pakunwa kwavanoita mushonga nekuda kwezvikonzero zvakasiyana-siyana. Vamwe vanokanganwa kunwa mishonga yavo kana kuzonwa nguva inotarisirwa kunwa yapfuura. Izvi ndizvo zvikonzero zvinogona kuita kuti vamwe vanhu vakanganwe kana kunonoka kunwa mishonga. Pachikonzero chega chega ndapota taurai kana musina kunwa mishonga yenyu yese yeHIV nenguva <u>mumwedzi wapfuura</u>, nguva dzose, dzimwe nguva, kashoma kuiitika kana kuti hazviitike

	Question I did not take all of my HIV medicines on time because .... Handina kunwa mishonga yangu yeHIV yese nenguva ...	Always **Nguva dzose**	Most of the time **Nguva zhinji**	Some of the time **Dzimwe nguva**	Rarely **Kashoma**	Never **Hazvina kuitika**
1	Of my religious or spiritual beliefs **Nekuda kwezvitendero zvekunamata kana zvitendero zvechivanhu**					
2	I did not believe they were important for my current health **nekuti ndaisatenda kuti yakakosha pautano hwangu hwaiye zvino**					
3	I did not fully understand how or when to take them **Nekuti handina kunzwisisa kuti unonwiwa sei kana kuti unonwiwa nguvai**					
4	I did not want people to know my status **Nekuti ndaisada kuti vanhu vazive pandimire**					
5	of side effects **nekuda kwematambudziko andaizogona kusangana nawo kana ndabva kumanwa (side effects)**					

	Question I did not take all of my HIV medicines on time because .... Handina kunwa mishonga yangu yeHIV yese nenguva ...	Always **Nguva dzose**	Most of the time **Nguva zhinji**	Some of the time **Dzimwe nguva**	Rarely **Kashoma**	Never **Hazvina kuitika**
6	I was worried about the long term effects of my medicines **Nekuti ndainetsekana nezvaizogona kuitika nekuda kwemushonga uyu nekufamba kwenguva**					
7	I felt they were harmful **Nekuti ndaifunga kuti inokuvadza**					
8	I did not have a reminder **Nekuti ndanga ndisina chinondiyeuchidza**					
9	I forgot **Nekuti ndakakanganwa**					
10	I was asleep when I was supposed to take them **Nekuti ndanga ndakakotsira pandaifanirwa kuinwa**					
11	I did not have them with me **Nekuti ndanga ndisinawo pandiri**					
12	I felt sick or ill **Nekuti ndairwara**					
13	I was thinking too much or felt stressed **Nekuti ndaifungisisa kana kuti ndaishungurudzika**					
14	I was feeling well **nekuti ndainzwa zvakanaka**					
15	I did not fully understand how they work **Nekuti ndanga ndisina kunyatsonzwisisa kuti anoshanda sei**					
16	I was tired of taking my pills **Nekuti ndanga ndaneta nekunwa mapiritsi angu**					
17	I was busy **Nekuti ndanga ndakabatikana ndichiita zvimwe zvinhu.**					
18	I had to take them in front of others **Nekuti ndaifanirwa kuinwa pamberi pevamwe**					

	Question I did not take all of my HIV medicines on time because .... Handina kunwa mishonga yangu yeHIV yese nenguva ...	Always **Nguva dzose**	Most of the time **Nguva zhinji**	Some of the time **Dzimwe nguva**	Rarely **Kashoma**	Never **Hazvina kuitika**
19	I was worried about them interacting with other medication I have to take **Nekuti ndaitya kukanganisa kushanda kwemimwe mishonga yandinofanira kunwa**					
20	Of a change in my daily routine **Nekuda kwechiitiko chakaitika chakange chisina kutarisirwa chikakanganisa zvandinosiita mazuva ose**					
21	I did not have enough food to eat **Nekuti ndanga ndisina chikafu chakakwana chekudya**					
22	I was drinking alcohol **Nekuti ndainwa doro**					

Appendix D:Patient Health Questionnaire-9 (PHQ-9)

Instructions

Please circle on the appropriate number response

Over the LAST 2 WEEKS, how often have you been bothered by any of the following problems? ***Mumasvondo maviri apfuura makashungurudzwa kangani nematambudziko anotevera***		Not at all ***Kwete***	Several days ***Mamwe mazuva***	More than half the days ***Zviri pakati nepakati***	Nearly every day ***Zuva rega rega***
1	Little interest or pleasure in doing things. **Kusanyatsova nechido chekuita zvinhu**	0	1	2	3
2	Feeling down, depressed, or hopeless. **Kusanyatsonzwa chido nezvehupenyu, kufunganya zvakapfuurikidza kana kushaya tariro muhupenyu**	0	1	2	3
3	Trouble falling or staying asleep, or sleeping too much. **Kutadza kuwana hope kana kurara zvakapfuurikidza**	0	1	2	3
4	Feeling tired or having little energy. **Kunzwa kuneta uye kuve nesimba shoma rekuita zvinhu**	0	1	2	3
5	Poor appetite or overeating. **Kusanyatsodya zvakakwana kana kudyisa**	0	1	2	3
6	Feeling bad about yourself — or that you are a failure or have let yourself or your family down. **Kuzvizvidza pachezvako-kana kuti kunzwa sekuti urimukundikani muhupenyu kana kutadza kuzadzikisa zvaitarisirwa nevemhuri yako**	0	1	2	3
7	Trouble concentrating on things, such as reading the newspaper or watching television.**Kutadza kuita zvinhu**	0	1	2	3

	zvakaita sekuverenga pepanhau nekuona chivhitivhiti pfungwa dziri pamwechete				
8	Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual. **Kufamba kana kutaura zvine kunonokera mukati zvekuti zvinogona zvakaonekwa nevamwe vakakutenderedza? Kana kuti kutadza kugarisika zvekuti wange urikufamba-famba zvakapfuurikidza zvaunofanirwa kunge uchiita**	0	1	2	3
9	Thoughts that you would be better off dead or of hurting yourself in some way. **Kuve nendangariro dzekuti zvirinani kuti dai wafa zvakodu kana kuda kuzvikuvadza neimwe nzira**	0	1	2	3
		A11 – PHQ9 total score/zvibodzwa zvabatanidzwa			☐

Appendix E: GAD-7

Over the last **2 weeks**, how often have you been <u>bothered</u> by any of the following problems? **Mumasvondo *maviri apfuura*, <u>makashungurudzwa</u> zvakadii nematambudziko anotevera?**		Not at all **Kwete**	Several days **Mamwe mazuva**	More than half the days **Mazuva akati wandei**	Nearly every day **Zuva nezuva**
1	Feeling nervous, anxious or on edge. **Ndainzwa kugarotya, kutambudzika nekushushikana**	**0**	**1**	**2**	**3**
2	Not being able to stop or control worrying. **Kutadza kuregedza kushushikana mupfungwa**	**0**	**1**	**2**	**3**
3	Worrying too much about different things. **Kushushikana zvakanyanya nekuda kwezvinhu zvakasiyana- siyana**	**0**	**1**	**2**	**3**
4	Trouble relaxing. **Kutadza kuzorora zvakanaka**	**0**	**1**	**2**	**3**
5	Being so restless that it is hard to sit still. **Kushushikana zvekuti kugarisika kwainetsa**	**0**	**1**	**2**	**3**
6	Becoming easily annoyed or irritable. **Kukurumidza kusvotwa nezvinhu**	**0**	**1**	**2**	**3**
7	Feeling afraid as if something awful might happen. **Kunzwa kutya kuti kungangoitike chinhu chakaipa**	**0**	**1**	**2**	**3**

total score /zvibodzwa zvabatanidzwa

Scoring:

Zvibodzwa:

A total of 5+ indicates increasing or higher risk drinking.

Zvibodzwa zvishanu (5) zvichikwira zvinoratidza kuwedzera kana njodzi huru yekunwa.

An overall total score of 5 or above is AUDIT-C positive.

Zvibodzwa zvabatanidzwa zvese zvikaita zvishanu kana kudarika (5 or above) kureva kuti AUDIT-C yaona.

Appendix G: Drug Use Disorders Identification Test (DUDIT)

For each question select your answer and fill in the score given in the box at the end of the row

	Question	**0**	**1**	**2**	**3**	**4**	**Score**
1	How often do you use drugs other than alcohol? **Munoshandisa zvimwe zvinodhaka zvisiri doro kakawanda sei?**	Never **Handishandi se zvachose**	Once a month or less **Kamwechete pamwedzi kana zvishoma**	2-4 times a month **Kaviri- kaina pamwedzi**	2-3 times a week **Kaviri kana katatu pavhiki**	4 times a week or more often **Kaina pavhiki kana kakawanda**	
2	Do you use more than one type of the drug on the same occasion? **Munoshandisa zvinodhaka zvinodarika chimwechete panguva imwechete here?**	Never **Handishandi se zvachose**	Once a month or less **Kamwechete pamwedzi kana zvishoma**	2-4 times a month **Kaviri- kaina pamwedzi**	2-3 times a week **Kaviri kana katatu pavhiki**	4 times a week or more often **Kaina pavhiki kana kakawanda**	
3	How many times do you take drugs on a typical day when you use drugs? **Munoshandisa zvinodhaka kakawanda sei muzuva rimwechete?**	0	1-2	3-4	5-6	7 or more	
4	How often you are influenced heavily by drugs? **Kangani kamunodhakwa nezvinodhaka zvakanyanyisa**	Never **Handisati**	Less often than once a month **Kashoma pane kamwechete pamwedzi**	Every month **Mwedzi woga-woga**	Every week **Pasvondo pega-pega**	Daily or almost every day **Zuva rega-rega**	
5	Over the past year, have you felt that your longing for drugs was so strong that you could not resist it? **Mugore rapfura maimbonzwa kuda zvinodhaka zvakanyanyisa zvekuti maikundikana kumarega?**	Never **Hazvina kuiitika**	Less often than once a month **Kashoma pane kamwechete pamwedzi**	Every month **Mwedzi woga-woga**	Every week **Pasvondo pega-pega**	Daily or almost every day **Zuva rega-rega**	
6	Has it happened, over the past year that you have not been able to stop taking drugs once you have started?	Never **Hazvina kuiitika**	Less often than once a month **Kashoma pane kamwechete pamwedzi**	Every month **Mwedzi woga-woga**	Every week **Pasvondo pega-pega**	Daily or almost every day **Zuva rega-rega**	

	Zvakamboitika here mugore rapfuura zvekuti muchinge matanga kushandisa zvinodhaka maikundikana kumaregedza?						
7	How often over the past year have you taken drugs and then neglected to do something you should have done? **Mugore rapfuura, zvakaitika kakawanda sei kuti makashandisa zvinodhaka muchibva marega kuita chimwe chinhu chamaifanira kunge muchiita?**	Never **Hazvina kuiitika**	Less often than once a month **Kashoma pane kamwechete pamwedzi**	Every month **Mwedzi woga-woga**	Every week **Pasvondo pega-pega**	Daily or almost every day **Zuva rega-rega**	
8	How often over the past year have you needed to take a drug the morning after heavy drug use the day before? **Mugore rapfuura, kangani kamanzwa kuda kunwa mushonga mangwanani mushure mekushandisa zvinodhaka zuva rapfuura**	Never **Hazvina kuiitika**	Less often than once a month **Kashoma pane kamwechete pamwedzi**	Every month **Mwedzi woga-woga**	Every week **Pasvondo pega-pega**	Daily or almost every day **Zuva rega-rega**	
9	How often over the past year have you had guilt conscience because you used drugs? **Mugore rapfuura kakawanda sei pamainzwa kuzvipa mhosva nekuda kwekuti waishandisa zvinodhaka?**	Never **Hazvina kuiitika**	Less often than once a month **Kashoma pane kamwechete pamwedzi**	Every month **Mwedzi woga-woga**	Every week **Pasvondo pega-pega**	Daily or almost every day **Zuva rega-rega**	
10	Have you or anyone else hurt (mentally or physically) because you used drugs? **Makambokuvara here kana kuti mumwe munhu (mupfungwa kana panyama) nekuti maishandisa zvinodhaka**	No **Kwete**		Yes, but not over the past year **Hongu asi kwete mugore rapfuura**		Yes, over the past year **Hongu, mugore rapfuura**	

11	Has a relative or a friend, a doctor or a nurse or anyone else, has worried about your drug use or said to you that you should stop using drugs? **Pane here wehukama, kana shamwari, kana chiremba, mukoti kana mumwewo munhu akambonetsekana nekuda kwekushandisa kwenyu zvinodhaka kana kuti akambokutaurirai kuti muchirega kushandisa zvinodhaka**	No **Kwete**		Yes, but not over the past year **Hongu asi kwete mugore rapfuura**		Yes, over the past year **Hongu, mugore rapfuura**	
						Total	

Appendix H: English Informed Consent form

Informed Consent form

Common Mental Disorders, Substance Use Disorders and barriers to ART adherence among young adults living with HIV

Principle Investigator: Ms Emily Saruchera

Supervisors: Dr. Marguerite Schneider, Dr. Melanie Abas, Dr. Munyaradzi Madhombiro

Phone Number: +263 772 309 007

Version 1.1

Information Sheet

Introduction

You are being invited to take part in this study entitled Common Mental Disorders, substance use disorders and barriers to ART adherence in young adults aged 18 to 29 years. The research study is being conducted at Parirenyatwa Centre of Excellence by Ms Emily Saruchera, a student at University of Cape Town and her supervisors are Dr. Marguerite Schneider, Dr. Melanie Abas, and Dr. Munyaradzi Madhombiro. This research study is being sponsored by the African Mental Health Research Initiative.

It is important for you to read and understand why this research study is being conducted and what it also involves before you decide to take part. Please read all the information provided below and feel free to ask any questions to the researcher if you need clarity. If you agree to take part in this study you will be asked to sign this consent form and you will be offered a copy to keep.

Purpose

The purpose of this study is to find out how many young adults living with HIV at a clinic in Harare experience depression, anxiety, post-traumatic stress disorder and substance use disorders. It will further examine the relationship of depression, anxiety, post-traumatic stress disorder and substance use disorders with barriers to antiretroviral therapy adherence in young adults living with HIV. Previous studies carried in Zimbabwe have shown that there are high rates of common mental and substance use disorders in older adults living with HIV. They have also shown that common mental disorders may affect how patients (older adults) take their medication. However, very few studies in Zimbabwe have looked at the prevalence of depression, anxiety, post-traumatic stress disorder, substance use disorders and its association with barriers to ART adherence in young adults living with HIV. This study would also like to find out to what extent young adults living with HIV also experience depression,

anxiety, post-traumatic stress disorder and substance use disorders and how these may be related to barriers to ART adherence.

Participants

This study seeks young males and females aged 18 to 29 years who access HIV treatment at Parirenyatwa Centre of Excellence. If you are below the age of 18, above the age of 29 years and too unwell physically and mentally then unfortunately you are not eligible to participate in this study.

Procedure and Duration

If you decide to participate in this study, you will undergo a survey questionnaire which will last between 25 to 40 minutes. The questionnaire will consist of questions about depression, anxiety, post-traumatic stress disorder, substance use disorders and barriers to ART medications. The questionnaire will be administered by a trained researcher. We will also check in your clinic book the date you were initiated on ART.

Potential risks and Discomforts

There will be minimal risk to you but you may find some of the questions make you feel emotional. We can talk about that if you do get such feelings. If you however, feel that you want to discontinue you are allowed to do so.

Benefits

You may not benefit directly from this study but it may guide future research, benefit the clinic as whole by identifying the prevalence of depression, anxiety, post-traumatic stress disorder, substance use disorders and its relationship with barriers to ART adherence. It may benefit other patients in the future.

Cost, compensation and reimbursements

There will be no cost for you since the study will be done at the clinic. You will not be reimbursed for transport costs since you will only meet the researcher once when you come for your clinical appointments. However, if you fail to complete the questionnaire in one day, you may be asked to come back the next day and complete it. In that case you receive $3 to reimburse your transport costs. you will receive refreshments to compensate for the time you will spend participating in the study.

Confidentiality

If you decide to participate in this study, all information that you will provide will remain private and confidential. No third part will have access to the information. Confidentiality will only be breached if you are at risk of suicide or if you show symptoms of depression, anxiety, post-traumatic stress disorder and substance use disorders on the assessment tools we will be using. In such a case you will be referred to our treatment team which consist of a clinical psychologist, psychiatrist and physician for further assessment and consideration for treatment. In order to protect you, your name will not appear on the questionnaire or in any

reports of publications on the results and the details you will provide will not be traceable back to you.

Voluntary Participation

Your participation in this study is voluntary. You are also allowed to withdraw or discontinue from the study at anytime without stating the reason and without any penalty. You will also have an option of withdrawing with your data that you would have provided.

Offer to answer Questions

If you have any question or anything unclear to you related to this research study, please feel free to ask the researcher before you sign the consent form. For further information, you may contact Ms Emily Saruchera on +263 772 309 007.

NOTE: If you have any ethical complains of this study you may contact the Medical Research Council of Zimbabwe on telephone number +263 (4) 791792.

Conflict of interest

The researcher has no conflict of interest in this study.

CONSENT FORM

Thank you very much for considering taking part in this study. If there is anything unclear from the information sheet please ask the researcher before you sign this consent form. You will have another copy of this information and consent form to keep.

- I have read and understood all the information provided above ☐
- I agree to take part in this research study voluntarily. ☐
- I understand that I can withdraw from the study any time ☐
- I consent having my date I initiated ART recorded from my clinic book ☐

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Name of the research participant

Signature

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Date

Name of the interviewer

Signature

Date

Appendix I: Shona Informed Consent form

Gwaro rewirirano

Common Mental Disorders, Substance Use Disorders and barriers to ART adherence among young adults living with HIV

Mukuru wetsvakiridzo: Ms Emily Saruchera

Supervisors: Dr. Marguerite Schneider, Dr. Melanie Abas, Dr. Munyaradzi Madhombiro

Nhamba dzerunhare: +263 772 309 007

Version 1.1

Information Sheet

Nhanganyaya

Muri kukokwa kuti munge muri mutsvakairidzo inonzi matambudziko ekufungisisa, kushurudzika kana kushandisa zvinodhaka zvakapfuridza nezvinokanganisa kunwa mushonga we ART muvanhu vechidiki vari pakati pemakore makumi nesere (18) ne makumi maviri nepfumbamwe (29). Tsvakiridzo iyi iri kuitirwa paParirenyatwa Centre of Excellence namuzvare Emily Saruchera uyo achange achifundiswa na chiremba Marguerite Schneider, chiremba Melanie Abas, uye chiremba Munyaradzi Madhombiro. Tsvakiridzo iyi iri kubhadharwa neve Africa Mental Health Research Initiative (AMARI).

Musati maiita sarudzo yekuti munge muri mutsvakiridzo zvakakosha kuti muverenge pamwechete nekunzwisisa chinangwa chetsvakiridzo uye kuti ichange ichiita nezvei. Ndapota verengai mashoko ese akanyorwa pazasi uye sunungukai kubvunza mutsvakiridzi kana muine chero mubvunzo wamungade kuti ujekeswe. Kana muchinge mabvuma kuva mutsvakiridzo ino, muchakumbirwa kuti musaine gwaro rewirirano uye muchazopihwa gwaro renyu rekuti muchengeta.

Chinangwa

Chinangwa chetsvakiridzo ino ndechekuda kunzwisisa kuti vanhu vechidiki vari kurarama nehutachiwana avo vanobatsirwa pakiriniki iri muHarare vanangani vavo vari kusangana nematambudziko ekufungisisa, kuzvidya moyo, kushungurudzika kwakanyanya mushure mekusangana nenjodzi nekushandisa zvinodhaka zvakapfuridza. Tsvakiridzo ino ichaongorora hukama huri pakati pematambudziko aya nezvingakanganisa kunwa mushonga weART muvanhu vechidiki vanorarama nehutachiwana hweHIV. Dzimwe tsvakiridzo dzakaitwa muZimbabwe dzakaratidza kuti vanhu vakuru vakawanda vanosangana nematambudziko ane chekuita nekufungisisa kana kushungurudzika uye nekushandisa zvinodhaka zvakapfurikidza. Tsvakiridzo idzi dzakaitwa muvanhu vakuru dzakaratidza zvakare kuti matambudziko iwaya ekufungisisa nekushungurudzika kuti anogona kukanganisa kunwa mishonga zvakanaka. Kunyangwe hazvo tsvakiridzo idzi dzakaitwa, dzishoma dzakaongorora hukama huri pakati pematambudziko ane chekuita nepfungwa anosanganisira kufungisisa, kuzvidya moyo, kushungurudzika kwakanyanya mushure mekusangana nenjodzi ,kushandisa zvinodhaka zvakapfuridza nezvinokanganisa kunwa mushonga weART muvanhu vechidiki vanorarama nehutachiwana hweHIV. Nekudaro tsvakiridzo iyi ichaongorora huwandu hwevanhu vachidiki vanosangana nematambudziko ekufungisisa, kuzvidya moyo, kushungurudzika kwakanyanya mushure mekusangana nenjodzi ,kushandisa zvinodhaka zvakapfuridza uye nekutarisa hukama hwematambudziko aya nezvinokanganisa kunwa mushonga weART zvakanaka.

Vanhu vachange mutsvakiridzo

Vanhu vachange vari mutsvakiridzo ino varume nevakadzi vechidiki vari pakati pemakore makumi nesere ne makore makumi maviri nemapfumbamwe vanorarama neutachiwana hweHIV vachirapwa pakiriniki inonzi Parirenyatwa Centre of Excellence. Kana muchinge musati masvika makore makumi nemasere kana kuti makadarika makore makumi maviri nepfumbamwe uye muri kurwara zvakanyanya zvese muviri nemupfungwa tinourumbo hazvigone kuti munge muri mutsvakiridzo iyi.

Zvichaitwa neNguva

Kana muchinge masarudza kuva mutsvakiridzo ino, muchabvunzwa mibvunzo kwemaminitsi ari pakati pe makumi maviri nemashanu (25) ne makumi mana (40). Mibvunzo iyi ichange ine chekuti nekufungisisa, kuzvidya moyo, kushungurudzika kwakanyanya mushure mekusangana nenjodzi ,kushandisa zvinodhaka zvakapfuridza uye zvinokanganisa kunwa

mushonga weART zvakanaka. Muchange muchibvunzwa nemutsvakiridzi akadzidziswa kuita izvi. Tichazenge zvakare tichitarisa mubhuku renyu remuchipatara kuti makatanga riinhi kunwa mishonga weART. Tinogona kukumbirai kuti muve muhurukuro ine chekuita nezvamakasangana nazvo kana muchinge makambosangana nezviitiko zvinokonzeresa trauma kumashure. Hurukuro iyi inogona kuiitika pakati pe awa rimwechete kana maviri. Tinozoronga kuti munge muchizodzoka kumusangano uyu nerimwe zuva. Kana muchinge mapinda muhurukuro iyi, muchange muchitapwa mazwi.

Njodzi kana Matambudziko

Hatitarisire kuti mungasangana nenjodzi yakanyanya asi munogona kubatikana nemimwe mibvunzo yamuchabvunzwa. Kana izvi zvichinge zvaitika kwamuri, tinogona kumbokurukura. Asi kana muchinge mafunga kubuda muchirongwa, munotenderwa henyu.

Zvichawanikwa

Munogona kusawana rubatsiro rwakananganana nemi asi tsvakiridzo iyi, inogona kuwana ruzivo rwungabatsidza tsvakiridzo dzangaitwa muna ramangwana zvakare inogona kubatsira kiriniki kuti izive huwandu hwe matambudziko ekufungisisa, kuzvidya moyo, kushungurudzika kwakanyanya mushure mekusangana nenjodzi ,kushandisa zvinodhaka zvakapfuridza uye nehukama hwematambudziko aya nezvinokanganisa kunwa mushonga weART zvakanaka. Izvi zvinogona kuzobatsira vamwe varwere mune ramangwana.

Mubhadharo nemuripo

Hapana chamunobhadhara sezvo tsvakiridzo ichange ichiitira pakiriniki. Muchange muchizosangana nemutsvakiridzi kamwechete apo pamunenge muuya kumisangano yenyu yamagara muchiuya kukiriniki, nekudaro vetsvakiridzo hakwanise kunge vachikupai muripo wekufambisa. Asi kana muchinge makundikana kupindura mibvunzo yese muzuva rimwechete, kana kuti muchinge mapinda muhurukuro yetrauma munokumbirwa kuti munge muchizodzoka pazuva ramunenge makasuninguka, kana muchinge madzoka muchazenge muchipihwa $3 yeripira muchovha. Muchange muchipihwa zvinwiwa kuripira nguva yenyu yamuchange muri mutsvakiridzo.

Zvakavanzika

Kana muchinge masarudza kuva kutsvakiridzo iyi, zvese zvamuchatura zvinoramba zvakavanzika uye hakuna mumwewo munhu asiri mutsvakiridzi mutsvakiridzo ino anowana ruzivo rwamuchatipa. Kunze kwekuti maonekwa muine dambudziko rekufungisisa, kuzvidya moyo, kushungurudzika kwakanyanya mushure mekusangana nenjodzi ,kushandisa zvinodhaka tinoziva clinical psychologist kana psychiatrist kana vamwe vana chiremba kuitira kuti mubatsirwe padambudziko iroro. Kuti tikuchengetedzei, zita renyu harinyorwe pagwaro remubvunzo kana pane mashoko achashambidzwa zvekuti hakuna anoziva kuti mashoko amakataura ndeapi.

Sarudzo yekuvamustvakiridzo

Isarudzo yenyu kuva mutsvakiridzo ino, hamumanikidze. Makasununguka kubuda mutsakiridzo chero ipi nguva zvayo musina kupa chikonzero uye pasina mubhadharo. Munotenderwa zvakare kana muchida kutora mashoko kana ruzivo rwenyu rwamunenge mambopa kutsvakiridzo.

Kana muine mibvunzo

Kana muine mibvunzo kana chamusina kunzwisisa zvine chekuita netsvakiridzo, sunungukai kubvunza mutsvakiridzi musati masaina gwara rewirirano. Kana muchida kunzwa zvizire munogona kuchaira muzvare Emily Saruchera ruunhare panhamba dzinoti 0772309007.

CHERECHEDZA: Kana muine zvichemo zvine chekuita nekodzero dzenyu, munokwanisa kuchaira runhare veMedical Research Council of Zimbabwe panhamba dzinoti +263 (4) 79179

GWARO REWIRANO

Tinokutendai zvikuru nekusarudza kuva mutsvakiridzo ino. Kana paine chamusina kunzwisisa pagwaro remashoko, ndapota bvunzai mutsvakiridzi musati masaina gwaro rewirirano. Muchapihwa gwaro renyu kuti mugochengeta.

- Ndaverenga ndikanzwisisa mashoko ari pamusoro
- Ndazvisarudzira kuva mutsvakiridzo ino

- Ndinonzwisisa kuti ndinogona kubuda mutsvakiridzo ino chero nguva
- Ndinobvuma kuti zuva randakatanga kunwa mushonga weART ritariswe mubhuku ☐ rangu rekukiriniki

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Zita reabvunzwa mutsvakiridzo

Sainecha

---------- ----------

Zuva

Zita remutsvakiridzi

Sainecha

Zuva

Appendix J: Approval letters

UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Human Research Ethics Committee

Room E52-46 Old Main Building
Groote Schuur Hospital
Observatory 7925
Telephone [021] 406 6495
Email: sumayah.arieff-allam@uct.ac.za
Website: www.health.uct.ac.za/fhs/research/humanethics/forms

26 October 2018

HREC REF: 652/2018

A/Prof M Schneider
Alan J Flisher Centre for Public Mental Health
45 Sawkins Road
Rondebosch

Dear A/Prof Schneider

PROJECT TITLE: COMMON MENTAL DISORDERS, SUBSTANCE USE DISORDERS AND BARRIERS TO ADHERENCE TO HIV MEDICATION AMONG EMERGING ADULTS LIVING WITH HIV USING HEALTH CARE SERVICES IN HARARE (MPHIL Candidate - Ms E Saruchera)

Thank you for your response letter dated 23 October 2018, addressing the issues raised by the Human Research Ethics Committee (HREC).

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study.

Approval is granted for one year until the 30 October 2019.

Please submit a progress form, using the standardised Annual Report Form if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.
(Forms can be found on our website: www.health.uct.ac.za/fhs/research/humanethics/forms)

We acknowledge that the student: Ms Emily Saruchera will also be involved in this study.

Please quote the HREC REF in all your correspondence.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please note that for all studies approved by the HREC, the principal investigator **must** obtain appropriate institutional approval, where necessary, before the research may occur.

Yours sincerely

signature removed to avoid exposure online

PROFESSOR M BLOCKMAN
CHAIRPERSON, FHS HUMAN RESEARCH ETHICS COMMITTEE

Federal Wide Assurance Number: FWA00001637.
Institutional Review Board (IRB) number: IRB00001938

Telephone: 791792/791193
Telefax: (263) - 4 - 790715
E-mail: mrcz@mrcz.org.zw
Website: http://www.mrcz.org.zw

Medical Research Council of Zimbabwe
Josiah Tongogara / Mazoe Street
P. O. Box CY 573
Causeway
Harare

APPROVAL LETTER

REF: MRCZ/B/1623

04 February, 2019

Emily W. Saruchera
3856 Unit D
Chitungwiza
Zimbabwe

RE: COMMON MENTAL DISORDERS, SUBSTANCE USE DISORDERS AND BARRIERS TO ADHERENCE TO HIV MEDICATION AMONG EMERGING ADULTS LIVING WITH HIV USING HEALTH-CARE SERVICES IN HARARE

Thank you for the above titled proposal that you submitted to the Medical Research Council of Zimbabwe (MRCZ) for review. Please be advised that the Medical Research Council of Zimbabwe has **reviewed** and **approved** your application to conduct the above titled study. This is based on the following documents that were submitted to the MRCZ for review:

a) Study proposal
b) Questionnaire
c) Informed Consent Forms (English & Shona Versions)

APPROVAL NUMBER : **MRCZ/B/1623**
This number should be used on all correspondence, consent forms and documents as appropriate.

- **APPROVAL DATE** : **04 February, 2019**
- **TYPE OF MEETING** : **Expedited**
- **EXPIRATION DATE** : **03 February, 2020**
  After this date, this project may only continue upon renewal. For purposes of renewal, a progress report on a standard form obtainable from the MRCZ Offices should be submitted one month before the expiration date for continuing review.
- **SERIOUS ADVERSE EVENT REPORTING**: All serious problems having to do with subject safety must be reported to the Institutional Ethical Review Committee (IERC) as well as the MRCZ within 3 working days using standard forms obtainable from the MRCZ Offices.
- **MODIFICATIONS**: Prior MRCZ and IERC approval using standard forms obtainable from the MRCZ Offices is required before implementing any changes in the Protocol (including changes in the consent documents).
- **TERMINATION OF STUDY**: On termination of a study, a report has to be submitted to the MRCZ using standard forms obtainable from the MRCZ Offices.
- **QUESTIONS**: Please contact the MRCZ on Telephone No. (04) 791792, 791193 or by e-mail o.

Other

- Please be reminded to send in copies of your research results for our records as well as for Health Research Database.
- You're also encouraged to submit electronic copies of your publications in peer-reviewed journals that may emanate from this study.

Yours Faithfully

Signature removed to avoid exposure online

MEDICAL RESEARCH COUNCIL OF ZIMBABWE
2019 -02- 04
APPROVED
P.O. BOX CY 573 Causeway HARARE

MRCZ SECRETARIAT
FOR CHAIRPERSON
MEDICAL RESEARCH COUNCIL OF ZIMBABWE

PROMOTING THE ETHICAL CONDUCT OF HEALTH RESEARCH

APPROVAL LETTER

Date: 28 January 2019 **JREC Ref: 297/18**

Names of Researcher Emily Saruchera
Address: UZCHS-RSC

RE: COMMON MENTAL DISORDERS, SUBSTANCE USE DISORDERS AND BARRIERS TO ADHERENCE TO HIV MEDICATION AMONG EMERGING ADULTS LIVING WITH HIV USING HEALTH CARE SERVICES IN HARARE

Thank you for your application for ethical review of the above mentioned research to the Joint Research Ethics Committee. Please be advised that the Joint Research Ethics Committee has reviewed and approved your application to conduct the above named study. You are still required to obtain MRCZ and RCZ approval before you commence the study if required by the nature of your study.

- **APPROVAL NUMBER:** **JREC/297/18**
- **APPROVAL DATE:** **28 January 2019**
- **EXPIRY DATE:** **27 January 2020**

This approval is based on the review and approval of the following documents that were submitted to the Joint Ethics Committee:

a) Completed Application Form
b) Full Study Protocol
c) Informed Consent in English and/or appropriate local language

After this date the study may only continue upon renewal. For purposes of renewal please submit a completed renewal form (obtainable from the JREC office) and the following documents before the expiry date:

a. Progress report
b. A Summary of adverse events
c. A DSMB report