Depression and Anxiety among Pregnant Women Living with HIV In Ibadan, Oyo State, Nigeria

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Certification

This is to certify that **Enitan Oluwaseyi ADEOYE** with matriculation number LCU/PG/002389 carried out this research work titled "Depression and anxiety among Pregnant women living with HIV in Ibadan, Oyo State, Nigeria "in the Department of public health, Faculty of Public health, Lead city University, Ibadan for the award of Master's degree in Public health (MPH) and this has not been previously submitted.

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Dedication

I dedicate this project to God Almighty my creator, my strong pillar, my source of inspiration, wisdom, knowledge and understanding. He has been the source of my strength throughout this program and on His wings only have I soared.

Acknowledgment

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Even though the above-mentioned institution and persons have assisted in the process of this study, I alone stand responsible for the errors, if any found in the study.

Abstract

The global goal of ending mother-to-child transmission (MTCT) of HIV is undermined by antenatal depression and anxiety in HIV-positive women which were linked to a range of poor maternal and child outcomes. Despite the significance of antenatal mental health, there is a paucity of information on the risk factors for prevalent mental diseases in HIV-infected women. The purpose of the current study was to determine the incidence of, and risk factors for, depression and anxiety in pregnant HIV-positive women who visited prenatal clinics in Ibadan, Oyo State. This study explored the psychosocial challenges experienced by WLWH during their pregnancy period. The study was carried out with a facility-based cross-sectional approach. The Edinburgh Postnatal Depression Scale (EPDS) and the generalized anxiety disorder scale were administered along with a socio-demographic questionnaire. A total of 357 participants were randomly used for this study with their full consent from four purposeful selected centers. According to the research's findings, pregnant women living with HIV had a substantially larger prevalence of depression (74.5%) than anxiety (12%); however, in terms of comorbidity, we discover that more than half of the population (10.6%) experiences both depression and anxiety. The majority of women who tested positive for probable anxiety also met the threshold for likely depression. This is because depression and anxiety are closely related. Concerns pertaining to one's mental health need to be given the same level of priority as one's physical health if the goal of eradicating the transmission of HIV through mother-to-child transmission is to be achieved. The findings that were obtained were influenced by factors such as educational level, income level, tribe, religious disclosure to the spouse, and other socio-economic factors.

Keywords: Depression, anxiety, Edinburgh postnatal depression scale, women living with HIV, People living with HIV, Cormobidity.
Word Count : 276

Content **Table of Contents** **Page**

Chapter Four: Results and Discussion of Findings

Chapter Five: Conclusion

List of Tables

List of Figures

List of Abrevations

Abbreviation	Meaning
AIDS	Acquired Immunodeficiency Syndrome
ART	Antiretroviral Therapy
ARV	Antiretroviral
BDI	Beck Depression Inventory
CES-D	Centre for Epidemiological Studies-Depression scale
cOR	Crude Odds Ratio
DALYs	Disability-Adjusted Life Years
GAD	Generalized Anxiety Disorder
GBD	Global Burden of Disease
HADS	The Hospital Anxiety and Depression Scale
HIC	High-income Country
HIV	Human Immunodeficiency Virus
HSCL-15	Hopkins Symptom Checklist-15
LIC	Low-income County
LLMIC	Low- and Lower-Middle-Income Country
LMIC	Low- and Middle-Income Country
MNS	Mental Neurological and Substance Use Disorders
MTCT	Mother-to-Child Transmission

PLHIV	People Living with HIV
PMTCT	Prevention of Mother-to-Child Transmission
RCT	Randomized Control Trial
SSQ	Short Symptoms Questionnaire
WHO	World Health Organization
DSM-V	Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition
CI	Confidence Interval
DSM-V	Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition
NNRTI	Non-Nucleoside Reverse Transcriptase Inhibitors
SCS	Specific Chronic Stress

Chapter One

Introduction

1.1 Background to the Study

Depressive disorders are characterized by Sadness, loss of interest or pleasure, and guilt are symptoms of depressive disorders or low self-esteem, issues with appetite or sleep, fatigue, and attention problems[1]. The term "anxiety disorders" refers to a range of mental conditions that are distinguished by experiences of apprehension and phobias; generalized anxiety disorder, panic disorder, specific phobias, and social anxiety disorder are all forms of fear, both obsessive-compulsive disorder and post-traumatic stress disorder are types of mental illness[2]. The Human Immune deficiency Virus (HIV) epidemic is still a substantial and significant obstacle to overcome in terms of world health. As of the end of 2019, it was projected that there were 37.7 million individuals living with HIV around the globe, with roughly 1.7 million new infections occurring during that year contrary to popular belief [3]. A large number of persons living with HIV (PLHIV) are located in Sub-Saharan Africa, with women accounting for approximately more than 50% of all PLHIV in the region which specifically is quite significant [4]. In Nigeria, an estimated 1.7 to 1.9 million people, for the most part, were living with HIV in 2019, with kind of higher rates found in women (6.2%) compared to men (3.8%) [5]. Despite the knowledge that HIV can affect anyone, women who are of childbearing age are typically the most vulnerable. Ibadan contributes 0.9% to the prevalence of HIV in Nigeria, which is fairly significant.

A study estimated that 58% of the people living with HIV are women[6,7]. Compared to men their age, young women get infected with HIV more frequently and earlier in life[8]. Comparatively speaking, 33,900 young men and almost 46,000 young women were HIV positive in 2016. A lack of information and access to proper sexual reproductive health care are two

variables contributing to an increased risk of HIV infection among young people. Only 29% of women and 27.9% of males between the ages of 15 and 24 were able to accurately identify means of avoiding sexual transmission of HIV, and reject significant myths surrounding transmission, according to reports from a 2017 National Health Survey[9]. Relationships between people of different generations are commonplace in Nigeria for the most part. In a survey conducted in 2017, it was found that 41.2% of women between the ages of 15 and 24 had typically had a sexual partner beyond the age of 10 in the previous 12 months, which is quite a substantial number. This raises the danger of HIV infection among members of this generation since the virus often moves from a sort of older males to younger women when it does its transmission.

People living with HIV are not only pretty much more likely to suffer from a variety of physical illnesses, basically contrary to popular belief, they are also more likely to suffer from common mental disorders such as depression and anxiety[10]. A meta-analysis of ten studies found depression to be nearly twice as high in PLHIV compared to HIV-negative patients. Although depression can affect anybody, women are two to three times more likely than men to experience it. Given the higher prevalence of depression among women overall, It should not be surprising that pregnant or recently delivered women are more susceptible. It is estimated that around 15.6% of pregnant women worldwide are affected by common mental illnesses, most notably depression linked with poverty and social disparity, antenatal. Mental disorders are common in low- and middle-income countries (LMICs) compared to Higher-income countries. According to studies, there is a high prevalence of mental disorders among expectant mothers in LMICs. One comprehensive evaluation of research done in LMICs, for instance, revealed a prevalence of 15.6%. More focused on expectant mothers According to Sawyer's review, the prevalence of

living inAfricais11.3%.

Given the high proportion of HIV infection that is observed on that continent, it should not be surprising that African women experience a considerable frequency of mental disorders[11,12]. Approximately 10% to 20% of these women reported suffering from postpartum depression. Although many factors can lead to depression, the research that has been conducted suggests that the particularly high prevalence of depression among pregnant women may be attributable to the fluctuations in the levels of estrogen and progesterone that occur during pregnancy[13]. These hormones have neuroregulatory effects, including on things like cognition and emotion.

Of particular concern is the lack of studies from Sub-Saharan Africa, a region where 70% of the world's HIV-positive women live[4]. A comparable incidence percentage for depression was identified by Kaida and colleagues in a group of 447 HIV-positive pregnant women in Uganda (39%)[14]. A significant rate of depression has been found among pregnant women in Tanzania, comparable to that seen in other LMICs. One research conducted in Dar es Salaam found that 39.5% of participants reported experiencing prenatal depression . On the other hand, there is a paucity of information about the mental health of pregnant women in Tanzania who are living with HIV. According to those studies, anything from 42.4% to 73.4% of pregnant women exhibited symptoms consistent with prenatal depression. The results of this study will contribute to establishing, planning, and implementing a screening program for depression and anxiety among HIV-infected pregnant women in Ibadan Oyo state.

1.2 Statement of the Problem

Depression and anxiety are prevalent mental health challenges globally, with significant implications for the well-being of individuals. Among vulnerable populations, such as pregnant women living with HIV, these conditions can be particularly debilitating, potentially leading to adverse outcomes for both the mother and child. In Ibadan, Oyo State, Nigeria, there is a notable lack of research and knowledge regarding the prevalence, risk factors, and management of depression and anxiety among this specific demographic.

This knowledge gap is a critical concern due to its potential to impede effective public health interventions aimed at promoting the mental well-being of pregnant women living with HIV in the region. Without a comprehensive understanding of the unique challenges faced by this population, there is a risk of inadequate support and resources allocated to address their mental health needs, potentially leading to increased rates of untreated or undermanaged depression and anxiety.

Furthermore, the interplay between HIV status, pregnancy, and mental health requires a nuanced examination to develop targeted interventions. The lack of locally-relevant data and studies in Ibadan hinders the formulation of evidence-based strategies that could effectively alleviate the burden of depression and anxiety among pregnant women living with HIV.Addressing this knowledge gap is crucial to improving the overall health outcomes of this vulnerable population in Ibadan. By conducting comprehensive research on the prevalence, risk factors, and appropriate interventions for depression and anxiety in this specific demographic, it is possible to inform tailored public health initiatives and healthcare policies that can

significantly enhance the mental well-being of pregnant women living with HIV in Ibadan, Oyo State, Nigeria.

1.3 Aim and Objectives of the Study

The study aimed to determine the prevalence and factors associated with Depression and anxiety among HIV-infected pregnant women attending antenatal clinics in Ibadan Oyo State.

Specific Objectives

The specific objectives of this study are to:

i. determine the prevalence of depression among HIV-infected pregnant women attending antenatal clinics in Ibadan Oyo State.
ii. determine the prevalence of anxiety among HIV-infected pregnant women attending antenatal clinics in Ibadan Oyo State.
iii. determine the prevalence of comorbidity of depression and anxiety among HIV-infected pregnant women attending antenatal clinics in Ibadan Oyo State.
iv. examine factors associated with depression among HIV-infected pregnant women attending antenatal clinics in Ibadan Oyo State.
v. examine factors associated with depression among HIV-infected pregnant women attending antenatal clinics in Ibadan Oyo State.

1.4 Justification

It is noticeable that pregnant women living with HIV are often neglected in terms of their mental health, and it affects them and their families, which is a hindrance to the sustainable development goal of good health and well-being.

The focus of treatment for pregnant women living with HIV is mostly on the child and not her health

There is little work done to show the comorbidity of depression and anxiety.

1.5 Research Questions

The following research questions were answered in the study;

1. What is the prevalence of depression among pregnant women living with HIV in Ibadan Oyo state?
2. What is the prevalence of anxiety among pregnant women living with HIV in Ibadan Oyo state?
3. What is the prevalence of comorbidity of depression and anxiety among HIV-infected pregnant women in Ibadan, Oyo State?
4. What are the factors associated with these common mental health disorders among HIV-infected pregnant women in Ibadan, Oyo state?

1.6 Significance of the Study

This study on Depression and Anxiety among Pregnant Women Living with HIV in Ibadan, Nigeria holds immense significance. By comprehensively examining the mental health challenges faced by this specific demographic, it promises to enhance overall well-being for both mother and child. Tailored interventions can be developed, ensuring more effective treatment and reduced burden of mental health disorders. Healthcare providers will be better equipped to offer compassionate care, potentially improving treatment adherence. Additionally, the study can help combat stigma associated with HIV and mental health, fostering a more inclusive healthcare

environment. Policymakers will be informed about the unique needs of this population, leading to resource allocation for targeted mental health programs. This research also contributes to the global understanding of mental health challenges among pregnant women living with HIV, potentially influencing international guidelines. Ultimately, the study empowers the community with crucial information, promoting early recognition of symptoms and a culture of mental health awareness.

1.7 Scope of Study

This study was done to show the prevalence of depression and anxiety in pregnant women living with HIV. This study was done in a time frame of 2-3 months in the demographic area of Ibadan Oyo state. 330 participants would be used for this study.

1.8 Limitations of the Study

Self-reported data were used, which may affect social desirability and recall bais.

1.9 Operational Definitions of Terms

Depression: Depression is a mood disorder that causes a persistent feeling of sadness and loss of interest. Also called major depressive disorder or clinical depression, it affects how you feel, think and behave and can lead to a variety of emotional and physical problems.

Anxiety: Anxiety is an emotion characterized by feelings of tension, worried thoughts, and physical changes like increased blood pressure.

Pregnant women : Women determined to have one or more embryo in the uterus in their second trimester and above.

Endnotes

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Chapter Two

Literature Review

This chapter presents previous works done by reseaerchers which have relevance to this study. The review of related and relevant literature was carried out under theoretical framework, theoretical review, empirical review, appraisal of literature and conceptual model.

2.1 Conceptual Review

2.1.1 Concept of HIV

The HIV cycle, pathophysiology, and the prevalence of depression and anxiety will all be covered in the first section of this chapter. When appropriate, we will discuss certain at-risk categories, such as women, individuals living with HIV, and pregnant women, after first concentrating on the general population. This body of work will then concentrate on examining the prevalence of mental health conditions, such as depression and anxiety, among pregnant women living with HIV. We will also go through what is known currently regarding the factors that affect prenatal depression and anxiety in women who are HIV-positive. The debate on the effects of untreated mental health issues including depression and anxiety would finally bring the chapter to an end.

The National AIDS Advisory Committee and the National Expert Advisory Committee on AIDS were both established by the Nigerian health sector. Both groups were established as a result of the AIDS crisis in Nigeria (NEACA). However, the Federal Ministry of Health didn't begin to address the AIDS problem in Nigeria until 1991, which was often too late for the first official reaction to the nation's spreading HIV epidemic. This occurred in 1991. Up until 1999, when President Olusegun Obasanjo's administration gave it a boost, government attention to the HIV

epidemic grew gradually. HIV prevention, treatment, and care emerged as one of the government's top priorities during this time. Unfortunately, the number of infected people is still increasing alarmingly despite the countless programmes designed to raise awareness of the HIV epidemic. According to a report presented by the director general of the National Agency for the Control of AIDS (NACA) at a meeting of stakeholders with the National Steering Committee on Orphans and Vulnerable Children (OVC), there are about one thousand (1,000) new cases of the human immunodeficiency virus (HIV) reported in Nigeria every single day, with the younger population of the nation being the most susceptible.

Pregnant women frequently express greater levels of joy and hope during their pregnancies, which is positive for their general physical and mental health. Pregnancy, however, can also be a challenging time, one that is marked by an increase in nervous feelings and depressing thoughts. Many people may experience a normal increase in anxiety around this time, with comments from parents describing feelings of dread and uncertainty[1]. While it has been hypothesised that a little rise in mother antenatal (also known as prenatal) stress and anxiety is good for the development of the unborn child[2]. There is a common assumption that women who experience excessive levels of anxiety and depression can negatively impact a number of different areas of their lives as well as the lives of their children. Premature births are more likely when there are higher levels of anxiety and sadness during pregnancy, according to research low birth weight babies and difficult labour and delivery are both problems. A higher likelihood of behaviour and emotional problems in the kid later in life has also been linked to both maternal and paternal prenatal depression[3].

Additionally, anxiety and depression during pregnancy may be a precursor to anxiety and depression after giving birth, which might be harmful to both the child and the parent-child

relationship in addition to the child[4]. There hasn't been as much research on anxiety and, more especially, depression during the prenatal period as there has been during the postnatal period. But throughout the postnatal era, there has been a lot of research on these topics.

2.1.2 Definition Of Major Concepts

The concepts relevant to this particular research endeavour have been defined in a wide variety of theoretical and practical contexts. In order to provide conceptual consistency and clarity for the current research, the definitions below were employed.

HIV-Positive Women

For the purposes of this study, women are deemed to be HIV-positive if they have received a human immunodeficiency virus (HIV) diagnosis from a medical expert and have positive HIV antibody testing, including the HIV-1 Enzyme-Linked Immunosorbent Assay. This is how HIV-positive women are conceptualised. The diagnosis of HIV was confirmed after a check of the patient's medical records.

Depression

An extreme sensation of sadness and a lack of interest in daily tasks are two characteristics of the mental illness known as depression. It is not the same as the normal mood swings people experience as a normal aspect of living their lives. Reliable Source Significant life changes, such the death of a loved one or the loss of a job, can cause depression. But the presence of grief emotions must last for a long time before a doctor can diagnose depression. Depression is a condition that lasts for a long time rather than being a transient problem. It is defined by times

when the symptoms last at least two weeks. As a result, depressive symptoms may persist for weeks, months, or even years[5].

The three main types of depression that the NIMH recognises are dysthymia, major depression, and bipolar disorder (National Institute of Mental Health). A score on the Center for Epidemiologic Studies Depression Scale or Edinburgh Postnatal Depression Scale equal to or higher than the suggested cut-off for further examination. No attempt was made to provide a diagnosis for the symptoms reported by the subjects. Instead, the researchers analysed the severity of depression symptoms experienced by participants in the study and compared these individuals' symptoms to those experienced by members of other demographics[6].

Anxiety

Theoretically, anxiety is described as a feeling of impending danger and dread accompanied by agitation, tension, tachycardia, and dyspnea but unrelated to obviously identifiable stimuli. A person with generalised anxiety disorder experiences feelings of impending doom, which are typically connected to concerns about one's money, health, family, or place of employment, according to the National Institute of Mental Health . It's not always possible to pinpoint where one's discomfort comes from. The operational definition of anxiety used in this experiment was a positive result on the Beck Anxiety Inventory[7]. The results of the proposed study will provide further insights, which could potentially affect proposals for this group's future evaluations.

General Definitions

Health

Not just the absence of disease or infirmity, but also whole physical, mental, and social

wellbeing is what is meant by being in good health.[8] Health can be viewed as a continuum or a state (at a particular time) (over a more extended period). Through self-reporting of subjective symptoms and documentation of disease markers (CD4 count), which were collected through medical record chart abstraction, this study used a complete definition of health that includes both mental and physical health.

Mental Health

A state of psychological well-being in which the person has accomplished a satisfactory integration of his instinctual drives acceptable to both himself and his social milieu is referred to as mental health. It also refers to emotional, behavioural, and social maturity or normality, the absence of a mental or behavioural disorder, and a state of psychological wellbeing. The theoretical definition of mental health for the planned study was the results of the CESD and Beck Anxiety Inventory[9].

2.1.3 Epidemiology of HIV

Since the early 1980s, when the HIV pandemic first emerged, it has been one of the major causes of morbidity and mortality, adding to the burden of disease on nations. As a result, the region's life expectancy has dropped by more than 20 years, economic growth has stalled, and household poverty levels have grown[10].

Over the previous 30 years, there have been 70 million new HIV infections, and 35 million deaths that can be directly attributed to HIV have been recorded. HIV still affects people all around the world . It is a well-known truth that the majority of factors, including racial and ethnic backgrounds, alcohol and tobacco use, delayed HIV testing, a history of STIs in the past, multiple sexual partners, infrequent condom usage, and knowledge of HIV, all combine to

increase the prevalence of HIV in the world. Multiple sexual partners and infrequent condom use are other factors that contribute to the transmission of HIV. These have significant effects on the individuals affected, who are now more likely to die, as well as the neighbourhood where these individuals reside, possibly resulting in a significant increase in the number of newly reported infections as a result of the spread of infection. According to the Joint United Nations Programme on HIV, 2.1 million new HIV infections occurred globally in 2015. Only 70% of HIV-positive individuals are aware of their status, and more than 40% have not had a test or are not regularly taking antiretroviral medication[11]. The World Health Organization projected that there were around 36.7 million HIV-positive people worldwide at the end of 2016. However, a significant portion of adults between the ages of 15 and 49 now have HIV. According to data on HIV and AIDS, 1.8 million of the world's 36.7 million HIV-positive people are youngsters under the age of 15, with the majority of them living in sub-Saharan Africa[12].

According to projections, 1.9 million people aged 15 and older contracted HIV for the first time in 2015, with 47% of those cases being women. Young ladies and teenage girls made up 58% of the newly identified cases in 2015. All around the world, young women and girls between the ages of 15 and 24 have a 60% greater chance of contracting HIV. These age categories are where the bulk of HIV infections are detected.

According to some estimations, the main cause of DALYS in persons between the ages of 30-44 worldwide is HIV. Given that the disease is becoming increasingly widespread in most nations, HIV is considered a critical issue for public health on a global scale and the "single largest setback in human growth" in modern history[13]. Between the years 2000 and 2014, it is projected that 38.1 million people contracted HIV, and 25.3 million people were hospitalised for AIDS-related illnesses. But from 3.1 million in 2000 to 2.0 million by the end of 2014, the incidence of

new infections fell by 35%, and as of the end of 2014, the prevalence was projected to be 36.9 million persons. Additionally, the number of AIDS-related deaths decreased by 24% between the years 2000 and 2014, from a peak of 2.0 million deaths in 2004/2005 to 1.2 million deaths in 2014. A decline in HIV incidence coincided with this decrease. This is attributed to a concerted international effort to accomplish the Millennium Development Goals (MDGs) on HIV and the introduction of antiretroviral medication (ART) .

Sub-Saharan Africa (SSA) is the region with the highest prevalence of the HIV epidemic, while having a population that only makes up 10% of the world's total. In most of the countries in sub-Saharan Africa (SSA), where the disease is more prevalent, the socioeconomic effects of HIV include a decline in life expectancy, a halt in economic growth, and an increase in the level of household poverty . According to estimates, there were 25.8 million people living with HIV in SSA by the end of 2014, with women making up 57% of the total. Additionally, it is anticipated that SSA generated 1.4 million new infections. Nevertheless, between 2000 and 2014, this number implies a decline of almost 41%. SSA continues to rule the world in terms of the percentage of all new infections notwithstanding these advances. 790,000 people were predicted to have died from AIDS-related causes in SSA in 2014, accounting for 34.2% of the global projection; nonetheless, this figure shows a 48% decrease between 2004 and 2014.

Although the prevalence of HIV varies greatly from place to country, low- and middle-income nations, including Africa, account for the vast majority of reported infections. In 2016, there were 25.5 million people living with HIV in sub-Saharan Africa, compared to 6.7 million in Asia and 4.2 million in both Europe and the United States. Regardless of age or gender, everyone can contract HIV and AIDS. Adults living with HIV were most prevalent in Swaziland (27.2%), Lesotho (25%) and Botswana (21.9%), South Africa (18.9%), Namibia (13.8%), Zimbabwe

(13.5%), Zambia (12.4%), Mozambique (12.3%), Malawi (9.2%), and Uganda (6.5%). Figure 2.1 below shows the proportion of people worldwide who have HIV infection.

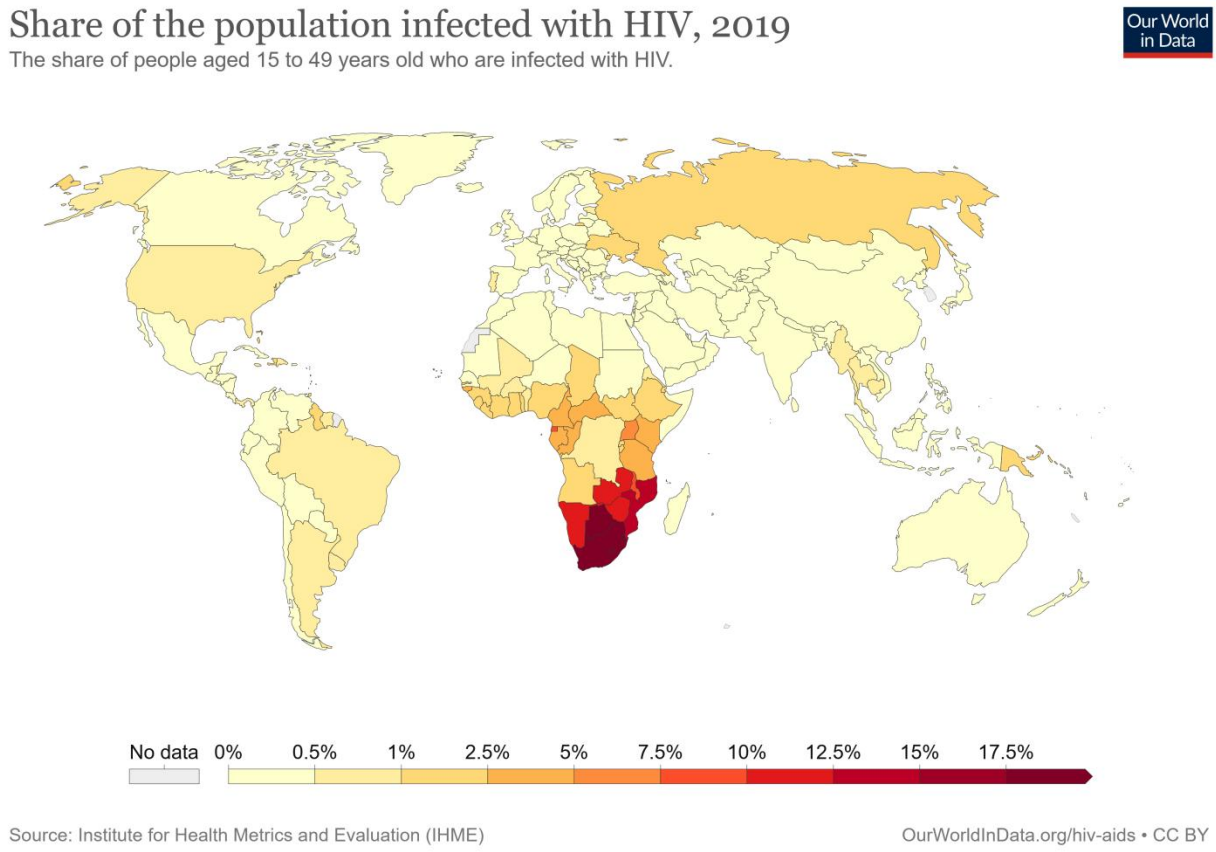

Figure 2.1. Share of the Population Infected with HIV

Source:[12]

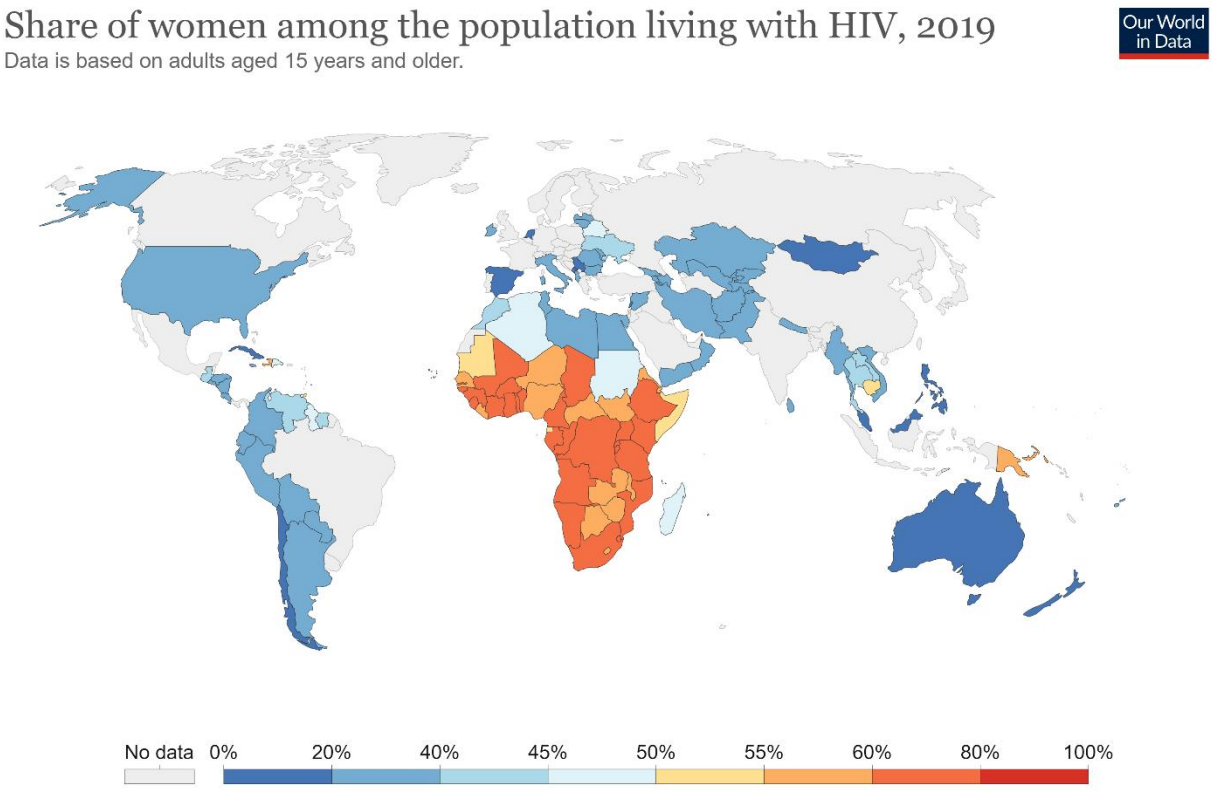

Figure 2.2 Diagram of Women in the Population with HIV

Source: [13]

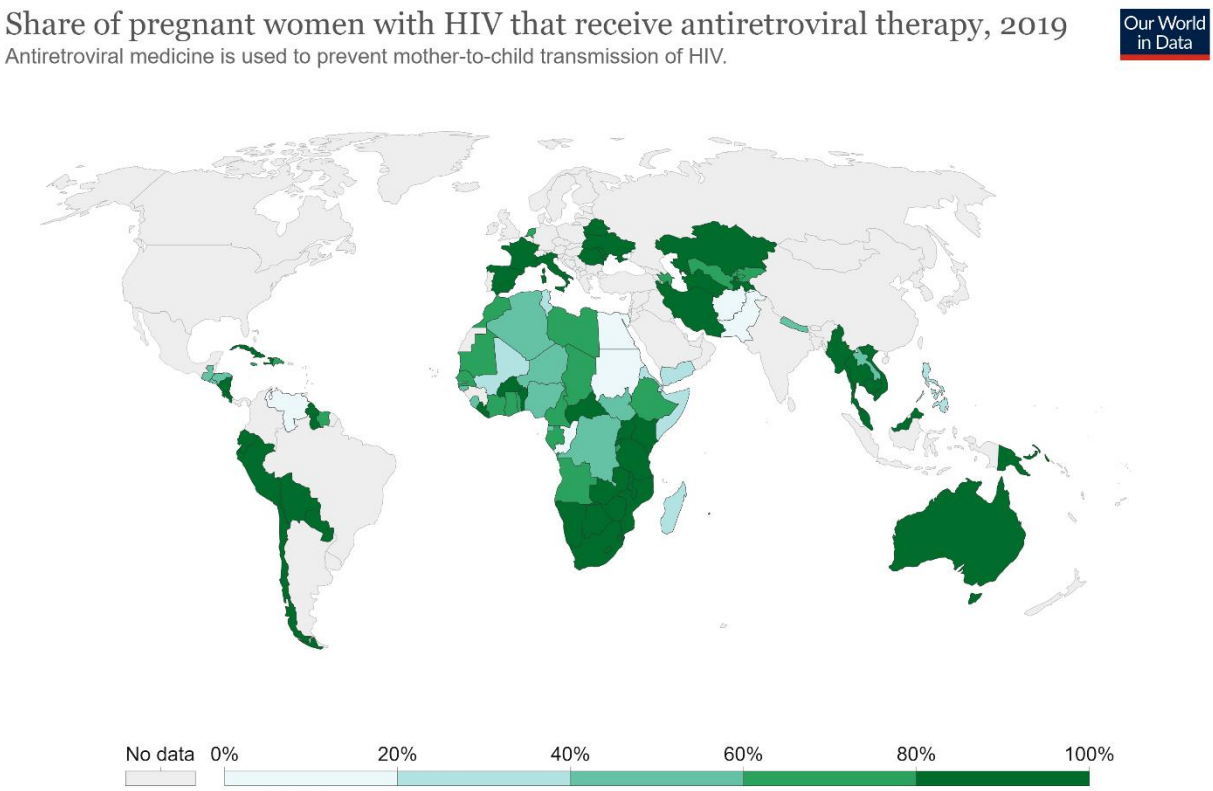

Figure 2.3 Share of Pregnant Women with HIV that Receive ART

Source[13]

2.1.4 Transmission and Presentation of HIV

AIDS develops from HIV infection, which is brought on by the HIV virus. Generally speaking, HIV is communicated from an HIV-positive person to an uninfected one. Blood, rectal fluids, semen, vaginal fluids, pre-seminal fluids, and breast milk are the fluids most frequently capable of spreading HIV. HIV must either be directly injected into the bloodstream (through a needle or syringe) of an uninfected individual or come into touch with a mucous membrane or injured tissue for transmission to occur. WHO, 2017. The mouth, vagina, penis, and the rectum all include mucous membranes. HIV is mostly transferred through sexual contact and sharing of injectable supplies with HIV-positive individuals[14]. HIV infection causes the immune system's infection-fighting CD4 to be attacked, which lowers CD4 counts and makes it harder for the body to fight infections. Without therapy, HIV can gradually erode the immune system and progress to AIDS. HIV infection worsens over time if not treated. HIV infection spreads in three stages, including

(1) acute HIV infection,

(2) Chronic HIV infection, and

(3) Acquired immunodeficiency syndrome (AIDS).

It has been demonstrated that antiretroviral therapy (ARV) can stop HIV infection from turning into AIDS. HIV, however, has no known treatment. HIV medications help to lower viral loads, which lowers the risk of HIV transmission. Additionally, taking HIV medications as prescribed helps those with the disease live longer, healthier lives.

The clinical presentation of symptoms and outward manifestations are key factors in HIV diagnosis. Physical indications and symptoms of any stage of HIV infection may be evident in

HIV-infected people. A broad body rash, fever, and a flu-like illness are the symptoms of acute seroconversion. When atypical diseases manifest in otherwise healthy people, HIV infection should be suspected as an underlying condition since the signs and symptoms match those of the presenting sickness. An HIV-positive person may experience weight loss. HIV infection may be suspected if there is evidence of opportunistic infections or HIV risk factors.

2.1.5 Transmission of HIV through Sexual Intercourse

The majority of HIV infections occur among heterosexual partners, with unprotected sexual intercourse being the most prevalent method of transmission. The risk of infection during anal intercourse is significant, estimated at 1.4–l.7% per act, in both heterosexual and gay interactions. As opposed to the projected 0.06% per act in high-income nations, the probability of transmission in heterosexual relations is predicted to be 0.34% in low-income countries. The majority of HIV infections occur among heterosexual partners, with unprotected sexual intercourse being the most prevalent method of transmission. The risk of transmitting HIV during sex is raised by the presence of other STDs, genital ulcers, pregnancy, and anal sex. Another element linked to a higher risk of HIV sexual transmission is the viral load (the risk increases by 2.4 fold for every 10giO increase in viral load). The quantity of sexual partners and ongoing sexual relationships are other considerations.

2.1.6 Transmission of HIV through Contaminated Blood/Blood Products

The second most frequent method of HIV transmission is during intravenous drug use when people share hypodermic needles. The most typical way that HIV is spread is through tainted blood and blood products, including blood transfusions and its byproducts. 15% of all new

infections in low-income countries, or between 5% and 10% of infections worldwide, are thought to be transmitted through this route.

2.1.7 Mother-to-Child Transmission of HIV

Vertical transmission, also known as transfer from a mother to her child, can occur at any time during pregnancy, birth, or nursing. In the world, it ranks as the third most typical method of HIV transmission. The risk of HIV transmission from an infected woman to her kid at any stage during pregnancy or delivery is thought to be 20% in the absence of ART, while the risk of HIV transmission during nursing is thought to be 35%. The rate of HIV infection through this route has significantly decreased as a result of policies intended to ensure that every pregnant woman gets checked during prenatal care.

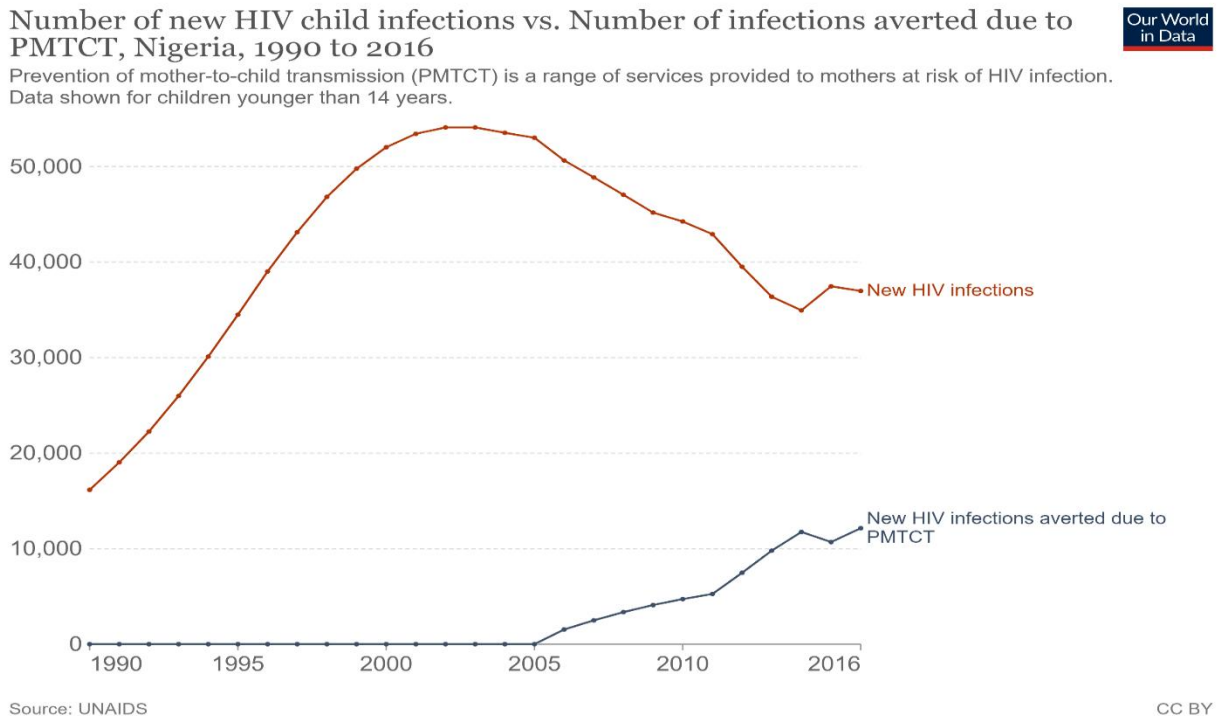

Figure 2.4 New Infection Rate
Source:[14]

2.1.8 Global HIV Statistics

30,2 million As of June 30, 2021, people had access to antiretroviral treatment.

In 2020, there were 37.7 million (30.2 million-45.1 million) HIV-positive individuals worldwide.

In 2020, 1.5 million [1.0 million–2.0 million] people contracted HIV for the first time, while 680,000 [480 000–1.0 million] people passed away from AIDS-related illnesses.

Since the commencement of the epidemic, 79.3 million (55.9 million-110 million) people have contracted HIV.

Since the beginning of the AIDS epidemic, 36.3 million [27.2 million–47.8 million] persons have passed away from AIDS-related illnesses.

2.1. 9 People Living with HIV Accessing Antiretroviral Therapy

Antiretroviral medication was being used by 28.2 million people as of June 30, 2021, up from 7.8 million [6.9 million-7.9 million] in 2010.

73% [56-88%] of all HIV-positive individuals had access to therapy in 2020.

54% [37-69%] of young children aged 0-14 years and 74% [57-90%] of individuals aged 15 years and older living with HIV had access to therapy.

Only 68% [52-83%] of male individuals aged 15 and older had access to treatment, compared to 79% [61-95%] of female adults of the same age.

In 2020, 85% [63- >98%] of HIV-positive pregnant women had access to antiretroviral medications to stop HIV from being passed on to their unborn children.

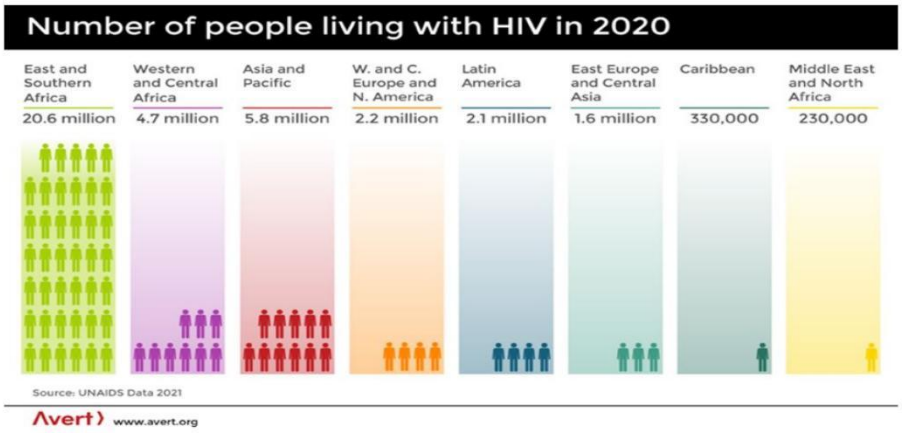

Figure 2.5 People Living with HIV in 2020
Source[15]

2.1.10 New HIV Infections

Since the peak in 1997, there has been a 52% decrease in new HIV infections.

As opposed to 3.0 million [2.1 million-4.2 million] people in 1997, there were approximately 1.5 million [1.0 million-2.0 million] new HIV infections in 2020.

Infections that occurred for the first time in 2020 were 50% female and female.

From 2.1 million [1.5 million-2.9 million] to 1.5 million [1.0 million-2.0 million] new HIV infections during 2010, there has been a 31% drop.

Between 2010 and 2020, there will be a 53% decrease in the number of new HIV infections among children, from 320 000 [210 000–510 000] in 2010.

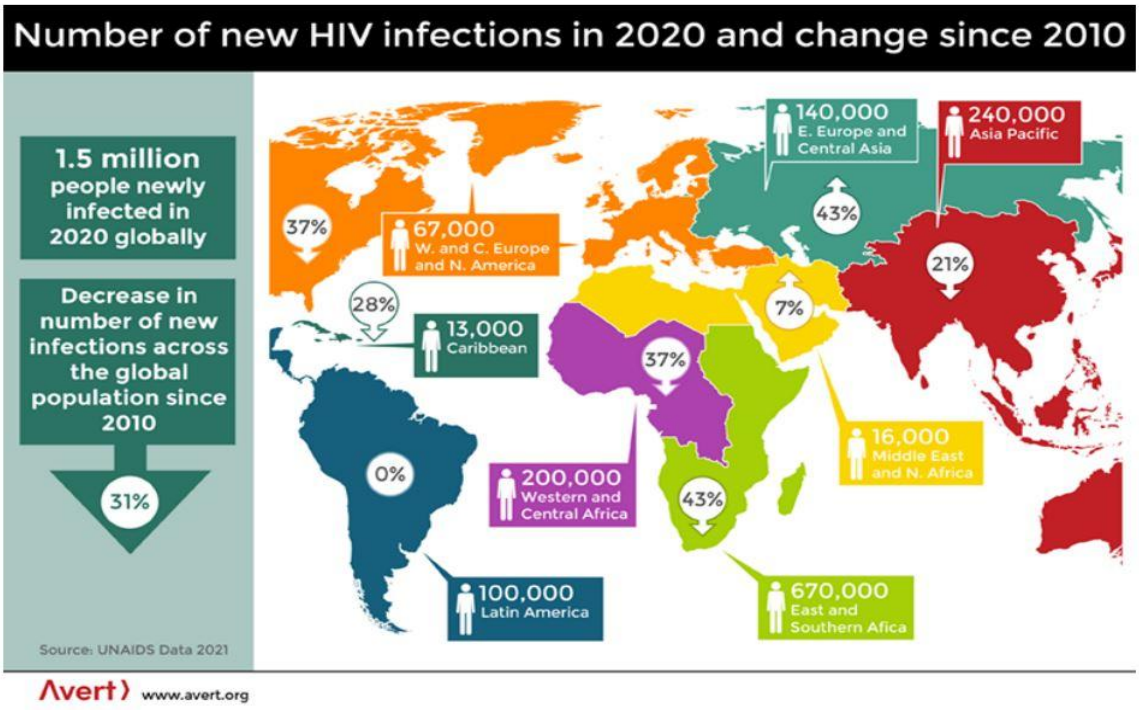

Figure 2.6 Number of New infections and change since 2010

Source[15]

2.1.11. AIDS-Related Deaths

The number of deaths linked to AIDS has decreased by 64% since the epidemic's peak in 2004, and by 47% since 2010.

Globally, 680,000 [480 000-1 million] persons died of AIDS-related illnesses in 2020, a considerable decline from the 1.9 million [1.3 million-2.7 million] and 1.3 million [910 000-1.9 million] deaths from AIDS-related illnesses in 2004 and 2010, respectively.Since 2010, AIDS-related mortality among women and girls has decreased by 53%, while mortality among men and boys has decreased by 41%.

Infection with HIV continues to be a serious issue for global public health. It was estimated that there would be 37.7 million people living with HIV worldwide in 2020, including 1.7 million children, and that adult HIV prevalence would be 0.7%. Around 6.1 million of these individuals, or 16% of the total, are thought to be ignorant of their viral status. According to estimates, 79.3 million people have acquired HIV since the pandemic's start, and 36.3 million have passed away from AIDS-related illnesses. 680,000 people will die from AIDS-related illnesses in the year 2020. This number has decreased by almost 64 percent, from 1.9 million in 2004 to 1.3 million in 2010, since its peak. The majority of people who are HIV + today reside in the middle- and low-income countries. With 20.6 million individuals living with the virus and 670,000 new HIV infections in 2020, East and Southern Africa will be the region of the globe most affected by HIV. The WHO Africa is the region most severely afflicted by HIV, with more than two thirds of all HIV-positive people living there. Almost one in every twenty-five persons (3.6% of all adults) in this area today has HIV. It is estimated that 1.5 million people would contract HIV for the first time in 2020.

Globally, there have been 31% fewer new HIV infections since 2010, from 2.1 million in 2010 to 1.4 million in 2018. Since 2010, there have been 53% fewer newly identified HIV diagnoses in children, going from 320,000 in 2010 to 150,000 in 2020. Additionally, there is a lot of work to be done to educate teenagers and young people about HIV testing and the disease. In 2019, major impacted demographics and their partners accounted for 65% of all newly diagnosed adult HIV cases. Those who labour in the sex industry, those who inject drugs, prisoners, transgender people, homosexual men, and other men who have sex with other men are some of these populations. These populations were responsible for 39% of new HIV infections in sub-Saharan Africa, but 93% of new HIV infections outside of sub-Saharan Africa. HIV infection is 35 times

more likely to occur in drug injectors than in the general population. For transgender women, the ratio is 34 times higher. For those who work in the sex industry, it is 26 times greater. Men who are homosexual and other guys who exclusively have intercourse with other men are 25 times more likely to have it. 91% of new HIV infections are recorded in Eastern Europe and Central Asia, 95% are reported in the Middle East and North Africa, 96% are reported in Western and Central Europe and North America, 94% are reported in Asia and the Pacific, and 92% are reported in Latin America. West and Central Africa are reported to have 72% of new HIV infections; In the Caribbean, 68% of new HIV infections are recorded, whereas in East and Southern Europe, 32% of new HIV infections are reported.

2.2 Theoretical Framework

2.2.1 Stress Diathesis Model

A theoretical framework is made up of concepts or abstractions that are related to one another and organised logically because they have some relationship to the entire subject matter. The organising of the empirical data, the formulation of the research questions, the choice of the study instruments, and the interpretation of the study findings were all made easier by using the theoretical framework that served as the foundation for this study. The theoretical framework was also helpful in identifying knowledge gaps that may assist future theories be developed, which could lead to a better understanding of the variables that predict depression and anxious symptoms in the research population and the creation of better treatment methods. This was made possible by the framework's assistance in identifying existing knowledge gaps. In the anticipated study, African American women who tested positive for HIV were questioned about their inherited and acquired vulnerabilities and how these acted as indicators of depressive and anxious symptoms.

According to the stress diathesis model, vulnerability factors have a role in the onset of depression when they interact with unfavourable life events. This is known as the "stress diathesis hypothesis" in the model[15]. According to this paradigm, stressful life events are supposed to cause people to become more psychologically susceptible to depression. These events also have an impact on how negative cognitive schemas are formed.

Negative schemas may go dormant while a person is recovering, but they could always reawaken, which could result in the emergence of predispositions for mood disorders. When a traumatic experience or an occurrence that recalls a prior trauma occurs, it sets off a chain reaction that reactivates the negative cognitive process, which subsequently results in unpleasant sensations and symptoms. This marks the start of the series of actions.

Certain people do not have a psychological tendency that makes their mental health worse even in the most stressful situations. Everyone experiences both short-term and long-term stress, but due to their distinct histories and genetic make-ups, each person's body responds to the many kinds of stress in a different way. The stress diathesis model heavily relies on the idea of allostatic load. Allostasis was defined by Sterling and Eyer as the capacity to achieve stability via change. When stressful events occur in a person's life, a wide range of behaviours may be displayed. Successful resiliency in the face of stress can produce positive outcomes including enhanced coping. Damage occurs when the body is unable to respond appropriately to life's many stressful conditions. examined the relationships between allostasis, allostatic stress, and mood disorders.

The adaptation that takes place in reaction to stress is referred to as allostasis. Every time adaptation is interfered with, whether for biological or environmental reasons, allostasis adds another level of complexity to the process. Allostasis is the result of this. An allostatic state

results from the failure to shut down mediators in response to stress. In the event that adaption fails, injury results. The effects of stress can accumulate over time, particularly if adaptation is continuously contested and futilely tried. Allostatic stress is the term used to describe the cumulative effects over time of an ongoing assault on the body. McEwen lists four circumstances that are connected to excessive allostatic load:

(1) Frequent stress,

(2) Repeated stressors,

(3) Inability to turn off allostatic Responses after the stress are over, and

(4) the trigger of compensatory responses due to inadequate allostatic responses.

Practically every system in the body is affected by an increased allostatic load, which also results in decreased immunological response, elevated risk of obesity and atherosclerosis, and demineralization of bone. Long-term allostatic load raises the possibility of irreversible brain injury in rats. Genetic or developmental problems that prevent the necessary coping mechanisms from being used might cause allostatic stress. The way people perceive stress and respond to it depends on neurobiological factors. These factors also affect how people react to the daily challenges they experience.

Renna was a pioneering scientist who looked into the physiological responses of the body to stress. A study asserts that when the pituitary gland secretes an excessive amount of adrenocorticotrophic hormone, the release of glucocorticoids from the adrenal cortex increases. Both positive and negative stress can trigger this well-known neuroendocrine reaction. An overactive hypothalamic-pituitary-adrenal and noradrenergic system, as well as a malfunctioning serotonergic system, can both contribute to the pathophysiology of suicidal behaviour. Suicidal

behaviour, impulsivity, violent behaviour, and high levels of anxiety have all been linked to both neurobiological system dysfunction and the impact of stressful life experiences on those systems. In reaction to stressful life events, both healthy persons and those who are depressed experience a spike in cortisol release, regardless of whether the stress is transient or persistent. It is impossible to anticipate the outcomes based on the amount or intensity of stress that was experienced due to individual variances in reactions and the notion that some people have underlying susceptibilities to depression and other mood disorders. Effective coping methods are advised in order to maintain homeostasis when presented with stressful situations because stress cannot be prevented.

The physiological stress response has been found to be correlated with lifestyle. Sleep deprivation and early negative experiences have an impact on the physiologic stress response. Early negative experiences could make corticotropin-releasing factor mechanisms more sensitive. The disturbance of neural circuits brought on by early unpleasant life experiences may potentially be a factor in adult depression. Short bouts of sleep deprivation have been demonstrated to raise levels of cortisol, glucose, insulin, and insulin resistance. Poor sleep quality or sleep pattern disruptions may lead to dysregulation of the hypothalamic-pituitary-adrenal axis. Depressive illnesses and high cortisol levels have been connected. The effects of a higher allostatic load may not be favourable. The immune system may be impacted by the physiologic changes brought on by an increase in allostatic load, which could result in the appearance of inflammatory, infectious, and autoimmune disorders[16]. Increased allostasis burden, which may lead to pathophysiologic changes, may have long-term effects on chronic depression. While concurrently enduring considerable depression and a long-term rise in allostatic stress, there is a chance of adverse cardiac effects, including increased platelet reactivity. There is proof

that certain individuals may develop mood disorders as a result of the combination of biological, psychological, social, and cultural factors. Although the exact cause of mood disorders is unknown, there is evidence that certain factors may contribute to them. There is mounting evidence that physiological as well as biochemical factors contribute to mood disorders. Different people deal with life's stresses in different ways. The results of the body's adaptive adaptation to stress, which in turn leads to allostasis, include appropriate responses and excellent coping. When the body is unable to adapt to the demanding conditions of daily life, mood issues are regularly observed. It is possible for stressors that generate a physiologic stress response to cause harmful effects if they are allowed to continue for an extended period of time.

Even while it might be difficult to predict who would experience a mood disorder, lifestyle, personal history, and the presence and nature of current stressors are all important considerations when looking into mood disorders. In light of this, the current study examined these underlying weaknesses to determine if they may be used as potential indicators of depressive and anxious symptoms. For this investigation, the underlying genetic vulnerabilities were examined, including family histories of mood disorders and alcohol and drug abuse. In the current study, underlying acquired vulnerabilities including educational attainment, income (annual household income), drug and/or alcohol use, HIV disclosure status, sleep hygiene, and a history of sexual abuse or assault were assessed.

Conducting a review of potential signs of psychopathology is required in order to offer comprehensive care to women living with HIV. Healthcare professionals typically miss the importance of depression and anxiety in patients in this category despite their high frequency. However, everyone has underlying vulnerabilities that can kick off a domino effect that affects

brain functions. Some of these vulnerabilities are inherited, while others are acquired. These weaknesses could be acquired or inherited.

The stress diathesis model is appropriate to utilise as the conceptual framework for this inquiry because it accurately portrays and describes this process. The stress diathesis model has been applied to this group in an effort to better understand the signs and symptoms of depression and anxiety, and it has been shown to be beneficial for understanding depression and anxiety generally[17]. As a result, the purpose of this study was to investigate the usefulness of the stress diathesis model in relation to this group.

2.3 Review of Empirical studies

2.3.1 HIV Prevalence and Incidence for Women

The number of women receiving HIV diagnoses has increased. During the early phases of the global epidemic, women made up about 42.0% of all HIV-positive people in 1990; however, by 2012, this proportion had risen to 50.1%. 17.7 million of the 35.3 million HIV-positive people worldwide are women. Despite a global 33% decrease in new infections (2.3 million) from 2001 to 2012, there was nevertheless a reported rise in the number of HIV-positive people in that year. (4,3 million). The introduction of antiretroviral therapy (ART), which has also helped to lower the number of AIDS-related deaths, is largely to blame for the overall decline in HIV incidence. An estimated 1.3 million people in North America have HIV as of 2012, with about 260,000 of them being women (double the prevalence reported in 1990)[95]. Between the years 1985 and 1994, 10% of Canadian women were HIV positive; by 1999, that number had increased to 25%. The frequency of HIV-positive reports has barely changed in more recent years, with women reporting HIV-positive status at a rate of 23.9% in 2000 and 25.7% in 2009 . In 2011, an estimated 71,300 Of people living with HIV in Canada, 16,600 (23.3%) were women[99].

The trend displayed by the demographics of people living with HIV in Canada has changed since the 1980s. Ethnicity is taken into account in the epidemiology of HIV in Canada. Racialized women, such as those from Africa, the Caribbean, Black, and Indigenous cultures, have a much higher rate of being overrepresented in the HIV epidemic compared to Caucasian or White women[18]. Between 1999 and 2008, White women's positive HIV reports decreased steadily, from 40% to 28%. However, over the same time period, positive HIV reports increased among African, Caribbean, and Black women from 12% to 28% and among Aboriginal women from 45% to 52%. There are limitations on how ethnicity and race are reported in relation to the prevalence of HIV in Canada because Ontario and Québec haven't previously gathered these data. The highest recorded rates of HIV infection have been found in Ontario and Québec, hence it is not surprising that these two provinces impose limitations. On the other hand, as of 2013, agreements with the Public Health Agency of Canada have made it possible to report on races and ethnicities .

Due to their intricacy and interaction, the factors that contributed to HIV risk in the 1980s are still important today, as seen by the increase in the proportion of female HIV carriers. Statistics indicate that not nearly enough progress has been made, particularly for women of colour who are members of minority organisations. Intersectionality refers to the overlapping of many identities, such as gender, race, ethnicity, class, and sexual orientation. When manifested in a variety of situations, the numerous oppressive and discriminatory behaviours that might result from perceived memberships in these identities may raise a person's risk of developing HIV.

2.3.2 HIV Risk Factors for Women: Biology and Life Stressors

Numerous factors, including those that are biological, economic, cultural, social, and political, increase the susceptibility of women to contracting HIV. Women are biologically more

susceptible to contracting HIV in heterosexual relationships because unprotected male-to-female vaginal HIV transmission is more efficient than unprotected female-to-male vaginal HIV transmission. Because heterosexual relationships are more prevalent, this is the case. Additionally, it's critical to remember that the risk of HIV transmission through penile-vaginal contact is 18 times lower than the risk of HIV transmission through anal contact, which is not shielded, and that the percentage of heterosexual people who engage in anal intercourse is increasing. The cervicovaginal mucosa has a substantially higher surface area than the penis and foreskin, which contributes to the increased sensitivity of the female reproductive tract tissues to HIV , as does the presence of semen that may remain in the female genital tract for up to 3 days . Both of these elements may enhance the virus's contact with its target cells and make it easier for the virus to enter the mucus tissue, where it can spread infection[19,20]. Co-infections (such as gonorrhoea, syphilis, cytomegalovirus, and herpes) in the female genital tract have also been reported to support increased HIV shedding, transmission, and susceptibility. This is because these infections increase the likelihood that HIV will be passed on to the next generation[21] [22].Additionally, hormonal contraceptives, especially progesterone-based formulations, have been connected to an increased risk of HIV transmission. Although women are more likely than men to develop HIV owing to biological considerations, this risk may be decreased if there is greater equality and social justice for women around the world.

The contemporary social environment has led to the development of gender and cultural norms that position and determine how women interact with and participate in society, as well as how society interacts with and addresses the needs of women for equity. The contemporary social context positions and shapes these gender and cultural standards. Because of gendered roles and gender inequality, many women have been victims of gender-based violence, most notably

sexual assault. There is a link between a woman's history of gender-based violence, which includes abuse from an intimate partner and abuse during infancy, and a higher chance of contracting HIV. The difficulty of negotiating safer sex and the denial of intercourse due to fear of violence are related to gender violence, which raises the risk of HIV infection[23]. In addition, deviating from the gendered roles and identities that society and culture promote can lead to violence, which has been noted as a factor in the spread of HIV infection among women. An significant factor to take into account for women living with HIV is the risk of exclusion from their community or household, as well as the risk of self- or child-harm after disclosing their diagnosis. These risks may help spread HIV to others. Importantly, There is some evidence that women who have been the victims of intimate partner violence are more likely to seek preventative health care, including HIV testing as a result of heightened awareness of the HIV risks they face[24]. Despite this, it has been demonstrated that violence, along with other obstacles, decreases participation in the healthcare system and continuity of care[25]. Additionally, it has been suggested that fleeing violence by ending a relationship or community causes socioeconomic instability, which was covered in more detail below. Additionally, it has been shown that female power dynamics influence drug use [26,27].

The current political context in Canada has had a substantial impact on both the HIV vulnerability of racialized women, among whom a change in greater HIV-positive report rates has been established, and the susceptibility of women of colour to the disease. It is critical to understand how social exclusion, particularly for coloured women who are faced in political arenas, has restricted the engagement of women who are susceptible to HIV infection in decision-making and civic participation. For women, who historically have been

underrepresented in political realms, this is especially true. In the latter, significant choices that have an impact on healthcare are being made. Exclusion due to discrimination (such as heterosexism, homophobia, and racism) has also influenced how people utilise and access health care and support services, which increases women's susceptibility to HIV[28]. In addition, the persistence of HIV-related stigma and prejudice has been facilitated by the pervasiveness of HIV misconceptions and ignorance in larger society, which is a significant contributor to women's unwillingness to seek care for testing or treatment[29] . The requirements of each individual woman have received more attention recently in HIV-related care. This is due to the recognition that higher service utilisation may be enabled by the relevance of services rather than access[30]. Accessing services for women of colour, particularly Aboriginal women and immigrants, involves other practical problems. The creation of the First Nations and Inuit Health Branch is one example of how colonialism's legacy has affected people's ability to access and use health care. This division decides which Aboriginal groups qualify for drug and ancillary health services as well as whose medications and medical costs, like those for antiretroviral therapy, are covered by insurance. This has had a detrimental effect on the medical care that Aboriginal women get.

According to studies that looked at the "healthy immigrant effect," hurdles to accessing healthcare services and a lack of follow-up after screening for illnesses are to blame for the lower reported prevalence of illnesses. The fact that immigrant groups typically have lower incidence of chronic diseases lends support to this. In the case of African and Caribbean women living with HIV, discrimination, language barriers, a lack of culturally relevant services and resources, cultural disconnection, and a lack of understanding by healthcare professionals all contribute to poor HIV health outcomes and limited access to healthcare services. Because they might have to

disclose their uncertain immigration status in order to receive medical care, which could jeopardise their status, some immigrants worry about their future in Canada[31,32]. In addition, women with HIV suffer difficulties with housing, employment, educational possibilities, and food hardship. Having a job has been found to significantly enhance the physical and mental health as well as the general quality of life for women who are HIV-positive. In the debate of the evolving profile and gender dimension of HIV, it is crucial to incorporate gender-based analysis and evaluation of many life pressures. This is because the risk factors for HIV in women are complicated.

2.3.3 Geographical Distribution of HIV in Oyo State:

For the purpose of conducting research, Oyo State was divided into the following zones: Ibarapa, Ogbomoso, Oyo, Ibadan, and Saki. The number of HIV -positive people who were interviewed in each of the four zones is indicated by the numbers 38, 43, 37, 38, and 44, respectively. These are the frequencies, which are highlighted in Figure2.7 below along with the percentage values that correspond to them, the percentage data that is legitimate, and the cumulative percentage data.

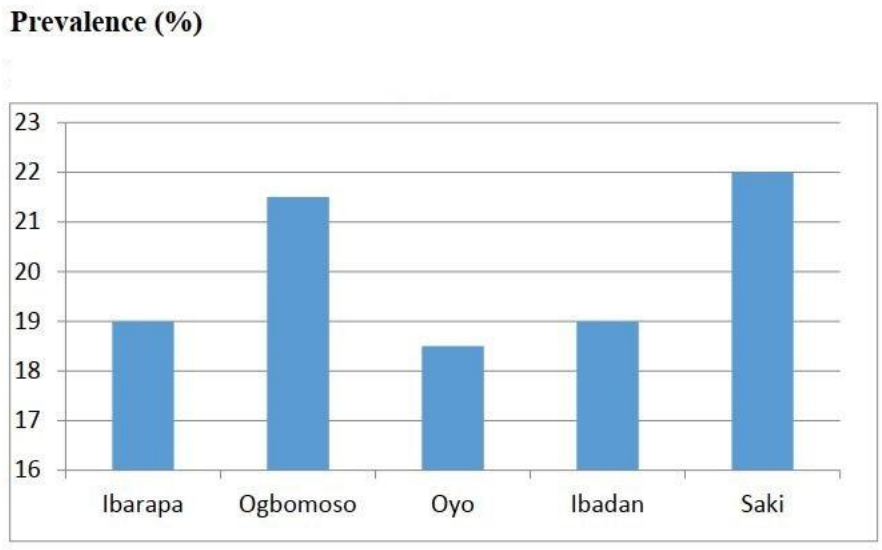

Figure 2.7 Bar Graph Showing the Geographical Distribution of HIV

Source[33]

2.3.4 Depression

In its broadest sense, depression is a mental health condition that can interfere with a person's ability to lead a normal life, including their capacity to maintain employment, continue their education, or carry out other activities that are typical for their age group. Based on the Diagnostic and Statistical Manual of Mental Disorders (DSM-V), If an individual demonstrates five or more symptoms of depression for a period of at least two weeks, including a depressed mood and a marked loss of interest or pleasure in life activities, in addition to at least four of the following symptoms, a clinical diagnosis of "depressive disorders" can be made.

1) Significant unintentional weight loss or gain,

2) Insomnia or sleeping too much,

3)Agitation or psychomotor retardation noticed by others,

4) fatigue or loss of energy,

5) Feelings of worthlessness or excessive guilt,

6) diminished ability to think or concentrate,

7) Indecisiveness, and

8) Recurrent thoughts of death.

There are around 350 million people all over the world who suffer from depression, according to estimates. People of every culture may experience signs of depression at some point in their lives. It is estimated that neuropsychiatric diseases are responsible for 16.2% of the global disease burden[33]. According to a study conducted by the WHO in 2012, almost one in twenty persons reported having experienced an episode of depression in the preceding year (WHO, 2012b). Ten percent of people are affected by serious depression (the lifetime prevalence is 17 %, and the one-year prevalence is 10 % of the total). According to the World Health Organization , the lifetime prevalence rates of the disease range from around 3% in Japan to 16.9% in the United States, with the majority of nations lying between 8 and 12%. Despite this, less than one-quarter of individuals throughout the world have access to therapy for depression[34]. Global depression rates were ten times higher in 2009 than in 1960, with the current mean age at diagnosis for depression today at 14.5 years compared to 29.5 years in 1960. By 2020, depression will be the second leading cause of disability in the world. By 2030, it is expected to be the largest contributor to the burden of disease. According to the findings of a poll conducted by the United States National Comorbidity Survey, 53.4% of American adults suffer from one or more mental or physical illnesses, which led to an average of 32.1 disability days in 2006. Depression of the major kind was responsible for more than half of the sick days used by American employees, and it was also the one that had the worst impact on their productivity [35,36]. A lack of focus, memory loss, and difficulty with planning and decision-making can be caused by depressive symptoms, which can have a negative impact on a person's capacity to work and lead to an increase in unemployment.

2.3.5 Depression Conceptualization

The biological, cognitive, and emotional variables linked with a person's social development throughout their lifetime are considered to be risk factors for the development of depressive symptoms. Having an unintended or unwanted pregnancy, having pregnancy-related illnesses or disabilities, receiving neither emotional nor physical support, having a partner who is lacking in empathy or openly antagonistic, being a victim of domestic violence, and having a low socioeconomic status are common risk factors associated with prenatal depression. There are multiple ways to describe aspects of depression. The diathesis-stress model of depression by Caspari is used to explain why some individuals develop depression while others, in similar circumstances, do not[37].

2.3.6 Prevalence of Depression

The most common mental health illness across all age categories, depression, is experienced by 322 million people, according to data from the World Health Organization (WHO). According to the results of the most recent world mental health survey (WMH), which was conducted in 28 countries using a methodology that was consistent across countries and the WHO Composite International Diagnostic Interview, depression was discovered to be the second most prevalent condition in the world after specific phobias (CIDI). The range for the lifetime prevalence of major depressive disorder was between 4% and 10%, whereas the range for the 12-month prevalence was between 3% and 6%[38]. It is important to highlight that according to this WMH, HICs had a higher prevalence of mental diseases than LMICs.

A few studies that are representative of the entire nation have been conducted to look into the prevalence of depression in different African countries. A lifetime prevalence of 9.8% was found,

for instance, in the South African Stress and Health (SASH) study, which was conducted as part of the World Mental Health Surveys. Surprisingly, the disorder that happened the most commonly (11.4%), followed by depression (9.8%), agoraphobia without panic (9.8%), and then alcohol addiction (11.4%)[39].

The findings of this study also showed that major depressive disorders, with a frequency of 4.9%, were the most common type of mental disease over a year. This elevated major depressive disorders to the position of most common disorder. Surprisingly, a survey carried out in Nigeria using the same techniques and screening tool as the SASH study found a low incidence of depression over the course of a lifetime (3.1%) and over the previous 12 months (1.1%)[40]. On the other hand, a nationwide study of 4,925 people ages 18 and older found that the prevalence of depression in Ethiopia was 9.1%. Surprisingly, a study in Ethiopia's urban outpatient department found a lower prevalence than the country's general survey: 6.7% of participants reported having depression symptoms in the 12 months before to the study. Major depressive mood disorder was 18.0% common during the course of a person's lifetime in this cohort. Additionally, the WHO's most recent study has estimated the incidence of common mental illnesses. Their findings indicate that 4.1% of Tanzania's population, or about 2.1 million people, suffer from depression. The criteria from the DSM-V are what are utilised to diagnose depression. However, doctors are not always available to make the diagnosis using the DSM-V in basic healthcare institutions and data collection (epidemiological research). This is so that it may be provided and reviewed by a doctor, as required by the DSM-V. Because of this, the DSM-application V's is typically constrained, which increases the need for screening tools. The currently available depression screening tests can identify people who are likely to have the condition but cannot provide a definitive diagnosis. There are several sensitive and easy-to-use validated screening tools

available when looking for depression. These methodologies have varying degrees of sensitivity and specificity, which is one of the reasons why the outcomes of further research on prevalence might fluctuate so greatly. Few studies in this review of the literature identified participants as having depression using the DSM-IV or DSM-V. Instead, the majority of investigations employed screening methods, with: Beck Depression Scale, The Hospital Anxiety and Depression Scale (HADS), Mini International Neuropsychiatric Review, Edinburgh Postnatal Depression Scale and Epidemiological Studies Depression Scale and Hopkins Symptom Checklist [41,42,43]. According to the existing research, some subgroups are more vulnerable to developing depression. This covers women, people living with HIV, and pregnant women.

Men are more prone than women to have externalising disorders and substance usage, while women are more likely to show signs and symptoms of depression. There are gender differences in the prevalence of depression in both high-income countries and low-income, middle-income, and low-middle-income countries. According to Patel's research, unipolar depressive disorder is the second most common type of mental disease among women in low- and middle-income countries (10.6% prevalence), whereas it is the third most common type of mental illness among men (6.7% prevalence)[44]. People who live with HIV experience depression far more frequently than those who do not.

The results of a meta-analysis that examined the traits that put people at risk for getting depression show that those who are HIV positive have a higher risk of depression than those who are not HIV positive. Even though there were only 10 papers in this meta-analysis, six of them only covered gay people, it had the advantage of including people who had already been diagnosed with depression, which was a significant strength of the research. In Zimbabwe, 68.7% of those who were HIV-positive and experiencing depression were also HIV-negative,

compared to 47.3% of those who were the other way around. The results of various studies conducted in South Africa indicate that the prevalence of depression among HIV-positive individuals is equivalent to that among HIV-negative individuals. For instance, Peltzer and colleagues found that just one out of every ten HIV-negative participants received a positive result for depressed symptoms, compared to two out of ten HIV-infected people[45,46].

Reports have shown that pregnancies are linked to a higher chance of getting depression, as was mentioned in the background section. One meta-analysis, for instance, which examined 21 different studies, found that depression was significantly more common in the second and third trimesters of pregnancy (12.8% and 12.0%, respectively). With the exception of one study carried out in Brazil, the majority of this research, however, was undertaken in HICs. Additionally, the studies that were included used screening methods that can exaggerate the prevalence of the disease (such EPDS and BDI)[47].

Antenatal depression in low-income countries (LICs), notably in Sub-Saharan Africa, has not received much attention. Prenatal depression appears to be as prevalent in LMICs as it is in HICs, based on the evidence that is currently available. For instance, Fisher's study discovered that the prevalence in low- and middle-income countries (LMICs) was 15.6%, while a research of African women indicated that prenatal depression affected 11.3% of them.

The prevalence of depression reported by the small studies conducted in South Africa, Ethiopia, and Zimbabwe appears to vary to some extent. For instance, when the Edinburgh Postnatal Depression Scale was used on a group of 1062 pregnant women in Cape Town, South Africa, it showed that 39% of the women tested positive for depression (EPDS). In contrast, in rural South Africa, more than half (47%) of pregnant women tested positive for depression on a significant depression component of the structured clinical interview for DSM-IV diagnoses. Furthermore,

15.7% of those expectant mothers had a history of depression. An urban sample of pregnant women in the South African province of KwaZulu Natal revealed that 38.3% of depressive women had self-harm thoughts in the seven days before to the interview. Likewise, a population-based study carried out in Ethiopia discovered that 29.5% of the 1311 pregnant women in that nation had positive PHQ9 testing .

On the other side, Zimbabwe had a comparatively low rate of prenatal depression (5.3%, n=23). Only 73 (17%) of the 437 pregnant women who completed the Shona Symptoms Questionnaire (SSQ) met the requirements for mental disorder. It's possible that the method used is to fault for the low prevalence. The customers were initially screened using the SSQ, and those who did well on it were then referred to a psychiatrist for further evaluation. The Zimbabwean study is one of the few to employ this strategy, with the participants being subjected to screening procedures before being submitted for clinical testing. The prevalence of the illness in these studies is more likely to correctly reflect the true prevalence of the ailment when compared to studies where the outcome measure was based on screening techniques. Women, people living with HIV, and pregnant women. It is not unexpected that pregnant women who are HIV-positive are among the group most at risk for depression.

2.3.7 Prenatal Depression

Antepartum or prenatal depression is the term used to describe depression in the months before delivery. According to estimates from the World Health Organization, 15% of new moms and 10% of pregnant women worldwide have severe postpartum depression[48]. The delivery problem that happens most frequently is prenatal depression. Contrarily, prenatal depression is just temporary and can be treated with the help of a qualified professional[49]. Prenatal depression can appear at any stage of pregnancy and can take many different forms, such as the following:

Postpartum depression is characterised by persistent worry, feelings of rage or irritability, lack of interest in the infant, disturbances in appetite and sleep, crying and sadness, feelings of guilt, shame, or hopelessness, loss of interest.

The mid- and late-trimesters of pregnancy were found to have a significantly higher prevalence of depressive symptoms. Prenatal depression was independently predicted by having experienced previous depressive symptoms (OR = 4.35), low (OR = 2.18) or moderate (OR = 1.86) satisfaction with obtaining basic needs, intimate partner violence (OR = 1.89), receiving earlier prenatal care (OR = -1.87), no spousal support, low income, and younger age[50].

An increased chance of developing depression symptoms when pregnant has been connected to a variety of factors that researchers have identified. Maternal worry, a history of depression, unwanted pregnancies, a lack of health insurance, a lower income, less education, smoking, being single, and marital strife are a few characteristics that have all been associated with a higher risk of prenatal depression. Other risk variables were maternal anxiety, previous depression, unexpected pregnancy, age at the time of conception (the younger the age, the higher the risk), number of children (the more children, the more likely to be depressed during subsequent pregnancies). Additionally, studies from different nations discovered a connection between past traumas and pregnancy melancholy.

While pregnant, depression can make it difficult for a woman to take care of herself and her unborn child and to build a relationship with her child. According to statistics, antidepressant medications can be used safely in the treatment of depression in expecting moms and, if used for

a brief period of time, won't harm the growing infant. Early prenatal testing for depression is therefore essential. Nurses and other healthcare providers may find it therapeutically helpful to categorise the target group based on their levels of depression.

The appropriate therapy can then be begun when a patient has a severe case of depression. Additionally, an intervention may be used to treat any of the different subtypes of depression in order to minimise its symptoms. Significantly, HIV prophylaxis and depression treatment can decrease the development of HIV infection into AIDS in people who already have HIV. Even if women are more susceptible to depression symptoms throughout the perinatal period. There hasn't been any research on the types or severity of depressive symptoms in pregnant HIV-positive women. Unfortunately, no research has been discovered to examine the types or severity of depression symptoms in pregnant HIV-positive women. Pregnancy increases the likelihood that a woman may develop depression, and women in low- and middle-income countries are more likely to do so. Early detection and treatment of prenatal depression may improve pregnancy outcomes and even avoid postnatal depression, despite the urgent need for culturally relevant and accurate diagnostic procedures[51].

2.3.8 Depression in HIV-Infected Pregnant Women

Despite posing a major threat to mental health, depression affects between 20 and 32 percent of people living with HIV (PLWHs). However, it is frequently disregarded. Depression is more likely to strike HIV-positive and AIDS-affected women, and the risk may even increase while they are pregnant[52]. Additionally, the virus itself can be to blame for the emergence of depression symptoms. HIV is a neurotropic virus that can persist in the central nervous system even after the first infection[53]. Three out of every four pregnant HIV-positive women in Thailand reported experiencing

depression to varying degrees. The results of this study are constrained, however, because stressful life experiences, which have been demonstrated to be a potential predictor of depression, were not looked at. Depression has been linked to physical symptoms, self-esteem, and emotional support. Additionally, there was little research done on how to classify depression. According to research by Kaaya conducted in Tanzania, 57% of HIV-positive women experienced depression at least once during the course of their six-year follow-up period. The DSM-IV and the Hopkins Symptom Checklist-25 (HSCL-25) were used to get these values. Another study by Jin revealed that 79% of HIV-positive people in China had some symptoms of major depressive disorder (MDD), and 96% of these people acquired MDD within 6 months after learning they were HIV positive (mean duration of knowing HIV infection status was two years). Among the women who took part in this study, 24% displayed severe symptoms of depression (Beck Depression Inventory [BDI] score greater than 29), 33% displayed moderate symptoms of depression (BDI score 17–29), 24% displayed mild symptoms of depression (BDI score 10–16), and 19% displayed no symptoms at all. Only 9% of HIV-positive individuals who met the criteria for MDD received therapy for their depression, according to the study. 18% of those polled frequently had suicide thoughts.

One of the most common co-morbidities linked to HIV infection is depression. It is also linked to the physical health outcomes of the HIV-positive person and may make it more difficult for them to accept HIV treatment. Depressive symptoms among PLWH negatively impact not just their biological outcomes but also their capacity for self-care and general quality of life. All of these findings indicate the necessity of aiding pregnant HIV-positive women by identifying, diagnosing, treating, and preventing severe depressive illness. The adoption of appropriate screening methods and early diagnosis both result in more accurate case findings and hasten the

start of therapy. Between 80 and 90 percent of people can get relief from severe depression with effective treatments. However, few researchers have made an effort to pinpoint the variables that might be utilised to foretell the severity of depression in pregnant HIV-positive women.

2.3.9 Depression among HIV-Positive Pregnant Women

There is some accessible research that primarily examines the prevalence of depression among pregnant HIV-positive women as well as the factors that are associated to it. These results show that pregnant women with HIV had a much higher risk of developing depressive symptoms than pregnant women without HIV[54]. Nine of the studies reported the prevalence of depression using screening methods, while only two of the studies included in a recent systematic review of prenatal depression among HIV-infected women in Africa used a diagnostic instrument to measure the incidence of depression. Prenatal depression was shown to have a reported mean prevalence of 23.5% when using diagnostic procedures, but it was found to have a reported mean prevalence of 43.5% when using screening approaches[55]. 99 (or 41%) of the 224 pregnant HIV-positive women in KwaZulu-Natal tested positive for depression, according to the EPDS. The prospective cohort study carried out in rural Uganda indicated that the overall prevalence of depression was 38.9% (173/447). In comparison to the postpartum period (36.8%, n=111/303), depression was found to be more common during the prenatal period (42.7%, n=44/104). Pregnant women reported an average of 1.29 depressive symptoms (standard deviation: 0.38), with a score of 1.75 or higher suggesting the likelihood of depression.

According to the EPDS, 99 (or 41% of the 224 pregnant HIV-+ women in KwaZulu-Natal) had depression tests that were positive. According to a prospective cohort research conducted in rural Uganda, depression was present in 38.9% (173/447) of the population overall. Depression was observed to be more prevalent during the perinatal time (42.7%, n=44/104) as opposed to the postpartum period (36.8%, n=111/303). An average of 1.29 depressed symptoms were reported by pregnant women (standard deviation: 0.38), with a score of 1.75 or higher indicating a high chance of depression[56]. Another study carried out in rural South Africa found that the prevalence of prenatal depression was the same among pregnant women who tested positive for HIV (52.9%, n=27/51) and those who tested negative (47.1%, n=24/51). The two groups did not significantly differ from one another[57]. Notably, Rochat and associates made use of DSM-IV diagnostic standards, which are more precise than the EPDS. These variations are most likely caused by the different screening or diagnostic methods utilised, as previously noted, as well as the time of the depression test.

Receiving a positive HIV result might be unexpected, especially for pregnant women who think they are immune to the virus. This is especially true for women who think they don't have a chance of getting HIV. This may be the cause of the elevated rate of depression among pregnant HIV-positive women. The great majority of them are having tests done for the first time as part of the obligatory prenatal care. These women care about the future of their unborn children as well as their own personal destinies.

In a Zambian research, pregnant HIV-positive women all thought they were endangering their unborn children. They reported feelings of guilt for having first exposed their unborn child to HIV, as well as worry and anxiety over what might happen to the unborn child. Every one of these elements may raise the risk of depression during the pregnancy and the weeks before birth.

Some HIV-positive pregnant women claim to have lost interest in life, felt guilty, and had recurring thoughts of harming themselves. In the Zambian study, the vast majority (88.8%) of HIV-positive pregnant women admitted to considering ending their pregnancies. Despite the fact that men may be invited to accompany their wives to their first antenatal consultation and, as a result, also be tested for HIV, it is the responsibility of women to tell their partners of their HIV status. The responsibility to disclose this falls on women because this does not always happen. Determining when and to whom to disclose one's HIV status may be exceedingly stressful when one takes into account all of the potential implications that could result from doing so; also, this stress may raise the risk of major depressive disorder among HIV-positive pregnant-women[58]. Additionally, HIV's pathogenesis has been linked to brain damage, notably in the subcortical region, which has raised worries about depression. A person with HIV may also be more susceptible to other illnesses that affect mood. In addition, a number of HIV medicines have negative side effects that could be depressing[59].

Four research have looked into the prevalence of antenatal depression in Tanzania. Only one study investigated anxiety among HIV-infected women[60]. Each study was conducted in Dar es Salaam on the same study population, either as a one-point prevalence inside a randomised control trial or as a secondary analysis. The studies' goal was to assess the supplementation's effectiveness. However, none of these research looked into the factors that might be linked to prenatal anxiety and depression in this cohort.

The prevalence of depression differed significantly among the numerous subpopulations of this research that were followed up on throughout a wide range of time periods, even though these analyses were conducted using data from the same randomised control trial (RCT). These

deviations ranged from 7.7% to 73.4%. Kaaya conducted a secondary investigation on 99 HIV-positive pregnant participants in a randomised controlled trial of multivitamin supplementation in order to validate the Hopkins Symptom Checklist-15 (HSCL-15). The SCID was used to detect prenatal depression in 7.7% of the pregnant women who participated and whose pregnancies were fewer than 27 weeks along. Other research done on the same group, however, discovered a significantly higher prevalence of the disorder. Using the HSCL-15 as an example, the prevalence from 2013 (74.3% of cases) was nearly twice as high as the prevalence from 2007 (42.4% of instances) throughout a five-year period[61]. The difference in prevalence is likely due to the size of the sample that was used as well as the depression diagnostic or screening techniques that were used. The three studies that determined the prevalence of prenatal depression to be 42.4%, 42.7%, and 73.4%, respectively, involved 912, 891, and 128 people, respectively. With a cut-off score of >1.06, HSCL-8 was used in these investigations to screen for potential depression. Only 99 participants were included in the analysis, and Kaaya and colleagues' 2002 study employed a diagnostic rather than screening method, which may have contributed to the observed variation in participant gestation. Two of these studies included pregnant women whose gestations were less than 27 weeks, one research only involved pregnant women whose gestations were between 20 and 40 weeks, and Antelman and colleagues' study participants' gestational ages were not specified. On a scale from 1 to 10, Sowa claims that none of the four studies had a high quality rating. While the other two studies were deemed to be of low quality, two others were classified as having a moderate level of quality. Due to the fact that no prior research has focused on the determinants, it is imperative to investigate the prevalence of prenatal depression and anxiety in various areas of the country as well as the variables linked with it. Evaluation of the prevalence of depressed and anxious disorders in contexts other than

clinical trials is essential because all prior research in Tanzania was embedded within an ongoing randomised controlled trial (RCT).

2.3.10 HIV and Depression

It is conceivable that the emotional burdens associated with having HIV could have a negative impact on a woman's mental health. It has been demonstrated that stress and depression both have an impact on the pathophysiology of HIV disease. According to prior research, the development of acute stress from traumatic life experiences into chronic stress can cause depression[62]. In addition, a person living with HIV who has poor mental health may have difficulty receiving health care services, despite the fact that their HIV illness is getting worse[63]. As a consequence of this, therapies that prevent or delay the onset of depression are required in order to forestall unfavourable outcomes related to HIV and mental health.

Depression is the most common psychiatric diagnosis reported in people living with HIV occurring four to seven times more often in people with HIV than in the general population. In addition, women with HIV are four times more likely to experience symptoms than HIV-negative women and more likely than men to develop depressive symptoms[64,65]. Therefore, it is crucial to specifically look at how women with HIV experience stress and sadness.

2.3.11 Depression among Adults living with HIV

The neuropsychiatric disorder linked to HIV infection with the highest prevalence rate is depression, which is more common in those who are HIV-positive. According to various sources, anywhere between 18 and 81 percent of HIV-positive patients experience depression. Another illness that disproportionately affects HIV-positive individuals vs HIV-negative individuals is depression. Researchers discovered that the prevalence of any depression among HIV-positive persons getting care was 25.6% (95% confidence interval [CI]: 23.8%-27.4%) using data from the National Medical Monitoring Project (MMP) and the Behavioral Risk Factor Surveillance System (BRFSS). This contrasts with the 9.1% (95% confidence interval [CI]: 8.9%-9.4%) prevalence of depression among adults in the general population. Major depression is more common among HIV-positive individuals than the general population, with a prevalence estimate of 12.4% (95% CI: 11.2%, 13.7%) compared to 4.1% (95% CI: 3.9%, 4.2%). The estimated rate of mental illness in the general population, which is 19.9%, is greater than the estimated rate of depression among those with HIV, which is 25,6%. In comparison to the general population, HIV+ individuals have a two to seven times higher risk of receiving a major depression diagnosis. Depression is known to affect several different health outcomes as well as health behaviours in HIV-positive individuals.

When there is a link between the two, it might be difficult to say whether HIV infection or depression came earlier, especially when it comes to the chain of causality. In addition to being a typical side effect of receiving an HIV diagnosis, sadness has also been demonstrated to increase the risk of HIV transmission. Adults with severe mental illnesses (SMIs), such as depression, are more likely to use injectable medications or participate in risky sexual behaviour, which raises the risk of HIV transmission. The prevalence of depression among people who engaged in one or

more HIV risk behaviours was found to be twice as high in a study as compared to individuals who did not engage in HIV risk behaviours.

2.4.12 Biological Etiologies of Depression among Persons Living with HIV

Another frequent problem that develops after receiving an HIV diagnosis is depression. In the HIV-positive population, environmental biological and psychological factors may both contribute to the emergence of depression. It's probable that HIV infection causes biochemical changes in the brain that lead to depression, which in turn contributes to secondary depression. One indicator that the central nervous system has been infected by the HIV virus and one of the signs is the presence of neurocognitive abnormalities, which have the potential to cause depression. HIV infection has been linked to changes in brain shape, somatostatin dysregulation, and tryptophan breakdown, as well as changes in neuronal networks and white matter anatomy. Many studies have been done to look at the differences in brain structure that are connected to severe depression in HIV-negative people. These studies have shown that a number of brain structures do, in fact, change with age. The orbitofrontal cortex, neural networks, and basal ganglia are a few areas of the brain that are vulnerable to HIV infection, which has been associated to secondary depression. There is evidence linking HIV infection with depression within the architecture of the brain, but further study over longer time horizons is needed to fully explore this association. Another biochemical pathway has been proposed to link HIV infection to depression: hypothalamus-pituitary-thyroid dysfunction (sometimes referred to as HPT dysfunction). It is generally known that HPT failure in HIV-negative populations may contribute to depression, other mood disorders, and dementia. HIV infection of the central nervous system can modify how the hypothalamus and thyroid communicate, and by this process, HIV infection of the central nervous system can cause depression.

2.3.13 Psychosocial Etiologies of Depression among Persons Living with HIV

The psychosocial elements that are common among HIV-positive people also contribute to the aetiology of depression in this population, in addition to the biological aspects that may explain depression diagnoses after HIV infection. Researchers have discovered that the prevalence of depression among those who have recently received a chronic illness or condition is significantly higher than that of the general population. Changes in a person's social support system, body image, perception of stigma, and functional limitations are all factors that raise the risk of depression among HIV-positive people. A study that analysed the emotions of newly diagnosed men and women in the San Francisco region included a qualitative analysis. Concerns about dying, the existence of stigma, and an identity threat were some of the prevalent themes that emerged from the examination of initial diagnoses.

2.3.14 Depression's Impact on the Progression of HIV

Depression is not only detrimental to patients with HIV and their sense of wellbeing, but one study indicated that those with depressed symptoms were more likely to develop AIDS than those without depressive symptoms. This rapid progression may be due to a number of factors, one of which is that those who suffer depressive symptoms are less likely to stick to their HIV treatment regimen than those who do not. Long-term depression, traumatic events, and stressful situations can all have an adverse effect on the course of the disease by reducing CD4 T lymphocyte numbers and increasing the likelihood of mortality. There is additional work to be done to determine how much depression is influenced by biomarkers. Depression may have an impact on behavioural and psychological risk factors, which in turn may have an impact on viral load or CD4 T cell levels.

The immune system was revealed to be significantly impacted by depression at the beginning of the study. Depression negatively affects the production of cytotoxic lymphocytes, which makes the course of the disease much harder to treat, in addition to its negative effects on the development of the HIV infection. Grave depression results in hyperactivity of the HPA axis, which raises the level of glucocorticoids in the blood. The production of interleukins and interferon, both of which affect how lymphocytes fight pathogenic diseases, is influenced by glucocorticoids. Glucocorticoids may be directly responsible for this outcome. In addition to these trials, other researchers were interested in learning how depression affects patients receiving antiretroviral therapy's immune system. According to early research conducted in Italy, those with depression have significantly less natural killer cells than those without the condition.

2.3.15 Anxiety

Similar to how a diagnosis of depression is made in clinical practise, a diagnosis of anxiety is also made using DSM-V criteria. On the other hand, the majority of the time in epidemiological research, screening techniques for anxiety are used. Although tested and reliable, these screening methods have varying degrees of sensitivity and specificity. It would suggest that the screening tool used affects the reported prevalence of anxiety in these studies in some way. Examples of some of the tools that were often used in the included research include the following: analyses are Depression Stress Anxiety Scale, Generalized Anxiety Disorders and the HADS [66] [67]. It's also important to note that it may be challenging to detect anxiety in people who are HIV-positive. For instance, it is possible that the anxiety is actually a panic attack brought on by the HIV test result if the time of the anxiety diagnosis is close to the time the HIV test results are positive. It is challenging to determine whether anxiety is a medicine side effect, a comorbid condition associated with HIV, or a psychological reaction to the pressures of the illness throughout an

HIV infection because there is no way to predict which comes first: the anxiety or the illness. Each of these details must be taken into account while conducting anxiety screenings on members of this group. There have been less studies undertaken and published on anxiety compared to the number of studies that have been completed and published on the prevalence of depression among pregnant women, individuals living with HIV, and the general population. The reported prevalence of anxiety varies significantly across different geographic areas, according to the data that are currently available. This holds true. According to several studies, countries with higher incomes experience more anxiety than those with lower incomes (LICs). The lifetime prevalence of anxiety varies from 4.8% in China to 31.0% in the United States, according to the WMH Surveys. This range is determined by comparing the two nations. The only African nations for whom statistics were easily accessible were Nigeria and South Africa. Both nations experienced this. In Nigeria, the disease only impacted 6.5% of the population, compared to 15.8% in South Africa[68]. According to a report, the incidence of anxiety disorders among adults in the United States who are 13 and older over the course of a year was 31.6%. In this investigation, the DSM-IV was used to determine an anxiety diagnosis. Generalized Anxiety Disorders were used to assess people 18 years and older in a community-based cross-sectional study in Malaysia. 8.2% (n=119) of the 1455 participants who completed the interview had an anxiety disorder score that was equal to or higher than the cut-off value of 8. Iran's 2015 national research found that the prevalence was significantly higher than in Malaysia, Nigeria, and South Africa. Anxiety was estimated to affect 29.5% of people, which is equal to the rate reported in the US.

The available literature suggests that certain groups are more at risk for anxiety. This includes 1) women,

2) PLHIV,

3) and pregnant women.

Women feel substantially higher levels of anxiety than men do, according to a thorough examination of research done in both HICs and LICs. It is significant to highlight that although the majority of the studies included in the review screened participants for anxiety using the CIDI, all of them were community-based and representative investigations. Kessler found that women (37.3%) are substantially more likely than men (25.6%) to experience anxiety in a research with similar goals. The results of another American study that was done nationally reached the same conclusions. Women had a larger lifetime prevalence of anxiety than men did, as well as a higher 12-month prevalence. In contrast to men, who had a greater 12-month prevalence of 13.0%, women had a higher lifetime prevalence of 33.3% than men did at 22.0%. According to statistics from Malaysia, women experience anxiety symptoms more frequently than men do; although men experience these symptoms at a prevalence of 7.7%, women experience them at a prevalence of 8.4%. On the other hand, Iranian men (33.8%) had a substantially higher prevalence of the illness than Iranian women (25.1%) had.

Those who live with HIV are more prone to experience worry than those who do not. For instance, among the 491,796 consumers in Britain who were tracked for 14 years, 172 (3.1%) of the HIV-positive individuals showed anxiety symptoms, compared to 4161 (1.7%) of the HIV-uninfected people. There were 491 796 participants in total. Other studies have shown that there is no appreciable difference in the prevalence of anxiety between HIV-positive and HIV-negative people. For instance, it was discovered that the adult anxiety prevalence rate in the United States of America is somewhere about 7%, and there is no appreciable difference between HIV-infected and HIV-uninfected individuals in this regard. Morrison and colleagues discovered a prevalence

range from 10.8% to 6.5% among women living with HIV and without HIV, respectively. This is similar to what Wixson reported, and there was no statistically significant difference[69].

The little research that has been done on the topic indicates that prenatal anxiety is much more widespread than previously believed. Pregnant women worry about giving birth as well as gaining an unhealthy amount of weight throughout their pregnancies, according to the results of one study. Of the 357 Chinese pregnant women screened using the HADS, more than half (54.0%) had high anxiety scores. When data were examined for Icelandic women, they were the same. As part of the screening procedure, the individuals' anxiety levels were evaluated using the anxiety subscale of the Depression Anxiety Stress Scale. The third trimester showed a prevalence of 50.9% when compared to the first, which was higher than the first trimester's 47.4% prevalence. Prenatal anxiety appears to be far less common in Africa than in HICs, according to research there. For instance, 11.4 percent of the 376 individuals who underwent the HADS in Egypt displayed signs of anxiety. It was discovered that the anxiety score patterns in Ghana and Ivory Coast were quite similar. 11.4% of pregnant women in Ghana and 17.4% of pregnant women in Ivory Coast had favourable anxiety symptom profiles when all 1030 pregnant women in those two countries were screened with the GAD-7.

2.3.16 Anxiety among Pregnant Women Living with HIV

Given that anxiety is common among both women and PLHIV, it is plausible that pregnant women who are living with HIV are more likely to experience anxiety symptoms than those who are not infected with the virus. Few studies have been conducted that specifically examine the prevalence of anxiety among expectant moms who are HIV-positive. These findings suggest that pregnant HIV positive and living with the virus individuals are far more likely to experience anxiety symptoms than pregnant HIV negative individuals[70]. Only a few studies have compared

the prevalence rates of anxiety in pregnant HIV-positive women to expectant pregnant women without HIV. For instance, research on prenatal anxiety was done among 258 women in the United States of America, some of whom had HIV and some of whom did not, and the findings revealed that HIV-positive women had much higher levels of anxiety than HIV-negative women. The women underwent anxiety tests using the State-Trait Anxiety Inventory. With a mean score of 37.1 (SD 13.8) for HIV-infected women and 31.8 (SD 11.3) for HIV-uninfected women, there was a significant,difference.

Another US study included 45 pregnant HIV-positive women who received care.

71.1% of cases were reported at University of Miami/Jackson Memorial Medical Center.

2.3.17 Factors Associated with Anxiety

According to the data presented above, anxiety affects a sizeable portion of the general population, and research has identified the factors that contribute to this high incidence of sufferers. One global study on the factors that raise the risk of having anxiety found that some of these factors include gender, age, culture, economic standing, and living in an urban area. Additionally, a connection has been made between worrying and the desire for jobs. Due to heavy workloads and time constraints, people in Dunedin, New Zealand, who had modest job demands were less likely to experience anxiety than those who had high job demands. We regarded married status to be the most important demographic component because it was the only one that significantly correlated with anxiety symptoms in Malaysian adults. Depression was associated with a considerable increase in anxiety, with depressed patients having a 17-fold higher risk of experiencing anxiety. Other factors that have been connected to anxiety include

having a chronic illness like cancer, experiencing domestic violence, struggling at work, being in an unhappy marriage, and holding a strong religious conviction. Similar findings came from a cross-sectional study carried out in Brazil, which showed that people with depression were more likely to experience anxiety than those without depression[71]. It is interesting to note that Marcus and his colleague also found that having a low socioeconomic status and being a woman were crucial factors associated to anxiety. Additionally, it was discovered that experiencing distressing experiences firsthand was a standalone predictor of anxiety. In South Africa, persons who had witnessed traumatic events were more likely to have anxiety than those who hadn't. This risk was increased by 78.0%.

Despite the fact that very few studies have been conducted to examine the factors associated with anxiety in pregnant women, those that have done so have discovered a number of characteristics that are related to this condition. When it comes time to give birth, there are many things to worry about. According to the results of one study, pregnant women, especially first-time mothers, worry about the labour and delivery procedure as well as how their bodies will look after giving birth. Pregnant women in the Netherlands were more likely to report feeling anxious when they were having their first kid than when they were expecting their second or subsequent child . Women who were obsessed with and anxious about how their bodies might look after giving delivery scored highly on anxiety scales. In Vancouver, Canada, women who were categorised as having a moderate to high risk of medical complications experienced higher levels of anxiety than women who were categorised as having a low risk or no risk of complications. The level of education of the woman's husband was the only independently determined social factor that was found to be associated with anxiety in a study done on pregnant Egyptian women. Worry was more prevalent in women who were married to illiterate men. Additionally, among

Chinese pregnant women, social support, self-esteem, and marital contentment were linked to anxiety symptoms[72].

Pregnant HIV-positive women are more likely to experience anxiety due to a number of contributing factors. Despite the paucity of study on the topic, certain independent anxiety risk factors have been identified. Antenatal anxiety has a strong association with the attribute of anxiety alone. Additionally, it was discovered that antenatal anxiety was linked to characteristics like HIV status, perceived family support, and a history of child maltreatment among pregnant women getting care in a hospital in Philadelphia. The length of time following an HIV diagnosis, the existence of concomitant conditions, and the usage of medications from the first line of antiretroviral therapy were all associated with anxiety symptoms. Women with depression showed much higher levels of anxiety. It has been established that shame and the disclosure of one's HIV status are strongly associated with anxiety symptoms. Keeping one's HIV status a secret is linked to a higher risk of anxiety symptoms, as is the idea that telling others about it will make one's family feel ashamed.. Although anxiety and depression have a wide range of indications and symptoms, they both have the same set of risk factors as their underlying causes. Additionally, the risk factors for depression and anxiety also increase the likelihood that someone would experience both conditions simultaneously, or comorbid sadness and anxiety.

2.3.18 Anxiety and Depression

Anxiety is generally thought to as a vague and disturbing emotional condition. Anxiety is characterised by the subjective feelings of tension, trepidation, and dread as well as physiological manifestations such heart palpitations. According to Sapolsky, the anticipatory stress response, which happens when the body gears up in advance for an anticipated stressful event, and anxiety can be compared (stressor). The body undergoes a number of physiological changes as a result of

this stress reaction, including an increased heart rate and higher concentrations of the "stress" hormones cortisol, adrenaline, and noradrenaline. Although these sensations may be adaptive in that they enable us to anticipate, plan for, and be aware of potential hazards, excessive anxiety can be harmful to one's health. High anxiety levels have been demonstrated to reduce cognitive function, may change how one perceives time and space, and can also hinder learning. Depending on the degree, frequency, and extent of pain or impairment brought on by anxious feelings, an anxiety disorder diagnosis may be necessary. One type of anxiety problem is called as generalised anxiety disorder (GAD). GAD is a long-term condition, is characterized by excessive anxiety and worry over a variety of events or activities and may cause significant individual impairment and distress during daily life.

2.3.19 Depression and Anxiety in Pregnancy

The mood disorder that is studied the most frequently in the context of research on mood disorders during pregnancy is postpartum depression. Prenatal depression, however, is consistently identified as one of the most significant risk factors for developing postpartum depression in a number of studies whose major goal was to study the traits that might predict postpartum depression. Because of this, delivering comprehensive prenatal care still requires the examination of psychiatric problems in pregnant women. We shall discuss the relationships between various mental problems and pregnancy in the paragraph that follows. Most women who are unable to work do so as a result of depression, which frequently first manifests itself

after motherhood. After giving birth, between 50% and 70% of women undergo psychological changes[73]. The general psychological symptoms that are frequently referred to as the "baby blues" include brief, moderate episodes of irritation, anxiety, and tearfulness. These feelings might only endure a short while. Due to their frequency, these symptoms, which can start as soon as the first day after delivery, are commonly thought of as being an expected feature of the postpartum period. Most affected ladies only experience these symptoms for five to ten days, which is a brief amount of time. After receiving infant care, it is possible for patients to have a return of their symptoms, which is typically accompanied by diminished sleep quantity and quality. Sometimes physical changes, rather than the changes in hormone levels that occur immediately after delivery, are to blame for an increase in dysmorphic syndrome instances. Many traits associated with post-partum depression have been identified during the past few decades according to study. The following are some of these variables: Contrary to earlier hypotheses that focused on important hormone changes that take place during pregnancy and right after birth, the current aetiology of mood issues in pregnancy proposes a multidimensional approach. Both during pregnancy and right after birth, these alterations take place.

Pregnancy sadness and anxiety, a personal or familial history of depression, high levels of life stress, and a lack of social support are the most prevalent factors that researchers have examined as potential causes of postpartum depression[74]. It is critical to identify vulnerable female groups as soon as feasible. Despite the wide variety of prevalence estimates for postpartum depression, research indicates that between 10 and 50 percent of women experience it. The varying rates can be attributable to the various sampling techniques, populations examined, and screening techniques used in the various investigations. Depression, sometimes known as postpartum depression, is the most common ailment that women face after giving child. Researchers have

shown that a significant predictor of postpartum depression is the degree of depressed symptoms in the postpartum period just after delivery[75]. A total of 217 new mothers who gave birth in two different hospitals in the United Kingdom were assessed for their postpartum depression levels five days and six weeks after giving birth using the Edinburgh Postnatal Depression Scale (EPDS)[76].

The findings showed that women who had EPDS scores higher than nine at five days after giving birth were eight times more likely to have EPDS scores higher than nine at six weeks after giving birth, which is indicative of mild depressive symptoms. In Dennis' 2004 research of Canadian moms (N = 594) in which women were tested using the EPDS, similar outcomes were seen.

one, four, and eight weeks after delivery. Increased EPDS scores at one week after giving birth were linked to increased EPDS scores at four and eight weeks after giving birth[77]. It was challenging to draw comparisons to the study being undertaken on African American women because the racial information about the Canadian participants was not provided. Screening tests for postpartum depression were examined in a separate study with postpartum moms in North Carolina (N = 391). The vast majority of the sample's participants were of Caucasian ancestry (84%) and had at least a high school diploma (74%). The goal of this study by medical residents was to compare screening with the use of the Edinburg Postnatal Depression Scale to official interviews of new mothers. 79 women who underwent the EPDS examination and 96 women who underwent clinical evaluations were compared using chi-square analysis (structured interviews). Depending on the day of their most recent birth, women were assigned to one of the two screening groups. The incidence of postpartum depression in the study was shown to be significantly higher when it was identified using the Edinburgh Postnatal Depression Scale than when it was identified naturally during normal clinical evaluation (35.4% versus 6.3%,

respectively; p =.003 for both comparisons). The EPDS is a useful instrument for identifying depression in postpartum women, according to research, which recommended its usage. The authors also advocate teaching medical residents how to use the EPDS while they are still in training and after they have completed their residency. The authors themselves make this suggestion. The findings of the study underscore the need for early screening, diagnosis, and care because they show that women who had depression symptoms immediately after giving birth still suffer them weeks later. It is impossible to overstate the significance of these findings in the context of the current study because they not only demonstrate the necessity of training medical professionals to implement early and routine screening in their practises but also the importance of screening women for depression symptoms.

Mood issues during pregnancy are a complex phenomenon that can affect both the mother and the unborn child in profound ways. Before, during, and after pregnancy, a woman's mental state may experience major changes that vary in length, intensity, and severity. If they do not receive therapy or a diagnosis, one-third of women who have postpartum depression may struggle with the disorder for an extra year. Therefore, it is critical to perform screens for depression in women as soon as is practically possible. There are many mothers who do not claim to be experiencing postpartum depression symptoms.

2.3.20 Global Burden of Depression and Anxiety

A significant portion of the global burden of disease is caused by mental illnesses (GBD). The number of Disability Adjusted Life Years (DALYs) brought on by Mental Neurological and Substance Use Disorders (MNS) increased by 41% between the years 1990 and 2010, according to the Global Burden of Disease Study from 2010. Furthermore, major depressive disorder increased by 37%. MNS DALYs grew from 182 million in 1990 to 258 million in 2010. MNS

contributed 10.4% of all DALYs in 2010, while mental illness accounted for 18.9% of all years lived with disability (YLDs). The estimates indicate that there are disparities based on a person's gender, with women being more affected than men by the scenario. According to studies, women (1,161.2) had significantly greater DALYs associated with anxiety and depression than men (689.9) do for the same age group. Similar to how males had lower absolute DALYs linked with anxiety, women had higher DALYs (510.3) (273.0). Additionally, compared to LICs (9.4%), HICs had a higher relative share of MNS DALYs to the overall illness burden (15.5%). Both in absolute and relative terms, this was true. Despite this, LICs had a greater impact on MNS DALYs in absolute terms than HICs did. Based on the most recent estimates of the GBD, Vigo and his colleagues contend that the MNS is drastically underestimated[78]. The underestimation of the prevalence of mental health diseases is due, in part, to the inaccurate classification of chronic pain syndromes as musculoskeletal illnesses and the exclusion of personality disorders from the calculations. Additionally, the significance of considering the effect of severe mental illness on death from other causes is undervalued. These authors reevaluated MNS's contribution to the GBD and discovered that it was accountable for 13.1% of DALYs and 32.4 percentage points of YLDs. Depression and anxiety accounted for just 11.6% of the total young life disorder cases in Tanzania in 2015.

2.3.21 Gender Differences in Anxiety and Depression

In general, it has been discovered that women are more likely than men to experience anxiety and depressive disorders. Studies conducted all around the world have found that women are more likely than men to experience anxiety disorders, specifically generalised anxiety disorder. Additionally, women are almost 2:1 more likely than males to experience depression over the course of their lifetime. Accordingly, estimations of lifetime prevalence in New Zealand show

that women are more likely than men to have depression and also have higher prevalence rates of any anxiety illness[79]. The limited research that have been done on the subject indicate that there is still a gender difference in depression during pregnancy. When it comes to worry, the issue is less obvious. Teixeira study found that compared to their spouses, women reported significantly higher levels of state anxiety and depressive symptoms. According to Matthey, mothers experienced far higher levels of depression than spouses. This study emphasises the fact that women frequently report higher levels of anxiety, particularly trait anxiety, despite the fact that there is evidence to show that men may underreport their anxiety. This has the effect of making a bias in reporting less likely to provide a sufficient explanation for the gender gap. Additionally, a number of studies have shown that male depression symptoms may not be the same as those that are normally assessed using the DSM-IV. Researchers Moller-Leimkuhler & Bottlender, found that men's depression was much more connected with irritability, aggression, and antisocial behaviour than it was with women's depression. Despite the fact that the co-morbidity of antisocial tendencies was not examined, this was the case. Additionally, it was argued that men's wrath, aggression, and alcohol use as a sort of self-medication may hide reported rates of sadness. Findings from the qualitative study on male depression were similar to those from the quantitative study. Increased irritation, the use of alcohol and other drugs, and conflict with others were all linked to the individuals' experiences of depression, according to the study's authors. They also discovered that "overworking, impatience, and anger difficulties tended to be the favoured techniques for regulating a sad mood." Additionally, they discovered that "overworking, irritability, and anger issues tended to Alcohol abuse, which the vast majority of participants recognised occurring concurrently with their melancholy, was considered as a

temporary remedy in the treatment of depression. This shows that males may decide to self-manage their depression symptoms rather than seeking help from outside sources.

Not to mention, similar to the situation with anxiety, it's possible that men may not disclose their depressive symptoms as frequently as women do. This, it has been suggested, is due to a diminished capacity to recall symptoms. Riecher-Rossler also due to variations in the way that depression manifests itself, as previously mentioned in this paragraph.

2.3.22 Risk Factors for Anxiety and Depression

The term "risk factor" can refer to either a variable or a trait of an individual that, if present, increases the likelihood that that individual would acquire a condition[80]. They can also be divided into two categories in a broader sense: precipitating factors, which are those factors that typically precede or cause a psychological disorder, and predisposing factors, which are factors (typically distal) that may increase susceptibility or vulnerability towards the development of a disorder. These two categories can each be further divided into subcategories. According to the research, both men and women are more likely than others to experience anxiety because of a variety of circumstances. There are numerous genetic, physiological, psychological, and social factors that have been found to increase the chance of developing anxiety disorders and high levels of anxiety. The majority of twin studies have produced compelling proof that there is a connection between a person's genetic propensity and the development of anxiety disorders[81].

Additionally, it's thought that physiological and biochemical elements, such heightened activity in the fear circuit (particularly the amygdala), are crucial in the emergence of anxiety[82]. Additionally, neuroticism is described as the propensity to react to situations with an exaggeratedly negative emotion. It may share some elements and traits with trait anxiety and has

been associated with a higher risk of anxiety disorders. In their large sample of over 7,000 participants in the prospective study conducted in the Netherlands, neuroticism successfully predicted the onset of anxiety disorders. Precipitating factors might be seen in one of two ways: as stressful situations or as contributory aspects. In a larger sense, the onset of anxiety may be both predisposed to and brought on by stressful life situations. It is evident that many of the risk factors for both depression and anxiety also overlap. Depression predisposing variables have been identified as genetic susceptibility, adverse childhood experiences, and early life stressors (including the loss of a parent when the individual is still a child and any form of abuse). These elements resemble the genetic risk elements for anxiety. It has been suggested that having an anxious personality type, commonly referred to as trait anxiety, increases the likelihood of developing a depressive condition. This research adds to the mounting evidence of the comorbidity between anxiety and depression as well as the parallels between their risk factors. Mori and Pacific ethnicity, female gender, and youth are risk factors for the emergence of both anxiety and mood disorders in New Zealand, according to studies.

Once more, the risk factors that might result in the development of depressive disorders are comparable to those that can result in the development of anxiety, such as family, financial, and legal constraints. It has been discovered that some of these include unemployment and strained family connections. There hasn't been much research on the prenatal period's risk factors for anxiety and depression development compared to the postnatal period and other times outside of the perinatal era. Despite this, a number of risk factors that have been demonstrated to raise the possibility of a mother experiencing elevated levels of anxiety or an anxiety disorder have been found. Grant found that non-Caucasian and single women were more likely to be diagnosed as anxious during pregnancy and, in particular, to report elevated scores on both the state and trait

measures of the STAI. This finding is similar to risk factors that exist outside of the perinatal period. Regardless of whether the women had ever experienced anxiety outside of the perinatal period, this was the case and found that low levels of education and younger age were associated with higher state and trait anxiety, while higher trait anxiety was linked to lower income and racial/ethnic minorities. Additionally, studies have demonstrated that mothers who are currently dealing with stressful life events are more likely to have anxiety while carrying their children. Research was out in Japan provided one example of this. The authors' research showed that pregnant women who experienced domestic violence during their pregnancies had a much higher probability of experiencing severe anxiety. Another worrying occurrence that has been identified as a risk factor for the specific anxiety that develops throughout pregnancy is pregnancy complications[83].

There is a clear overlap between the risk factors for depression and prenatal anxiety. Previous antenatal research has identified a number of risk factors for depression, including low socioeconomic status, ethnic minority status, being younger or older than 35, low level of education, and having a larger proportion of children. Obstetric risk and pregnancy complications are two instances of problems that are more specifically related to single motherhood and pregnancy. It has been demonstrated that these risk variables are very similar to those that mothers face, despite the paucity of study on the risk factors that partners face for increased prenatal anxiety and depression. Unemployment and low educational levels have been recognised as risk factors. The third trimester of pregnancy was shown to be the time when men were most likely to experience a considerable amount of distress, according to research, which also suggested that the later stages of gestation may be a time of higher risk of anxiety for partners. On the other hand, it's likely that partners will have higher levels of depression in the

first trimester[84]. The dads' (N = 294) degrees of melancholy over the course of their partners' pregnancies were investigated by the researchers. When the study was conducted and when it was concluded, they discovered that fathers were more likely to report higher degrees of depression early in the gestation period (12% of their sample) compared to later stages of pregnancy (8.7%). It is believed that a variety of different sequences of experiences and depression, both inside and outside of the prenatal period, may be linked to the formation of anxiety. The dads' (N = 294) degrees of melancholy over the course of their partners' pregnancies were investigated by the researchers. When the study was conducted and when it was concluded, they discovered that fathers were more likely to report higher degrees of depression early in the gestation period (12% of their sample) compared to later stages of pregnancy (8.7%). It is believed that a variety of unique sequences of experiences can be linked to the genesis of anxiety.

2.3.23 Risk Factors for Antenatal Anxiety and Depression

When moms were taken into account separately, not a single factor was shown to increase the likelihood of either elevated anxiety or depression levels in mothers. This supports the hypothesis that risk could be multi-factored, meaning that it could be influenced by a combination of genetic, biochemical, and psycho-social factors[85]. Despite this, it was found that a number of risk variables significantly raise the possibility of simultaneously feeling high amounts of both anxiety and sadness. The results of this study show that experiencing pregnancy-related problems and belonging to a racial or ethnic minority are both important risk factors for maternal anxiety (specific to the state and the pregnancy). This is consistent with what the data indicates overall (for ethnicity), both outside of the prenatal period.

Despite the fact that past research have identified these two traits as potential risk factors for state anxiety, the current study found no connection between young age, a low level of education,

and a higher likelihood of experiencing high levels of state anxiety. Most individuals had education levels below high school, which may have exacerbated the bias against poor education as a risk factor for elevated state anxiety. The sample of research participants had an average level of education, with the majority having completed at least some coursework beyond a high school diploma. In a similar vein, the relatively high proportion of educated mother participants who were included in this sample may have biassed the non-association between low education and state anxiety in this sample. Moms who were younger, had lower earnings, and were younger showed higher levels of trait anxiety. The investigators also discovered that racial minorities and low levels of education were risk factors for trait anxiety, therefore the results are consistent overall. This may be due to a different sample population, such as one with a higher level of education, as was the case with the prior line of thinking. The three most important risk factors for mother depression were found to be complications during pregnancy, low income, and young age; among the risk factors for the spouses, only ethnic minority was significantly associated with an increased risk of anxiety when taken into account alone (specifically state anxiety).

Outside of the prenatal period, this is consistent with earlier work. Only when they were combined with one another were the additional risk variables meaningful. However, having less education and a shorter gestation length both raise the risk of state-specific anxiety and anxiety related to pregnancy. This is consistent with research showing a link between anxiety and low levels of education. Contrary to the study's findings, which emphasised that the latter stages of pregnancy increased the risk of anxiety for partners, the conclusion that the early stages of pregnancy are a risk factor for anxiety[86]. It's possible that this is due to the range of techniques used to measure anxiety; in the current study, for instance, anxiety unique to pregnancy was also

assessed. It's interesting to note that the current study failed to identify any probable risk variables for couples' depression. This is in contrast to other research that discovered parental depression was a risk factor for unemployment. It's possible that different people have varied definitions of what being unemployed means. In the context of the current inquiry, unemployment was defined as the absence of any sort of paid job. Both full-time students and full-time fathers who stayed at home to care for their children made up around half of those who were classed as unemployed. Even though they were unpaid, it is likely that these jobs acted as preventative measures against the onset of depression.

2.3.24 Comorbidity of Depression and Anxiety in Pregnant Women Living with HIV

The most common types of mental illness, as was just mentioned, are anxiety and depression, according to the evidence that is now accessible. Some people only suffer one of the two disorders, but the majority of people have comorbidity, which means they are simultaneously affected by both conditions. Despite the fact that they live together, there is little proof of their comorbidity. If the distributions and factors linked to these disorders are examined independently, it's probable that the prevalence of mental health issues will be understated. This is due to the fact that these disorders can overlap, and people who have both conditions may exhibit signs and symptoms that are uncharacteristic of either one. Additionally, there is a connection between anxiety and depression, with people who are depressed having a 17 times higher risk of doing so. It's generally accepted that people who have been given a depression diagnosis also exhibit symptoms of anxiety in more than fifty percent (50%) of cases. In a similar line, it has been discovered that more than half of people seeking initial medical therapy for depression also have symptoms of generalised anxiety disorder. In Cape Town, South Africa, 13% of expectant mothers had good screening outcomes for co-occurring mental illnesses. The percentage of

pregnant women who also experienced depression and anxiety in that sample of expectant mothers was 52%.

2.3.25 Implications of Untreated Depression and Anxiety among Pregnant Women

Despite the prevalence of prenatal depression, there is a paucity of study on its impact. Numerous studies have shown that prenatal depression not only endangers the unborn child but also increases the likelihood that the mother may have postpartum depression and other negative effects. Poor child neurobehavioral outcomes (attention deficit disorder/hyperactivity) and poor cognitive functioning, both of which were more common in men than in females, were linked to higher levels of prenatal depression. Boys were particularly affected by this. Additionally, it has been found that prenatal depression affects the nutritional status of children born to mothers who experienced antenatal depression. According to the results of a community cohort study that compared 160 pregnant women with antenatal depression to 160 healthy pregnant women, children born to mothers who experienced prenatal depression were more likely to be malnourished.

To be more specific, infants born to mothers who experienced antenatal depression had a fourfold increased risk of being underweight and a four and a half fold increased risk of being stunted as compared to babies born to mothers who did not experience antenatal depression. Compared to children born to mothers who did not experience antenatal depression, children of mothers who experienced prenatal depression had a higher risk of developing diarrhoea. Numerous studies have discovered a link between prenatal depression and the emergence of postpartum depression as well as other mental health issues. For instance, a link between screening positive for depression during pregnancy and postpartum depression was found in Thailand. Those who had a history of depression during pregnancy were 2.5 times more likely to

experience postpartum depression than women who did not. Postpartum depression was ten times as likely to occur in Turkish women who experienced prenatal depression . Pregnant women in Zambia who have prenatal depression also run greater chances of contracting HIV, in addition to feeling depressed and anxious. Women with a poor perinatal outcome, such as an HIV-infected infant, had a 5.6-fold higher incidence of postpartum depression compared to those who had no prior history of the condition.

Gaining a deeper understanding of prenatal depression and anxiety among HIV-infected women has an influence not only on the life of the mother and the unborn child, but also on the community as a whole. One of the most important things that can be done to assist women living with HIV is to gain a better knowledge of prenatal depression and anxiety in HIV-infected mothers. Although there is little published research on the impacts of prenatal anxiety among HIV-positive women, the study on the effects of depression is vast. Prenatal depression is linked to a decline in CD4 count as well as an increased risk of mortality, according to a Tanzanian study. It also speeds up the rate at which HIV sickness develops to a more severe HIV WHO clinical stage[87].

Compared to pregnant women without depression, pregnant women with depression had poorer ARV adherence, according to two recent review articles. In particular, none of the depressed women had excellent (100%) ARV adherence, in contrast to the 57% of non-depressed women who were in their third trimester and did not have depression. This finding suggests that depression and poor ARV adherence are related in the United States. In contrast, 71% (10/14) of the women who were not depressed had achieved an HIV RNA viral load of less than 400 copies/mL at the time of delivery, which is a risk of MTCT of HIV. Only 22% (2/9) of the women who were depressed had done so. Poor ARV adherence raises the risk of both acquiring

ARV drug resistance as well as vertical HIV transmission. In the future, people's access to ARVs will be restricted because the resistant virus can spread from one person to another through sexual contact in addition to vertical transmission, especially in low- and middle-income countries (LMICs) where there are already few ARV alternatives..

Additionally, depressed pregnant women are less likely to keep regular doctor's appointments for medication refills and pregnancy monitoring. Poor adherence is a result of this, which raises the possibility of vertical HIV transmission from mother to child. For instance, 4 of the 146 infants born to 131 HIV-positive women in the United States who had pregnancies during the follow-up period were HIV-positive, and all of them were to moms who did not receive proper prenatal care. All of the kids who acquired HIV experienced this. Additionally, pregnant women who are depressed are less likely to try to convince their partners to use a condom. This increases their risk of contracting sexually transmitted diseases, which may increase their risk of passing HIV from mother to child, as well as passing HIV on to their partners. They run the danger of passing HIV to sexual partners as a result. The prevalence of prenatal depression and anxiety among pregnant women as well as the traits linked to it must be studied for these reasons. This will enable the early adoption of preventative measures and the identification of women who are at risk.

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Chapter Three

Methodology

This section provides more information about the research techniques applied in the study. It discusses the techniques and methods, such as the research design, sampling methods, the study population, sample size, sampling procedure, study location, research instrument and the analytical method used for this study.

3.1 **Research Design**

This study adopted a facility-based cross-sectional survery to acess the prevalence and anxiety among HIV-positive pregnant womenattending clinics in Ibadan, Oyo State.

3.2 Study Population

The study population were pregnant women living with HIV attending ART clinics in Ibadan, Oyo State.

3.3 Study Site

The capital and largest city of Nigeria's Oyo State is Ibadan. With a total population of 3,649,000 as of 2021 and more than 6 million residents in its metropolitan region, it is Nigeria's third-largest city by population, behind Lagos and Kano. Geographically speaking, it is the biggest city in the nation. Ibadan was the biggest and most populous city in Nigeria at the time of its independence in 1960. It was also the second-most populated city in Africa, behind Cairo. Ibadan is a city in southwest Nigeria, 128 miles (80 kilometres) inland from Lagos and 530 miles (330 kilometres) southwest of Abuja, the nation's capital. It serves as a key crossing point between the country's heartland and coastal regions. Since the beginning of the British colonial

administration, Ibadan has served as the administrative hub of the former Western Region. Today, some of the city's historic fortification walls still survive.

The Ibadan Metropolitan area has eleven (11) local administrations, five of which are urban (in the city) and six of which are semi-urban (in the less urban region). The third tier of administration in Nigeria is the local government, which is now an entity established by the military regimes but recognised by the constitution of 1999. The Executive Arm of local government councils is made up of the Executive Chairman, Vice-Chairman, Secretary, and Supervisory Councilors. The following makes the five zones constitute the component part of Oyo state in the western part of Nigeria (Saki, Oyo zone, Ogbomosho, Ibarapa and Ibadan). The findings following the research establish that the spatial distribution of HIV is highest in Saki zone, with 22 percent and lowest in the Oyo zone, with 18.5 per cent of respondents. Others are Ogbomoso 21.5 per cent, Ibarapa 19.0 per cent and Ibadan 19.0 per cent of respondents with the disease in Oyo state.

The study sites were:

1. Adeoyo Maternity Health Centre,
2. St Mary Catholic Hospital, Eleta
3. Adeoyo State Hospital, Ringroad and
4. St Annes Anglican Hospital, Molete

3.4 Sample & Sampling Methods

A purposive sampling method was adopted in selecting the health facilities because ART treatment is not available in all health facilities. The participants for the study were randomly selected from each of the health facilities.

The minimum sample size was determined using Fisher's formula. The following is the determinant for this cause:

- Estimate population of pregnant women living with HIV in Ibadan
- Acceptable sampling error 5%
- A standard deviation of 1.96
- 95% confidence level

$$N = \frac{Z^2pq}{d^2}$$

where n= minimum sample size

Z^2 = Standard score corresponding to a given confidence level. For example, at a 95% confidence level or 5% level of Significance

P= prevalence of depression in women is 26.6% from previous study(ogueji, 2021)

Q=(1-P) or say the percentage of failure which is 100-1=99%

D= precision limit or proportion of sampling error which is usually 5% confidence limit.

$$N = Z^2p(1-p)$$

d^2

Correcting for a possible non-response rate of 10%, the final calculation was n/0.9

n = 300

Correcting for a possible non-response rate of 10%, the final calculation was 300/0.9 = **333**

So a total of 333 women living with HIV will be interviewed

3.5 Eligibility Criteria

Eligibility Criteria (inclusion/Exclusion): The medical, demographic, and other parameters that determine which potential participants are qualified for enrollment in the research are known as eligibility criteria.

Inclusion Criteria:

a) All pregnant HIV-positive women in their second and third trimesters
b) Those who gave their consent were eligible.
c) Those who were already on antiretroviral therapy ARTs are eligible.
d) Those who enrolled in prevention of mother-to-child transmission of HIV (PMTCT) care at one of the antenatal study clinics at least one month prior.
e) Additionally, age 18 years and above and provide written informed consent.

Exclusion Criteria:

a) Pregnant women who just discovered they are HIV positive in the count of a month.
b) Pregnant women who are HIV negative or had an unconfirmed HIV positive result.
c) Pregnant HIV-positive women who showed psychotic symptoms or an intellectual disability.

d) Pregnant HIV-positive women who could not give informed consent**.**

3.6 Description of the Research Instruments

To measure depression and anxiety in this study, various design instruments have been discovered, and Depression was assessed using the Edinburgh Postnatal Depression Scale (EPDS), while anxiety was assessed using the generalized anxiety disorder (GAD-7).

The Edinburgh Postnatal Depression Scale **(**EPDS)[1].

Cox and colleagues in England conceived, developed and established the Edinburgh Postnatal Depression Scale, commonly known as the EPDS, in 1987 in order to screen women for signs of depression. The scale is also known by its alternative name, the EPDS. The EPDS focuses on the psychological symptoms of melancholy and is intended to minimize the attention that is paid to the physical symptoms of sadness, which are prevalent among women who suffer from depression and include things like insufficient sleep and either weight gain or loss. The Edinburgh Postpartum Depressive Scale (EPDS) is one of the most used self-reported questionnaires for assessing depression symptoms in postpartum women. It was developed in the United Kingdom. It is one of the most extensively used instruments overall and possesses psychometric characteristics that have been shown to be reliable. The EPDS is a self-administered scale that consists of 10 different questions. The scale includes a maximum score of 30 points and a minimum score of 0 points, with each question having four different possible answers ranging from 0 to 3.

The EPDS consists of a total of ten questions, each of which inquires about a respondent's feelings during the course of the preceding week. There are a total of four possible responses to

each question, ranging from 0 to 3, and they are as follows: In the spirit of maintaining openness, we have made specific changes to Questions 7, 9, and 10. When the EPDS was first published, there were no changes made to the questions or additions made to the questionnaire. In addition to the statements that were already made. In the expectation that it would make the concept more accessible for the participants to understand, we gave a number of distinct definitions and phrases. The utmost that can be achieved

A score of ten or more indicates a potential diagnosis of depression, and a score of zero indicates that there is no evidence of depression. There are a total of 30 points available. If you receive a score of 13 or higher, you probably have a considerable likelihood of developing depression. A variety of research methodologies were employed in a number of research projects that were conducted in low- and lower-middle-income countries (LLMICs). Based on the following conditions, prenatal testing for depression should be stopped. The process used to determine the cut-off entails balancing the demands of sensitivity and specificity. In a clinical setting and with HIV-positive pregnant women who are at high risk of depression, the positive predictive value is expected to be high, which justifies the study's choice of 10 as the cut-off point. At a lower cut-off point, many women screen cheerful but with a significant number of false positives. Additionally, a cut-off score of 10 points was used in some locally verified EPDS versions in LLMICs, which exhibited decent sensitivity and specificity. According to these investigations, the specificities and sensitivity may be between 73.1 and 91.5% and 81.5% to 88.9%, respectively. The sample's internal consistency scored 0.88 for the alpha coefficient.

Research personnel at every health institution would use the Edinburgh Postnatal Depression Scale to conduct screenings for prenatal depression (EPDS). The EPDS is a screening tool that is often used in sub-Saharan Africa, and the majority of settings use a cut-off score that ranges

from 12 to 15 points. It is made up of 10 queries, and every one of them inquiries regarding something that took place during the most recent week. The last inquiry seeks to determine whether or not a woman has contemplated self-injury, and women who receive a score that is anything other than 0 on this inquiry need further examination. The responses to questions 3, 5, and 10 are weighted more heavily than the responses to questions 0 and 2, which are scored in the same way. It is possible that the overall score might be anything from 0 to 30 or even higher. The EPDS frequently use a cut-off score range that is between 9 and 13, and this range can be anywhere in that range. During its validation, the EPDS was put through rigorous testing, and the results showed that it has good psychometric features. It had a sensitivity of 88 percent and a specificity of 87 percent, respectively.

Generalized Anxiety Disorder (GAD)

Anxiety for this study was measured using the GAD-7.[2] The seven-item scale measures anxiety symptoms over the prior two weeks on a scale of not at all (0), several days (1), over half the days (2), and nearly every day (3). A GAD-7 score of 10 or more has been validated in a study of United States (U.S.) primary care patients (sensitivity 89%, specificity 82%). While the GAD-7 is designed to study GAD, a GAD-7 score of 8 or more has moderate levels of sensitivity (66%–74%) and specificity (80%–81%) for posttraumatic stress disorder (PTSD), panic disorder, and social anxiety disorder.

Suitability of GAD

The GAD-7 has been approved for use with primary care patients, the general public, and GAD-affected adolescents[3].

Administration of GAD

The GAD-7 is a self-administered patient questionnaire, and it takes about 1-2 minutes to complete.

Scoring of GAD

The GAD-7 score is determined by allocating scores of 0, 1, 2, and 3, respectively, to the response categories "not at all," "a few days," "more than half the days," and "almost every day." The scores for the seven items are then added.

The GAD-7's seven items have a total score that can range from 0 to 21.

Interpretation of GAD

Scores 5, 10, and 15 represent cut points for mild, moderate, and severe anxiety, respectively.

When utilized as a screening instrument, it is advised to conduct additional testing when the score is 10 or higher.

3.6.1 Validity/Reliability of Research Instrument:

The questionnaires used have been validated by previous research beforehand and it has been, and it was also subjected to correction by the supervisor [4,5,6,7,8].

3.7 Method of Data Collection

The process of systematically obtaining and analyzing certain information in order to offer responses to pertinent questions and evaluate the results is known as data collection. Learning everything there is to know about a particular subject is the main emphasis of this activity. Data collection is done with the purpose of doing hypothesis testing in order to gain a better understanding of a phenomenon. (WHO).

An introduction letter and ethical approval were given to the Chief Medical Officer of each ART centre before proceeding to collect data. Data collection took place between July to August 2022. After the approval, the study plan and methods for maintaining privacy were explained to each client. This was done to increase efficiency and privacy during data collection. The selected participants were those who voluntarily consented to participate. The Research Assistants translated the questionnaires into the language participants understood, Yoruba, for ease of communication.

The instrument was administered in Yoruba, the commonly spoken language in Ibadan. This enabled the study participants to engage with the instrument in their mother tongue and also gave them the freedom to choose to answer the English or Yoruba version of the questionnaire. Research assistants were made available for participants who needed extra assistance with answering the questionnaire. This will include those participants who were not able to read or write. An informed consent form was attached to the questionnaire. It explained the research study and guaranteed confidentiality, and required consent from the participant to participate in the research study. The questionnaire took a maximum of 20 minutes to complete.

Figure 3.1 shows how the total number of data that was collected (750): St. Annes Anglican Hospital (54), State Hospital Adeoyo Ring road (41), Adeoyo Maternity Hospital Yemetu (499), and St. Mary Hospital (156). The excluded data were WLHIV that are above reproductive age

(281). The total number of sexually active WLHIV in this study is 443 and 357 pregnant WLWHIV.

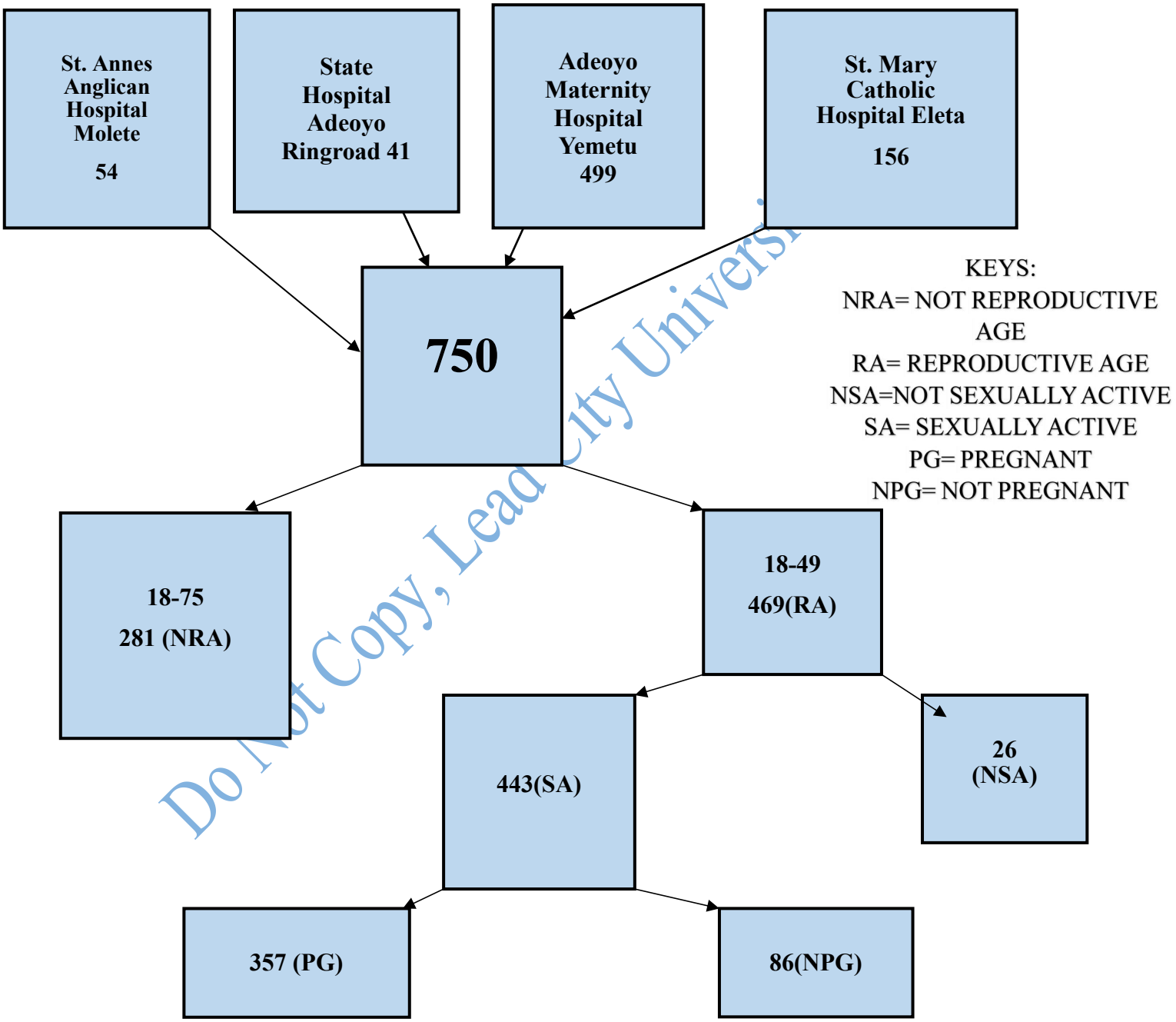

Fig 3.1: Flowchart of Distribution and Selection of Study Participants.

Source; Field Survey 2022

3.8 Data Management

SPSS Statistics version 25 was used to examine the data. Before analysis, the data was sorted to eliminate discrepancies. The demographic features of the respondents were summarized using descriptive statistics such as frequencies and proportions. Binary logistic regression was used to find significant predictors of depression and anxiety. Also, to estimate P-value of connection between the parameters.

3.9 Ethical Approval

Process of informed consent: Before participating, eligible individuals were required to complete a form of informed consent. The research assistant also handed out a paper copy of the informed consent information sheet and provided a brief verbal explanation of the investigation. Illiterate participants had to provide a thumbprint as proof of their agreement, which was then verified by the signature of a selected neutral witness. At any time during the study, participants were free to ask any questions or look for clarification. Participants were informed by study staff that their participation was completely voluntary, that they may discontinue at any moment, and that doing so would not have any impact on how they were treated or their position in the clinic.

Despite the low likelihood that participant confidentiality would be violated in this study, numerous safety measures were implemented throughout the research process to protect participant privacy and reduce the possibility that their HIV status would be accidentally or unintentionally revealed. In order to reduce the possibility of study participants being mistakenly recognised as HIV-positive, interviews were often scheduled on the same day as their routine

clinic visits. Only the participants' individual numbers were utilised in all data presentations, distribution, and publications in order to ensure confidentiality. The informed consent included the agreement to share results in this way.

Benefits: Participants were given rewards throughout the interview. All participants were made aware of the probability that knowing more about the difficulties faced by HIV-positive pregnant women will help future interventions in the area and the potential for larger benefits to society.

Ethical approval was obtained from

1. Oyo State Ministry of Health Department of Planning Research & Statistics Division (AD 13/479/ 44561[A]).
2. Written informed consent was obtained from the respondents after details about the study were explained to them, and strict confidentiality of all information obtained from respondents was maintained throughout the course of the study.

Endnotes

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Chapter Four

Results and Discussion of Findings

The results of the study are reported in this section of the report. The findings of the study are arranged in accordance with its objectives. In the first half of this chapter, both the socio-demographics and other characteristics of the people who participated in the research are discussed. After that, we will talk about the possible rates of anxiety and depression, as well as the co-morbidity associated with it. The final portion of this chapter addresses the factors that increase one's likelihood of developing depression, anxiety, or both depression and anxiety at the same time.

4.1 **Demographic Data of Analysis**

A total of 357 pregnant women living with HIV were eligible for analysis (96.4%). Of the 357 participants enrolled in this study, the median age was 36.76 ± 6.510. About a few of the participants had primary education only (n=83, 23.2%), secondary education only (n=132, 37.0%), Tertiary education only (n= 92, 25.8%) and none (n= 50, 14.0%). About 2/3 were married (n=339, 95.0%), divorced (n=7, 2.0%), widowed (6, 1.6%), separated (n=5, 1.4%). More than a quarter had 0 -20,000 income generating activity (n=160, 44.8%), and >50,000 had (n=39, 10.9%). More than half of the participants knew their HIV status prior to the index pregnancy (n=303, 84.9%). When asked if they had told anyone about their status, 303 respondents (84.9%) said they had. In relationship to their religion, , more than half were Christians (n=197, 55.2%) and Islam (n=160, 44.8). In addition to the already listed facts, the rate of employment differed in a ratio of 1: 7 where the unemployed is about (n=43, 12.0) and the employed is (n=314, 88.0%).

Table 4.1: General Characteristics of Respondents

n = 357

Variable	Frequency	Percent (%)
Age (n = 357)		
		91.5
Mean ± SD	36.76 ± 6.510	
Marital Status (n = 357)		
Married	339	95.0
Divorce	7	2.0
Widowed	6	1.6
Separated	5	1.4
Ethnic Group (n = 357)		
Yoruba	304	85.2
Igbo	40	11.2
Hausa	13	3.6
Religion (n = 357)		
Christianity	197	55.2
Islam	160	44.8
Educational Level (n =357)		
Primary level	83	23.2
Secondary level	132	37.0
Tertiary level	92	25.8
None	50	14.0
Employment Status		
Yes	357	100.0
No	0	0.0

Table 4.1: General Characteristics of Respondents Continuation

What Is Your Monthly Income		
<20,000	160	44.8
20,000 – 30,000	40	11.2
31,000 – 40,000	88	24.6
41,000 – 50,000	30	8.4
>51,000	39	10.9
Disclosure		
Yes	303	84.9
No	49	13.7
Not Applicable	5	1.4

Source: Field Survey 2022

4.1.2 Behavioral Characteristics Of Study Participants

The table below shows the various behavioural characteristics analysed to investigate further the relationship between behavioural characteristics, anxiety and depression. 274(76.8%) of the 357(100%) pregnant women living with HIV never took alcohol, 68 (19%) pregnant women living with HIV are still taking alcohol, while 15(4.2%) took alcohol but had stopped prior to this study.

When it comes to tobacco use and its likes, 339(95%) of pregnant women living with HIV have never tried smoking ever, and 18(5%) of pregnant women living with HIV are smokers. In the disclosure to their partners, 303(84.9%) had their partners informed about their status, and 49(13.7%) still had the news to themselves.

Table 4.2: Behavioral Characteristics of Respondents

n = 390

Variable	Frequency	Percent (%)
Alcohol Use (n = 357)		
Yes Currently	68	19.0
Yes Stopped	15	4.2
Never	274	76.8
Smoke		
No	339	95.0
Yes	18	5.0
Disclosure		
Yes	303	84.9
No	49	13.7
Not Applicable	5	1.4

Source: Field Survey 2022

4.2 Presentation of Data

Research Question One : What is the prevalence of depression among pregnant women living with HIV in Ibadan Oyo state?

This study showed that of 357 participants (pregnant women living with HIV), 266 happened to be depressed using Edinburgh's Postpartum depression Scale, which was scored on a 10 question but 0-30 scale where 0-9 is average but ten above reads depression. Table 3 below shows the different factors and the number of depressed and not depressed ranging from religion to marital status.

Table 4.3: Frequency of Depression

Level Of Depression		
Not Depressed	91	25.5%
Depressed	266	74.5%

Source: Field Survey 2022

Bivariate Analysis of Depression and Socio-Demographic Factors

Table 4.4: Prevalence of Depression among Pregnant Women Living with HIV (n=357)

Variable	Level of Depression		p-value
	Not depressed (n=91)	Depressed (n=266)	
Religion			
Christianity	60(23.3)	197(76.7)	0.017
Islam	31(19.4)	129(80.6)	
Tribe			
Yoruba	82(27)	222(73)	0.206
Igbo	8(20)	32(80)	
Hausa	1(7.7)	12(92.3)	
Educational Level			
Primary	13(15.7)	70(84.3)	0.017
Secondary	45(34.1)	87(65.9)	
Tertiary	23(25.0)	69(75.0)	
None	10(20)	40(80)	
Monthly Income			
< 20,000	66(41.3)	94(58.7)	0.000
20,000 – 30,000	2(5.0)	38(95.0)	
31,000 – 40,000	17(19.3)	71(80.7)	
41,000 – 50,000	0(0.0)	30(100)	
> 51,000	6(15.4)	33(84.6)	
Alcohol Consumption			
Yes Currently	0(0)	68(100)	0.000
Yes Stopped	0(0)	15(100)	
Never	91(33.2)	183(66.8)	

Source: Field Survey 2022

Table 4.4: Prevalence of Depression among pregnant women living with HIV (n=357) continuation

Ever Smoked			
No	81(23.9)	258(76.1)	0.003
Yes	10(55.6)	8(44.4)	
Anyone smoked around you			
No	80(26.4)	223(73.6)	0.349
Yes	11(20.4)	43(79.6)	
Disclosure			
No	27(55.1)	22(44.9)	0.000
Yes	63(20.8)	240(79.2)	
Not applicable	1(20.0)	4(80.0)	
Employment Status			
Unemployed	13(30.2)	30(69.8)	0.447
Employed	78(24.8)	236(75.2)	
Marital Status			
Married	82(24.2)	257(75.8)	0.062
Divorce	3(42.9)	4(57.1)	
Widowed	4(66.7)	2(33.3)	
Separated	2(40.0)	3(60.0)	

Research Question Two: What is the prevalence of anxiety among pregnant women living with HIV in Ibadan Oyo state?

This study showed that of 357 participants (pregnant women living with HIV), 250 (71%) of them had minimal anxiety, 61(17%) had mild anxiety, 40(11%) of them had moderate anxiety,

and 6(1%) had severe anxiety using the Generalized Anxiety Disorder Scale which was scored on an 8 question, but 0-4 minimal anxiety, 5-9 mild anxiety, 10-14 moderate anxiety and above 15 is scored severe anxiety. In this factor, the cut-off for anxiety ranged the moderate and severe. Therefore it can be said that 46(12%) of 357 had an anxiety disorder, while the rest had minimal and mild anxiety (88%). Table 4.5 below shows the different factors and the number of Anxiety affected to the ratio of unaffected.

Table 4.5: Frequency of Anxiety

Level of Anxiety	**fre**	**%**
Minimal Anxiety	250	70
Mild Anxiety	61	17.1
Moderate Anxiety	40	11.2
Severe Anxiety	6	1.7

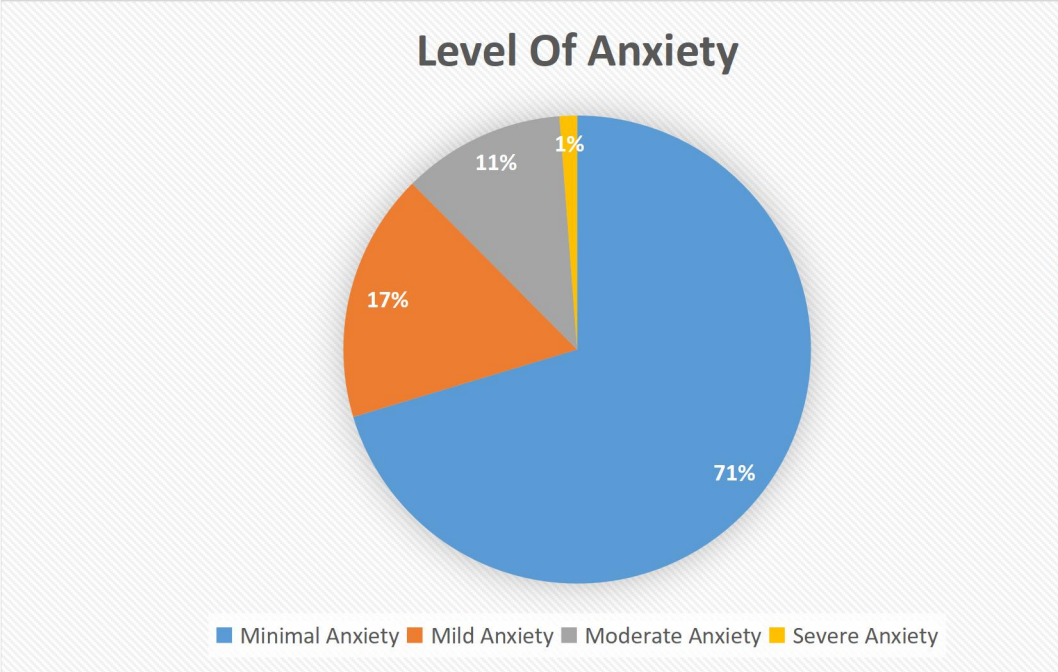

Figure 4.1: Pie Chart Showing Level of Anxiety

Source: Field Survey 2022

Table 4.6: Bivariate Analysis Of Anxiety And Socio-Demographic Factors n=357

Variable	Anxiety				p-value
	Minimal (250)	Mild(61)	Moderate(40)	Severe(6)	
Monthly Income					0.0000
<20,000	144(90)		6(3.6)	9(5.6)	

20,000 – 30,000	1(0.8)				
31,000 – 40,000	32(80)	7(17.5)	0()	1(2.5)	
41,000 – 50,000	52(59)	17(19.4)	19(21.6)	0()	
>51,000	11(36.7)		11(36.7)	4(13.3)	
	4(13.3)				
	11(28.2)		20(51.3)	8(20.5)	
	0()				
Gestational Age					
5-13 Weeks	19(59.4)	5(15.6)	8(25)	0()	0.001
14-28 Weeks	90(63.8)	33(23.4)	16(11.3)	2(1.5)	
29-40 Weeks	119(82.6)	14(9.7)	9(6.3)	2(1.4)	
>40 Weeks	22(55)	9(22.5)	7(17.5)	2(5)	
Religion					
Christianity	132(67)	36(18.3)	24(12.2)	5(2.5)	0.357
Islam	118(73.8)	25(15.6)	16(10)	1(0.6)	
Tribe					
Yoruba	217(71.4)	54(17.8)	28(9.2)	5(1.6)	0.110
Igbo	23(57.5)	6(15)	10(25)	1(2.5)	
Hausa	10(77)	1(7.7)	2(15.3)	0()	
Educational Level					
Primary	64(77)	12(14.4)	6(7.2)	1(1.4)	0.025
Secondary	91(69)	23(17.4)	13(9.8)	5(3.8)	
Tertiary	55(59.8)	23(25)	14(15.2)	0()	
None	40(80)	3(6)	7(14)	0()	
Marital Status					
Married	236(69.6)	60(17.7)	37(10.9)	6(1.8)	0.598
Divorce	6(85.7)	0()	1(14.3)	0()	
Widowed	5(83.3)	1(16.7)	0()	0()	
Separated	3(60)	0()	2(40)	0()	

Table 4.6: Bivariate Analysis Of Anxiety And Socio-Demographic Factors n=357 continuation

Employment Status					
Unemployed	36(83.7)	0()	7(16.3)	0()	0.009

Employed	214**(68.2)**	61(19.4)	33(10.5)	6(1.9)	
Pregnant In The Last Two Years					
Yes	250**(71.2)**	61(17.4)	40(11.4)		0.000
No	0				
Number Of Children After HIV Status					
1	201**(70)**	47(16.4)	33(11.5)	6(2.1)	0.687
2	45**(68.2)**	14(21.2)	0()	7(10.6)	
3	4(100)				
Disclosure					
Yes	212**(70)**	54(18)	31(10)	6(2)	0.544
No	34**(69.4)**	6(12.2)	9(18.4)	0()	

Source: Field Survey 2022

Research Question Three: What is the prevalence of comorbidity of depression and anxiety among HIV-infected pregnant women in Ibadan Oyo State?

Among the 357 women enrolled, 266 (74.5%) women met the cut-off score for possible depression. 91 (25.5%) participants reported not being depressed. Of the 357 women screened for anxiety, 46 (12.9%) met the cut-off score for probable anxiety disorder, while 331(87.1%) reportedly did not meet the cut score for anxiety. Comorbid anxiety and depression were prevalent at 10.6% of the frequency (n=38). The majority (74.5%) of women who screened positive for possible depression also had anxiety. Table 5 below gives details on the comorbidity of anxiety and depression.

Table 4.7: Prevalence of Comorbidity of anxiety and depression (n=357)

Depressed	anxiety				Total
	Minimal Anxiety	Mild Anxiety	Moderate Anxiety	Severe Anxiety	
Not Depressed	74	9	8	0	91
Depressed	176	52	32	6	266
	250	61	40	6	357

Source: Field Survey 2022

Research Question Four: What are the factors associated with these common mental health disorders among HIV-infected pregnant women in Ibadan Oyo state?

Factors Associated With Possible Depression

In bivariate and multivariate analysis (Table 4), religion, tribe, educational status, monthly income, alcohol use, smoking and drug use, marital status, employment status, disclosure and attitude about pregnancy were associated with possible depression, but only the secondary level educational status and <20,000 income level had a significant association with depression. Pregnant Married women living with HIV had 1.6 times higher odds of depression compared to separated women (cOR=1.6, 95% CI=0.012 – 3.236). Pregnant women living with HIV who were Christians are less likely to be depressed compared to Muslims (cOR=0.741,95% CI=0.388-1.417). Also, pregnant women living with HIV who were Yoruba's are less likely to be depressed compared to pregnant women living with HIV who were Hausa (cOR=0.100,95% CI=0.010-1.048). Furthermore, in relation to employment status, the unemployed, pregnant women living with HIV are more likely to be depressed compared to employed pregnant women living with HIV (cOR=1.049,95% CI=0.412-2.672). When compared to pregnant women without HIV who did not tell their partners about their status, those who did had a 0.1 greater risk of developing depression (cOR=0.198, 95% CI=0.012-3.236). Pregnant women living with HIV who did not reveal their status to their partners because of a deceased spouse or other reasons had 0.8 greater odds of developing depression than those who did (cOR=0.862, 95% CI=0.052-11.909). The same follows with alcohol, smoking, drug use and education.

Table 4.8 below provides the details on the factors associated with depression, their odd ratio and confidentiality interval.

In the logistic regression model Table 4, two factors remained significantly Associated with depression after controlling potential confounders. Women who fell in the <20,000 income level had 0.18 times higher odds of possible depression compared with pregnant women living with HIV who earned more than 50,000 (cOR=0.181, 95% CI=0.063–0.518). Women who reported a secondary level of education had 0.3 times higher odds of possible depression compared with those that reported none. (cOR=0.379, 95% CI=0.146 – 0.986).

Table 4.8: Bivariate and multivariate analysis of factors associated with possible depression among pregnant women living with HIV (n=357)

Variables	AOR (95%CI)	P-Value
Religion		
Christian	0.741(0.388-1.417)	0.365
Muslim	ref	
Tribe		
Yoruba	0.100(0.010-1.048)	0.055
Igbo	0.374(0.031-4.490)	0.438
Hausa	ref	
Educational Level		
Primary	0.435(0.138-1.367)	0.154
Secondary	0.379(0.146-0.986)	0.047
Tertiary	0.508(0.186-1.391)	0.188
None	Ref	
Monthly Income		
< 20,000	0.181(0.063-0.518)	0.001
20,000 – 30,000	2.768(0.461-16.633)	0.266
31,000 – 40,000	0.696(0.231-2.095)	0.519
41,000 – 50,000	164251221.8(0-0)	0.998
> 51,000	Ref	
Alcohol Consumption		
Yes Currently	863699585.1(0-0)	0.996
Yes Stopped	154731321.7(0-0)	0.998
Never	Ref	
Ever Smoked		
No	Ref	
Yes	3.330(0.853-12.990)	0.083
Marital Status		
Married	1.680(0.012-3.236)	0.709
Divorce	0.639(0.639-0.026)	0.785
Widowed	0.406(0.013-13.160)	0.406
Separated	Ref	

Table 4.8: Bivariate and multivariate analysis of factors associated with possible depression among pregnant women living with HIV (n=357) continuation

Employment Status		
Unemployed	1.049(0.412-2.672)	0.920
Employed	Ref	
Disclosure		
No	Ref	
Yes	0.198(0.012-3.236)	0.256
Not applicable	0.862(0.052-11.909)	0.862

Source: Field Survey 2022

Factors Associated With Probable Anxiety

In Table 4.9, religion, tribe, educational status, monthly income, alcohol use, smoking and drug use, marital status, employment status, disclosure, gestational age and number of children after HIV status were associated with possible depression but only monthly income, 29-40 weeks of gestational age, religion and pregnant women who had stopped alcohol before the time of this study had a significant association.

Married pregnant women living with HIV had 0.4 times higher odds of depression compared to separated pregnant women living with HIV (cOR=0.431, 95% CI=1.354 – 136908.619), divorced pregnant women living with HIV had 0.5 high risks compared to separated pregnant women living with HIV (cOR=0.532, 95% CI=1.711 – 1654919.261). Pregnant women living with HIV who were Christians had 4.7 times higher odds of depression compared to Islam (cOR=4.735,95% CI=1.095-20.472). Also, pregnant women living with HIV who were Yoruba's had 0.1 higher odds of depression compared to pregnant women living with HIV who were Hausa (cOR=0.100,95% CI=0.010-1.048). Furthermore, in relation to employment status, the unemployed, pregnant women living with HIV had 0.6 higher odds of depression compared to employed pregnant women living with HIV (cOR=0.621,95% CI=0.062-6.244). The number of pregnant women living with HIV who disclosed their status to their partners had 1.9 higher odds of depression compared to those who are not applicable (cOR=1.909,95% CI=2.474-147249.595). The number of pregnant women living with HIV who did not disclose their status to their partners either because of a dead partner or other factors had 0.3 higher odds of depression compared to those who are not applicable (cOR=0.336,95% CI=3.411-33094.382).

Table 4.9 below provides the details on the factors associated with depression, their odd ratio and confidentiality interval.

In the logistic regression model Table three factors remained significantly Associated with depression after checking the various factors. Women who fell in the <20,000, 20,000 – 30,000, 31,000 – 40,000, 41,000 – 50,000 income level had higher odds of possible depression compared with pregnant women living with HIV who earned more than >50,000 (cOR=0.009, 95% CI=0.001–0.064), (cOR=0.018, 95% CI=0.002–0.154), (cOR=0.005, 95% CI=0.000–0.057), (cOR=0.096, 95% CI=0.013–0.690). Women who reported 29-40 weeks of gestational age had 0.16 times higher odds of possible depression compared with those that reported none. (cOR=0.164, 95% CI=0.028 – 0.986). Pregnant women living with HIV who were Christians had 4.7 times higher odds of depression compared to Islam (cOR=4.735,95% CI=1.095-20.472). Pregnant women living with HIV who had stopped the intake of alcohol had 2.4 higher odds of possible depression compared to those who never took alcohol.

Table 4.9: Bivariate and multivariate analysis of factors associated with probable anxiety among pregnant women living with HIV (n=357)

Variable	AOR(95%CI)	p-value
Monthly Income		0.000
<20,000	0.009(0.001-0.064)	0.000
20,000 – 30,000	0.018(0.002-0.154)	0.000
31,000 – 40,000	0.005(0.000-0.057)	0.000
41,000 – 50,000	0.096(0.013-0.690)	0.020
>51,000	Ref	Ref
Gestational Age		
5-13 Weeks	0.159(0.015-1.691)	0.127
14-28 Weeks	0.197(0.037-1.059)	0.058
29-40 Weeks	0.164(0.028-0.970)	0.046
>40 Weeks	Ref	Ref
Religion		
Christianity	4.735(1.095-20.472)	0.037
Islam	Ref	Ref
Tribe		
Yoruba	7286471.376(0.000)	0.998
Igbo	10160095.90(0.000)	0.998
Hausa	Ref	Ref
Educational Level		
Primary	2.188(0.088-54.256)	0.633
Secondary	3.182(0.147-68.669)	0.460
Tertiary	1.380(0.056-33.882)	0.844
None	Ref	Ref
Marital Status		
Married	0.431(1.354-136908.619)	0.896
Divorce	0.532(1.711-1654919.261)	0.934
Widowed	0.234(4.804-1141222.258)	0.853
Separated	Ref	Ref
Employment Status		

Table 4.9: Bivariate and multivariate analysis of factors associated with probable anxiety among pregnant women living with HIV (n=357) continuation

Unemployed	0.621(0.062-6.244)	0.686
Employed	Ref	Ref
Alcohol		
Yes Currently	0.202(0.033-1.232)	0.083
Yes Stopped	2.423(2.423-2.423)	0.000
Never	Ref	Ref
Number Of Children After HIV Status		
1	3395250.567(0.000)	0.999
2	0.311(0.000)	1.000
3	Ref	Ref
Disclosure		
Yes	1.909(2.474-147249.595)	0.910
No	0.336(3.411-33094.382)	0.853
Not applicable	Ref	Ref

Source: Field Survey 2022

4.3 **Discussion of Findings**

According to the results of this study, the Edinburgh Postpartum Depression Scale revealed that 266 (74.5%) of the 357 pregnant women living with HIV who participated were affected by postpartum depression. This study found a significantly higher prevalence of depression (74.5%) among the participants when compared to previous research, and it was found to be connected to factors such as religion, tribe, educational level, monthly income, alcohol and drug use, marital status, employment status, disclosure, and attitude toward pregnancy. Additionally, it was found that these factors were connected to one another. According to the results of recent research, there is a potential that one out of every four HIV-positive pregnant women has experienced depression at some point in their lives. Despite the fact that these findings are comparable to the prevalence rate of 22% in the US this frequency is low in contrast to studies done in Tanzania and other African nations. For instance, reports indicate that the rates of depression in South Africa and Uganda, respectively, are 41.0% and 42.7% of the population[1]. The prevalence of prenatal depression in Dar es Salaam was comparable to that in Moshi, with rates in Dar es Salaam ranging anywhere from almost twice (42,4%) to three times (74,3%) greater than those in Moshi. However, the prevalence of prenatal depression in Dar es Salaam was comparable to that in Moshi[2]. The prevalence of depression was revealed to be substantially lower in this specific study for a variety of plausible reasons, and it was proven to be much lower when compared to earlier studies that had been undertaken in other African nations. The disparities in prevalence may be attributable to a variety of variables, including the following: the number of people who participated in the study the kind of research instrument

used; the variety of research screening instruments utilized (questionnaires employed); and cultural variations. According to the findings of this study, the prevalence of depression among pregnant women in Ibadan who are living with HIV is significant. This is an issue that requires careful attention in order to enhance the overall quality of health for pregnant women who are living with HIV.

This study showed that of 357 participants (pregnant women living with HIV), 250 (71%) of them had minimal anxiety, 61(17%) had mild anxiety, 40(11%) of them had moderate anxiety, and 6(1%) had severe anxiety. In comparison to other studies conducted, this research report a low level of anxiety compared to other research made like that of the US reported a much higher prevalence (71.1%) compared to what was discovered in Ibadan. Various factors must have contributed to this increase in the prevalence of anxiety, such as support from partners, lifestyle, income level and the like.

According to findings from recent studies, there is a possibility that one in every four HIV-positive pregnant women has suffered depression. The prevalence of depression in Ibadan Oyo State was 74.5% which is on a large scale compared to the findings of others. 22% prevalence in the US, For instance, reports indicate that the rates of depression in South Africa and Uganda, respectively, are 41.0% and 42.7% of the population. The prevalence of prenatal depression in Dar es Salaam was comparable to that in Moshi, with rates in Dar es Salaam ranging anywhere from almost twice (42.4%) to three times (74.3%) greater than those in Moshi, The prevalence of depression was revealed to be substantially lower in this specific study for a variety of plausible reasons, and it was proven to be much lower when compared to earlier studies that had been undertaken in other African nations. To begin, it is possible that the differences in the outcomes are due to differences in cultural values, geographical location, and

the passage of time. The fact that the studies were carried out utilizing a variety of methods is another factor that can explain the disparate findings about the prevalence of depression. It is probable that the discrepancy in the prevalence of mental illness that was identified was caused by these causes. The present study is a cross-sectional analysis, whereas the studies that came before it started by recruiting women and then proceeded to follow up with them. After obtaining the participants' informed consent to take part in the study, data were gathered on several elements of the individuals' mental health at predetermined intervals. During the course of the follow-up, it is probable that some of the women started to have difficulties associated with HIV as they began to adjust to their status. This adjustment may have included adjusting to the new realities of life as well as adjusting to changes in their lives. When they entered the research four weeks later, over half of the women who took part in it had not yet been given their diagnosis. The study was conducted on women. As a direct result of this, the participants' mental health problems may not have been readily visible at the time, or they may not have felt comfortable discussing them. In conclusion, a wide range of screening methods are utilized by a number of different research projects in order to make a diagnosis of depression. In earlier research carried out in Tanzania, HSCL was employed as a diagnostic tool for depression. The HSCL, in its modified form, was used to screen people for depression in Uganda. This screening tool was created by Kaida[1]. It is possible that the observed variation in prevalence might be attributed to the fact that there is a wide range of screening tools available for depression. For the purpose of screening participants for their level of depression, this study utilized the EDPS scale. On the other hand, there are no tried and true methods for recognizing and treating people who have been proven to have symptoms that are consistent with depression[3]. Because of this, a significant number of these women who could be suffering from depression will not be recognized. If

pregnant women in Ibadan who are living with HIV and not receiving treatment for their mental health are much, there would be a number of potential consequences. Depression that is not treated can deepen or even become chronic if it is left untreated. When it is caught early or when its symptoms are not as severe, depression may be easier to treat. When dealing with depression of a more severe nature, it is necessary to use trained medical experts, which is unusual in the majority of African settings. In addition, if women living with HIV do not receive an adequate amount of support and assistance in the management of their conditions, they may be less likely to take their medication on a continuous basis and more likely to miss their clinic sessions. All of these factors work against the objective of eliminating the MTCT of HIV[3], which is part of the UNAIDS strategy to help end the HIV epidemic by the year 2030 (the 90-90-90 target) [4].

The prevalence rates of anxiety symptoms identified in this study are comparable to the rates that were discovered in the previous study, which tested positive for anxiety symptoms in 12% of women. According to what was discussed in Chapter 2, there have been very few studies that have investigated the frequency with which this group experiences anxiety. There are some discrepancies in the findings of the scant research that is currently available in the published body of work about the frequency with which people experience anxiety. For example, in contrast to what we found, a study conducted in the United States reported a significantly higher percentage (71.1%)[5]. The variation that was seen might have been due to a number of factors, including the sample size, the design, the anxiety measure, and the diverse cultural contexts of mental illness. There are not many studies done in Ibadan that look at the prevalence of anxiety among HIV-positive pregnant mothers. However, if pregnant women have mild anxiety but are not treated for it right away, they run the danger of their symptoms becoming more severe. Women who suffer from serious anxiety problems have a far higher risk of developing

depression, being addicted to drugs, and even thinking about taking their own lives[6]. When it comes to PMTCT, these women have a lower likelihood of keeping their clinic appointments and taking their ARVs as prescribed. By doing this, they put their nursing children and their unborn offspring at an increased risk of contracting the virus. The mother's anxiety not only has a negative impact on the mental health of the child but also increases the likelihood that the pregnancy will have unfavourable outcomes such as intrauterine growth restriction, premature delivery, and low birth weight. According to the findings of one comprehensive study, for instance, anxious women had a significantly increased risk of having children who suffer from mental health issues, most notably attention deficit disorder (ADD). Even though there have been significant advancements in the treatment of HIV, most notably in the field of PMTCT, there has been less attention dedicated to mental disorders such as anxiety, particularly among LIC. This is especially the case in countries where there is a lower level of economic development. This raises a worry since those living in LIC to have a higher risk of contracting HIV. It would be a move in the wrong way to prioritize the mental health of women while working toward the goal of safeguarding moms. This would be a step in the wrong direction.

The result that 10.6% of women in this study met the criteria for both probable anxiety and prospective depression was discovered in the present study. It is crucial to take note of this finding because it was identified in the current study. According to research that has been made available to the general public, the percentage of pregnant women who simultaneously suffer from mental health conditions, including anxiety and depression, is equivalent to that of the broader population. On the other hand, there is a paucity of data pertaining to HIV-positive pregnant women. The prevalence of comorbidities, on the other hand, is comparable to that of past research[7]. The previous study indicates that the prevalence of comorbid depression and

anxiety is significantly higher than the prevalence of either depression or anxiety alone. This is due to the fact that up to 74.5% of persons who suffer from depression also display symptoms of anxiety [8]. A challenge arises from the fact that certain people who have comorbidities may not necessarily exhibit the typical symptoms associated with such conditions[9]. It is fascinating that these illnesses are frequently misdiagnosed, which may be due to the fact that the symptoms they showed are those of other ailments. If these women who suffer from comorbid illnesses are unable to manage their conditions effectively, they run the risk of experiencing poor disease outcomes as well as a decrease in the quality of their lives. This is because people who have comorbidity likely to have lower outcomes for their diseases than individuals who do not have comorbidity[10]. Even with treatment for mental illness, patients who have comorbid conditions recover more slowly. Patients who have comorbid conditions tend to recover more slowly than other patients, and they also have a higher risk of acquiring chronic illnesses and higher recurrence rates. As a result, there is a good chance that treatment failure rates will continue to be high if these illnesses are not addressed holistically and as comorbid ailments. There are reliable screening tools accessible, which may be utilized in order to diagnose both sadness and anxiety. Because they need little training, these screening tools may be utilized in even the most fundamental forms of medical treatment. Even at the level where medicine is required, there are only a select few therapies that have been demonstrated to be useful for the two illnesses[11].

Endnotes

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Chapter Five

Conclusion

5.1 Summary of Findings

The primary objective of this study is to determine the level of depression and anxiety experienced by pregnant women who are HIV positive and live in the city of Ibadan, which is located in the state of Oyo in Nigeria. The current status of the Research problem brought to light the observed void that calls for further investigation in the form of this study. In addition, the research effort included a section on the operational definition of words and concepts, in which the research objectives, the significance of the study, the scope, and a few terminologies that had been unclear were clarified.

This was done with the intention of linking the current study with the previous study in order to be able to highlight the gap that the current study would be filling. As a result of this, the study conducted a complete examination of the linked literature from the past. Within the scope of this research, a facility-based cross-sectional survey was conducted with pregnant women who were HIV-positive in Oyo State, Nigeria. A random method of sampling was utilized to choose the sample sizes, and a total of 357 people were chosen to take part in the study as a sample size. The quantitative technique was used for the process of data collection. This method includes the Socio-Demography Data Questionnaire, screening for anxiety and EDPS, screening for variables that cause depression, and screening for behavioural lifestyle.

According to the findings of this research, the vast majority of participants experience high rates of depressive symptoms yet have relatively moderate levels of anxiety. The findings also demonstrated that the co-occurrence of anxiety and depression was rather modest,

coming in at 10.6%. The findings of this study pointed to the elements that, according to the research that was done, impact feelings of despair and anxiety.

5.2 Conclusion

According to the findings of the research that was carried out, a significantly higher prevalence of depression was found among pregnant women living with HIV in comparison to that of anxiety; however, in relation to the comorbidity, we find that more than half of the population suffers from both depression and anxiety. The majority of women who matched the criteria for likely depression also tested positive for probable anxiety. This is because depression and anxiety are closely related. Concerns pertaining to one's mental health need to be given the same level of priority as one's physical health if the goal of eradicating the transmission of HIV through mother-to-child transmission is to be achieved. The findings that were obtained were influenced by factors such as educational level, income level, tribe, religious disclosure to the spouse, and other socio-economic factors.

In this study, a significant amount of work was put into examining the prevalence of anxiety and depression among pregnant women who are living with HIV. The findings of this study indicated that understanding of what depression and anxiety are was widespread, even if not among all of the people who participated in this survey. There are a number of factors, such as financial level and educational status, that have contributed to the widespread occurrence of depression.

5.3 Recommendations

Given the alarming prevalence rates of depression (74.5%), anxiety (12%), and comorbidity (10.6%) among pregnant women living with HIV in Ibadan, Oyo State, urgent and targeted interventions are imperative. Firstly, healthcare providers should implement routine screening protocols for depression and anxiety during prenatal care visits for this population. These screenings should be integrated seamlessly into existing healthcare procedures to ensure early detection and timely intervention for those at risk. Additionally, specialized mental health interventions tailored to the unique needs of pregnant women living with HIV in Ibadan must be developed and implemented. These interventions should be culturally sensitive and accessible, ensuring that individuals receive the appropriate support and treatment.

Furthermore, capacity-building initiatives for healthcare providers are essential to equip them with the skills and knowledge necessary to provide comprehensive care for both physical and mental health. This includes training programs that enhance their understanding of the nuanced interactions between HIV, pregnancy, depression, and anxiety. To address comorbidity, integrated treatment plans should be established, fostering collaboration between HIV clinics and mental health services. This approach will ensure that individuals receive holistic care that addresses both their physical and mental health needs. Finally, policy advocacy and resource allocation are critical to facilitate the implementation of these recommendations. By prioritizing mental health support for pregnant women living with HIV, policymakers can allocate resources for targeted mental health programs and services, ultimately improving the overall well-being of this vulnerable population in Ibadan, Oyo State.

5.4. Contributions to Knowledge

The study's findings on depression, anxiety, and comorbidity rates among pregnant women living with HIV in Ibadan, Oyo State, represent a significant contribution to knowledge. By quantifying the prevalence of depression (74.5%) and anxiety (12%), the research provides a localized understanding of the mental health challenges faced by this specific demographic. Moreover, the observed comorbidity rate of 10.6% underscores the need for comprehensive, integrated healthcare approaches that address both mental health and HIV management concurrently. This data not only informs targeted interventions and resource allocation but also identifies potential high-risk groups, allowing for early intervention and prevention strategies. Additionally, the study sets a valuable precedent for future research, offering a foundational understanding of mental health issues in this population and encouraging further investigations into causal factors and long-term outcomes.

The study's implications extend to policy and practice, providing evidence-based insights for healthcare providers and policymakers in Ibadan, Oyo State. This localized data can inform the development and implementation of tailored interventions that address the specific mental health needs of pregnant women living with HIV. Overall, the study significantly advances our understanding of mental health in this vulnerable population, offering a critical foundation for improved care, targeted interventions, and ongoing research efforts to enhance the well-being of pregnant women living with HIV in Ibadan, Nigeria.

5.5 Suggestions for Further Research

Longitudinal Trajectories and Risk Factors: Future studies could delve into the longitudinal trajectories of mental health among pregnant women living with HIV, tracking changes over time. This approach would offer a dynamic understanding of how mental health evolves throughout pregnancy and postpartum. Additionally, exploring specific demographic, socio-economic, and psychosocial factors influencing mental health in this population is essential. Understanding the underlying determinants can inform targeted prevention and intervention strategies, potentially mitigating the high prevalence rates of depression and anxiety observed.

Comparative Regional Studies: Conducting comparative studies across different regions within Nigeria or internationally would provide valuable insights into potential regional variations in mental health prevalence. These studies could illuminate cultural or contextual factors that may influence mental health outcomes among pregnant women living with HIV. Such comparative research would contribute to a more comprehensive understanding of the complex interplay between HIV status, pregnancy, and mental health.

Effectiveness of Culturally-Adapted Interventions: Research focusing on the cultural adaptation and effectiveness of existing mental health interventions for this specific population in Ibadan, Oyo State, would be highly beneficial. This would involve tailoring interventions to align with the local cultural context, ensuring they are well-received and effective in addressing the unique mental health challenges faced by pregnant women living with HIV in the region.

These suggested areas of further research aim to deepen our understanding of the multifaceted relationship between HIV, pregnancy, and mental health. By exploring longitudinal trajectories, regional variations, and culturally-adapted interventions, future studies can contribute to the

development of more targeted and effective support systems for this vulnerable population in Ibadan, Nigeria.

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QUESTIONNAIRE

PSYCHOLOGICAL WELL-BEING, PREVALENCE OF HYPERTENSION, ART ADHERENCE AND CONTRACEPTIVE USE AMONG WOMEN LIVING WITH HIV IN IBADAN, NIGERIA

Dear Respondent,

We the researchers are postgraduate students of Lead City University, carrying out research on the above topic

Acceptance to answer the questionnaire will be taken as consent to participate in the study. All information will be treated confidentially and your name is not required on the questionnaire.

Instructions

Please tick (.) the appropriate box option applicable in question below. You tick on or more boxes as appropriate

SECTION A: SOCIO – DEMOGRAPHIC CHARACTERISTICS.

Kindly tick (√) or fill in the space provided in the statements below;

BP:
Vrl:

1. Age: _____
2. Religion: Christianity ( ) Islam ( ) Other (Specify)_____
3. Tribe: Yoruba( )Igbo ( ) Hausa ( ) Other (Specify)_____
4. Educational level: Primary level ( ) Secondary level ( ) Tertiary level ( ) None ( )
5. Marital status: Married ( ) Divorce ( ) Widowed ( ) Separated ( ) Single ( )
6. Type of partner: Spouse ( ) Steady ( ) Causal ( ) None ( )
7. Do you know your partners status: Yes ( ) No ( )
8. If yes: Positive ( ) Negative ( )
9. Employment status: Unemployed ( ) Employed ( )
10. In what year did you first **test positive** for HIV? ……
11. Are you taking antiretroviral drugs? Yes ( ) No ( )
12. How long have you been on ARVS:…….
13. Have you been pregnant in the last two years Yes ( ) No ( )
14. Have you been diagnosed of hypertension?: ……
15. Number of Children after learning about HIV Status _____
16. When last did you have sex with your partner: Less than 6 months ( ) More then 12 months ( )

17. Are you sexually active: yes ( ) No ( )
18. Are you Pregnant yes( ) No( )

---

19. What is your monthly income?
<20,000

20,000 – 30,000

31,000 – 40,000

41,000 – 50,000

>51,000

20. Status disclosure to partner Yes ( ) No ( )

---

21. If yes to 134, Gestational age
5-13 weeks
14-28 weeks
29-40 weeks
>40 weeks

SECTION B: PSYCHOLOGICAL WELL-BEING OF WOMEN LIVING WITH HIV

Tell us how you have felt in the past months.

22. I have been able to laugh and see the funny side of things
☐ As much as I always could
☐ Not quite so much now
☐ Definitely not so much now
☐ Not at all
23. I have looked forward with enjoyment to things
☐ As much as I always could
☐ Not quite so much now
☐ Definitely not so much now
☐ Not at all
24. I have blamed myself unnecessarily when things went wrong
☐ Yes, most of the time
☐ Yes, some of the time
☐ Not very often
☐ No, never
25. I have been anxious or worried for no good reason

☐ No, not at all
☐ Hardly ever
☐ Yes, sometimes
☐ Yes, very often

26. I have felt scared or panicky for no very good reason
☐ Yes, quite a lot
☐ Yes, sometimes
☐ No, not much
☐ No, not at all

27. Things have been getting on top of me
☐ Yes, most of the time I haven't been able to cope at all
☐ Yes, sometimes I haven't been coping as well as usual
☐ No, most of the time I have coped quite well
☐ No, I have been coping
☐ as well as ever

28. I have been so unhappy that I have had difficulty sleeping
☐ Yes, most of the time
☐ Yes, sometimes
☐ Not very often
☐ No, not at all

29. I have felt sad or miserable
☐ Yes, most of the time
☐ Yes, quite often
☐ Not very often
☐ No, not at all

30. I have been so unhappy that I have been crying
☐ Yes, most of the time
☐ Yes, quite often
☐ Only occasionally
☐ No, never

31. The thought of harming myself has occurred to me
☐ Yes, quite often
☐ Sometimes
☐ Hardly ever
☐ Never

Over the last 2 weeks, how often have you been bothered by the following problems?

	Not at all	Several Days	More than half the days	Nearly every day
32. Feeling nervous, anxious or on edge				
33. Not being able to stop or control worrying				
34. Worrying too much about different things				
35. Trouble relaxing				
36. Being so restless that it is hard to sit still				
37. Becoming easily annoyed or irritated				
38. Feeling afraid as if something awful might happen				
39. If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?				

LIFESTYLE/BEHAVIORAL

Alcohol Use

40. Have you ever consumed any alcohol such as Beer, wine and spirits? Yes Currently( ) Yes Stopped ( ) Never ( )
41. Have you consumed any alcohol within the past 12 months
    Yes ( ) No ( )

42. If yes(Currently), indicate how often you consume alcohol
    Always ( ) Often ( ) Sometimes ( ) Rarely ( ) Never ( )

43. If yes but stopped, state how often you consumed alcohol prior.
    Always ( ) Often ( ) Sometimes ( ) Rarely ( ) Never ( )

TOBACCO USE

44. Have you ever smoked any tobacco products, such as Pipes, Cigarettes, and Cigars etc?
    a. Yes(Currently)
        i. Average Number of Sticks:……
    b. Yes(Stopped)
        i. Average Number of Sticks:……
45. During the past one month did someone smoke in your home, workplace or surrounding.
    Yes ( ) No ( )

Informed Consent Form

This informed consent form is for pregnant women living with HIV aged 18 years and above participating in the research titled "depression and anxiety among pregnant women living with HIV in Ibadan."

Names, affiliations and Positions of the researchers conducting the study:

a) Name: **Adeoye Enitan Oluwaseyi**
Affiliation: Position: Principal Investigator

b) Name: **Dr. Folahanmi Tomiwa Akinsolu**
Affiliation: Lead City University, Ibadan, Nigeria.

Position: Supervisor

You will be given a copy of the full Informed Consent Form

PART 1: INFORMATION SHEET

My name is Adeoye Enitan and presently, I'm a trainee at University College Hospital and a postgraduate student of Public Health, Lead City University, and Ibadan. I am conducting a study which hopes to assess the depression and anxiety among pregnant woman living with HIV.

The research requires us to interview you using a questionnaire. You will be given a short questionnaire to fill to assess your experience and views of depression before HIV, after knowing you were positive and during pregnancy. Whenever a study is to be carried out, we ask for the permission of the participants after explaining the procedure to them.

You do not have to decide today whether or not you will participate in the research. Before you decide, you can talk to anyone you feel comfortable with about the research. If there happens to be any word you need clarification on, you can ask me or any researcher around and we will definitely take our time to explain to the best of your understanding. Thanks for your understanding.

PURPOSE OF THE RESEARCH

This study proposes that depression and anxiety is a common psychological health issue that should be watched over as it precedes postpartum depression and affect the new born common with pregnant women living with HIV in Nigeria. A total of 330 participants would be needed for this study to ensure viability of data.

EXPECTED DURATION

The total course of this research should not exceed 3 months and the research takes place over a period of 10-15 minutes per participant to fill the questionnaires administered.

RISKS

There is no known risk involved in participating in this research

BENEFITS

There may not be any immediate and direct benefit for you but your participation is will help us find the answer to the research questions.

CONFIDENTIALITY

We will not be sharing the identity of participants of this research. Any information that we collect from this research project will be kept confidential. Participant's information will be coded with numbers which only the researchers will have access to and it won't be shared except with necessary stakeholders.

VOLUNTARY PARTICIPATION

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

ALTERNATIVES TO PARTICIPATION:

If you decide not to join this study, it won't put you at risk of not getting your regular treatment.

CONTACT INFORMATION

You can also choose to back out of this study at any time you want without any consequences.

CONTACT INFORMATION

Who can I contact about this study? If I have questions or concerns about this research study, whom can I call?

You can call us with your questions or concerns. Our telephone numbers are listed below. Ask questions as often as you want

Adeoye Enitan Oluwaseyi
Public health
Lead City University, Ibadan
+2348156683086,+2347025407498
Iamalexd06@gmail.com

Dr Folahanmi Tomiwa Akinsolu
Department of Public Health,
Lead City University, Ibadan
+2347033171050
folahanmi.tomiwa@gmail.com

You can talk to them about:

1. Your rights as a research subject
2. Your concerns about the research
3. A complaint about the research and also, if you feel pressured to take part in this research study, or to continue with it, they want to know and can help.

When you call or write about a concern, please provide as much information as possible, including the name of the researcher, the Ethics Committee number (at the top of this form), and details about the problem. This will help Ethics Committee officials to look into your concern. When reporting a concern, you do not have to give your name unless you want to.

INFORMED CONSENT FORM FOR STUDY PARTICIPANTS ON HIV SELF SAMPLING RESEARCH

CERTIFICATE OF CONSENT

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

Name of Participant _____

Signature of Participant _____

Date _____

Day/month/year

If illiterate

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

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

Name of witness_____ AND Thumb print of participant

Signature of witness _____

Date _____

Day/month/year

Statement by the researcher/person taking consent

I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant understands that the following will be done:

1. I would be given a questionnaire to be filled

2. There would be a helping hand to explain if I am not cleared about the questions asked.

3. The results of the questionnaire will be recorded for research purpose.

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

A copy of this Informed Consent Form has been provided to the participant.

Print Name of Researcher/Person taking the consent_____

Signature of Researcher /Person taking the consent_____

Date _____

Day/month/year

Biodata

A. Personal Data

Name:	Enitan Oluwaseyi ADEOYE
Home Address:	No 2 Mosadi oluwa street omoleye Ogijo Ogun State.
Email:	iamalexd06@gmail.com
Contact Number:	+2348156683086, +2347025407498
Date of Birth and place of birth:	July 19th 1995, Lagos state
Nationality:	Nigerian
Marital Status:	Single
Sex:	Male
Name and Address of Next of Kin:	Joseph ADEOYE
	No 2 Mosadi oluwa street omoleye Ogijo Ogun State.

B. Educational Background with Dates

Senior School Certificate	2012
Computer College Ikorodu-	2012-2013
French Diploma – Universite D'abomey Calavi -	2014-2016
B.MLS Irgib Africa University	2020
Mph –In View Lead city	2021-2023
Forgein Graduate Training Uch Ibadan	2022-2023

C. Work Experience

Intern • Irgib Africa University•	2018
Intern • Federal College of Animal Health And Production Technology •	2019
Intern • Irgib Africa University •	2020-2021
University College Hospital Training .	2022- 2023

D. **SKILLS**

Good Laboratory Practice & Ethics

Good literacy and Numeracy Skills.

Enjoy working with children.

Flexibility and Creativity.

Great Interpersonal and Communication Skills.

Ability to build good working relationship with children and adults.

E. Membership

AMLSCN

F. **Certifications**

Revised Common Rule: Revisions to Informed Consent	
Collaborative Institutional Training Initiative	2021
Mental Health for Higher Ed and Healthcare	
Collaborative Institutional Training Initiative	2021
What You Need to Know About COVID-19 Vaccine	
Collaborative Institutional Training Initiative	2021
Nigerian National Code For Health Research Ethics	
Collaborative Institutional Training Initiative	2021
Responsible Conduct of Biomedical Research	
Collaborative Institutional Training Initiative	2021

H. **References**

Dr. Rasheed Balogun	08032719152
	balogunrb@gmail.com
Mr Otegbade Peter (Director Histpathology UCH)	0806783877
	otegbadeseyi@gmail.com

_____ _____

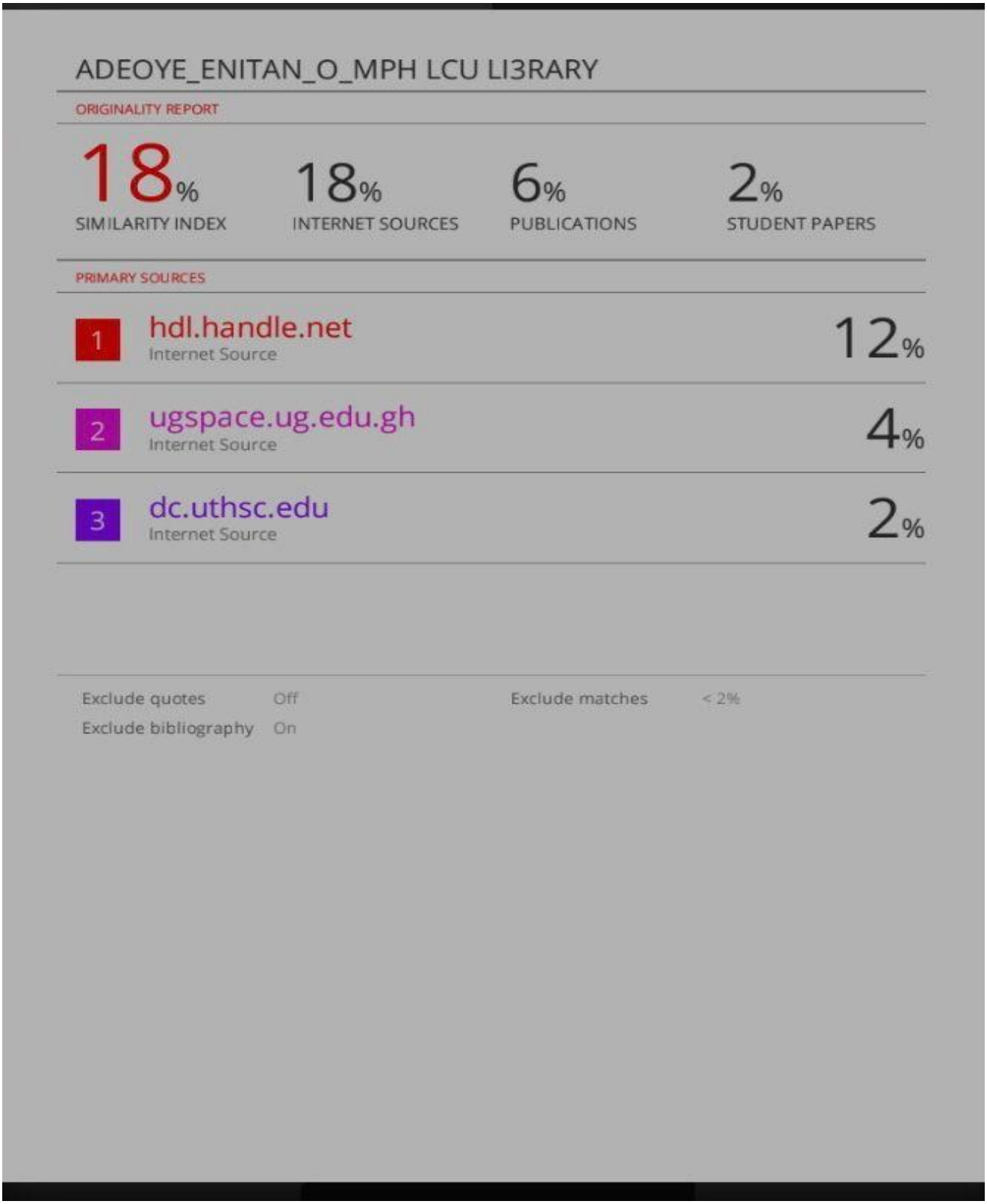
Signature **Date**

The University Compliance Certification

This is to certify that this thesis by Enitan Oluwaseyi ADEOYE, with Matric No. LCU/PG/002389 in the Department of Public Health, Faculty of Allied and Health Sciences, Lead City University, Ibadan is in full compliance with the approved University format.

_____ _____

Signature Date



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TELEGRAMS..... TELEPHONE.....

MINISTRY OF HEALTH

DEPARTMENT OF PLANNING, RESEARCH & STATISTICS DIVISION

PRIVATE MAIL BAG NO. 5027, OYO STATE OF NIGERIA

Your Ref. No. .....

All communications should be addressed to the Honorable Commissioner quoting

Our Ref. No AD 13/479/ 44561

25th August, 2022

The Principal Investigator,
Department of Public Health,
Faculty of Public Health,
Lead City University,
Ibadan, Nigeria.

Attention: Adeoye Enitan

ETHICS APPROVAL FOR THE IMPLEMENTATION
OF YOUR RESEARCH PROPOSAL IN OYO STATE

This is to acknowledge that your Research Proposal titled: "Depression and Anxiety among Women Living with HIV Attending Antenatal Centers in Ibadan, Oyo State." has been reviewed by the Oyo State Ethics Review Committee.

2. The committee has noted your compliance. In the light of this, I am pleased to convey to you the full approval by the committee for the implementation of the Research Proposal in Oyo State, Nigeria.

3. Please note that the National Code for Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations, in line with this, the Committee will monitor closely and follow up the implementation of the research study. However, the Ministry of Health would like to have a copy of the results and conclusions of findings as this will help in policy making in the health sector.

4. Wishing you all the best.

OYO STATE RESEARCH ETHICAL REVIEW COMMITTEE

Signature & Date

Dr. Abbas Gbolahan
Director, Planning, Research & Statistics
Secretary, Oyo State, Research Ethics Review Committee